PHARMACEUTICAL ABSTRACTS

Editor: A. G. DuMez, 32 S. Greene Street, Baltimore, Maryland.

CONTENTS

Pharmacy:

Pharmacology, Toxicology and Therapeutics:

New Remedies:

Chemistry:

Organic:

PHARMACY

MISCELLANEOUS (*Continued*)

Alginic Acid—Use of, for Soaps. Sodium alginate possesses no detergent properties.—ANON. *Maslob. Zhir. Delo,* No. 3 (1934), 28; through *J. Soc. Chem. Ind.,* 56 (1937), B., 805. (E. G. V.)

Anthracene. A Mosquito Larvicide. A dust prepared with refuse from coke benzene plants [containing 12–15% of anthracene (I)] diluted to contain 10 per cent of I gave 100 per cent kill of larvæ when spread over the surface of water.—S. KUTSCHER. *Med. Parasitol. Parasit. Dis. Moscow,* 3 (1934), 141; through *J. Soc. Chem. Ind.,* 56 (1937), B., 849. (E. G. V.)

Antiseptic. About 4 to 8 Gm. of salicylic acid are dissolved in 100 cc. of a 3 to 1 mixture of thaenol and glycerol to obtain an antiseptic solution for use in the treatment of skin diseases due to vegetable parasites.—HARRY J. NICHOLS. U. S. pat. 2,095,571, Oct. 12, 1937. (A. P.-C.)

Bath Preparations—Effervescent and Foam. The author discusses the powder-form baths, liquid-foam baths and the effervescent bath preparations.—S. P. JANNAWAY. *Perfumery Essent. Oil Record,* 28 (1937), 398. (A. C. DeD.)

Castor Oil—Refining of. The cold oil is mixed with 5% of soft water, and the mixture heated to 55° after 30 minutes, when 2% sodium carbonate is added, and the mixture is stirred at 65° for 1 hour, and allowed to settle for 4–5 hours. The soap stock contains 86% of the incidentally hydrolyzed fat, and the ratio neutral fat/fatty acids = 1.93/1, instead of 3.78/1, as obtained by the usual sodium hydroxide method.—M. Z. KLJATSCHKO. *Maslob. Zhir. Delo,* 2 (1937), 15–17; through *J. Soc. Chem. Ind.,* 56 (1937), 1080. (E. G. V.)

Chloropicrin—Use of, as a Mosquito Larvicide. For dusting the surface of water a preparation containing chloropicrin (I) 1 liter, dust 1 Kg., paraffin oil 1 liter is described. Mosquito eggs, larvæ and pupæ are killed. Fish are affected only when the depth of water is not more than 12–15 cm. For use as a stomach poison 150 Gm. of I are mixed with flour 1 Kg., dust 1 Kg., paraffin oil 100–150 Gm.—F. JATSENKO. *Med. Parasitol. Parasit. Dis. Moscow,* 3 (1934), 91; through *J. Soc. Chem. Ind.,* 56 (1937), B., 849. (E. G. V.)

Cosmetics—Progress in. A small number of improvements are discussed in detail. They are the use of gums and colloids, sodium alginate, bentonite, grading and testing, methyl cellulose, preservatives, nipagin, titree oil, glycerin and glycerin substitutes, emulsifying agents and related products, fatty alcohols, sulfonated fatty alcohols, triethanolamine, glyceryl monostearate, water-in-oil emulsifiers.—FRANK ATKINS. *Perfumery Essent. Oil Record,* 28 (1937), 364. (A. C. DeD.)

Dentifrice. An alkali metal perborate is used in admixture with an amount of monobasic phosphate of an alkaline earth metal sufficient to insure substantially complete liberation of the available oxygen of the perborate in aqueous medium.—PAUL POETSCHKE. U. S. pat. 2,094,671, Oct. 5, 1937. (A. P.-C.)

Detergents—Alkali-Free. Ethanolamine soaps are strictly "alkali free" and the term may be applied by extension to the alkali-metal salts of sulfo-acids (or like strong acids) since they do not yield alkali by hydrolysis in aqueous solution.—J. HETZER. *Öle, Fette, Wachse,* No. 4 (1937), 9; through *J. Soc. Chem. Ind.,* 56 (1937), B., 805. (E. G. V.)

Fruit and Berry Extracts—Preparation of. Pectin is precipitated from fruit juices by addition of juices rich in pectose (I) (for example, from clover leaves, lucerne, peas or potatoes), heating for 5–10 hours at 50–55° and then at 80° to check the action of I solution with carbon removes undesirable flavors.—S. V. TZEREVITINOV. *Konserven Prom.,* No. 6 (1935), 22; through *J. Soc. Chem. Ind.,* 56 (1937), B., 836. (E. G. V.)

Fungicides. Copper oxychloride is mixed with a protective colloid such as sulfite waste liquor and water in proportions to yield thixotropic material (the composition containing 20 to 50% of water).—PAUL KUBELKA. U. S. pat. 2,089,612, Aug. 10, 1937. (A. P.-C.)

Herbicide. The product consists of a mixture of sodium chlorate and sodium acetate.—IRVING E. MELHUS, assignor to CHIPMAN CHEMICAL CO., INC. U. S. pat. 2,094,366, Sept. 28, 1937. (A. P.-C.)

Insecticide. Hydroxy azo compounds containing at least one hydroxy group and at least one nitro group are used as insecticides.—DONALD L. VIVIAN and HERBERT L. J. HALLER, dedicated to the free use of the public on the territory of the U. S. A. U. S. pat. 2,094,831, Oct. 5, 1937. (A. P.-C.)

Insecticide. *2,095,939*—A compound containing homocyclic nuclei joined by one azo group, and containing at least one halogen atom in addition to at least one hydroxyl group is used as insecticide. *2,095,940*—An arylazo compound in which the nuclei are substituted by at least one hydrogen atom or at least one nitro group is used as insecticide. *2,095,941*—A compound containing homocyclic nuclei joined by one azo group, and containing in addition to not less than one hydroxyl group, not less than one halogen atom and not less than one alkyl group, is used as insecticide.—DONALD L. VIVIAN and HERBERT L. J. HALLER, dedicated to the free use of the Public. U. S. pats. 2,095,939 to 2,095,941, Oct. 12, 1937. (A. P.-C.)

Insecticide—Method of Producing. Sodium fluoride is precipitated from solution and the bulk of the liquid is removed to form a damp body of salt. An aqueous solution of soap is added to the salt, which is then dried and produces a free-flowing salt.—NELSON A. CHESTNUTT, JR., assignor to GENERAL CHEMICAL CO. U. S. pat. 2,095,464, Oct. 22, 1937. (A. P.-C.)

Lip-Stick Moulding. The composition is prepared in large steam-heated mixing kettles on one floor situated above the moulding floor. The hopper-shaped device reaches downward from the foregoing to a belt-conveyor system on which the moulds are placed. One of the latest addition is a refrigerating system which is applied to the small moulds so that they may be emptied without delay. The sticks as removed from the moulding boxes are spread loosely on another conveying belt made of a special textile composition. Silver paper which is wrapped around the end of the individual sticks is put on by hand. The finished sticks have then to be suitably packed for the market.—ANON. *Perfumery Essent. Oil Record,* 28 (1937), 361. (A. C. DeD.)

Medicinal Substances—Characteristic Reaction of. The preparation, properties and reactions of antipyrine, pyramidone and lithium benzoate are described.—T. LASSANDRO-PEPE. *Boll. chim.-farm.,* 76 (1937), 269; through *J. Soc. Chem. Ind.,* 56 (1937), B., 839. (E. G. V.)

Mucinous Preparations. Purified vegetable mucinous material freed of fiber, cellulose and other ulcer-irritating impurities is mixed with at least 20% of protein material possessing pronounced nutritive, antacid and demulcent properties. The preparation is used for alleviating ulcerous conditions of the digestive tract.—PHILIP A. KOBER and RAYMOND W. CROSLEY, assignors to G. D. SEARLE & CO. U. S. pat. 2,095,259, Oct. 12, 1937. (A. P.-C.)

Ointment—Protective, for Teeth. An alkaline substance such as magnesium carbonate is mixed with a substantially insoluble base or vehicle such as a heavy mineral oil to form a plastic, semisolid mass, adapted to remain in prolonged and intimate contact with the teeth when applied. —MALCOLM W. ATKINS. U. S. pat. 2,089,845, Aug. 10, 1937. (A. P.-C.)

Perfumery—Progress of, in 1937. A survey of the various articles on perfumery published in the *Perfumery and Essential Oil Record* during 1937 is given.—ANON. *Perfumery Essent. Oil Record,* 28 (1937), 439. (A. C. DeD.)

Raw Materials—Newer, Using the. The author reviews some of the most important and versatile of the newer raw materials for cosmetics, giving suggestions as to their use in the revision of typical old-fashioned formulæ.—S. P. JANNAWAY. *Perfumery Essent. Oil Record,* 29 (1938), 7. (A. C. DeD.)

Skin Creams, Powders and the Like—Radioactivation of. A jar or collapsible tube for non-liquid cosmetic is provided with a loose inner lid or neck extension (as desired) of or coated with radioactive material, the result being that only that portion of the cosmetic which will next be used is irradiated.—A. KAGAN-CHABCHAY. Brit. pat. 467,924, 1.13.36. Belg. pat. 1.14.35; through *J. Soc. Chem. Ind.,* 56 (1937), 1140. (E. G. V.)

Soap—Perfect Toilet. The selection of the fats (olive, arachis, castor, palm oil, slightly hardened oils) and the most suitable method of manufacture and drying for the especially mild soaps intended for nurturing the skin (as distinct from mere washing for example for foam-massage) are detailed.—K. L. WEBER. *Öle, Fette, Wachse,* No. 5 (1937), 1; through *J. Soc. Chem. Ind.,* 56 (1937), B., 805. (E. G. V.)

Vermin Destroyer and Process for Its Preparation. Halogenated hydrocarbons containing at least one double bond and one tertiary carbon atom per molecule are used.—DE BATAAFSCHE PETROLEUM MIJ N. V. Belg. pat. 419,844, March 31, 1937. (A. P.-C.)

Wetting, Detergent and Toilet Agents Prepared from Alkali Sulfates of Aliphatic Higher Alcohols. II, III. An account is given of the preparation and stability of alkali and ammonium sulfates of oleyl and cetyl alcohols, and their industrial status in Japan.—S. Ueno. *J. Soc. Chem. Ind. Japan*, 40 (1937), 24B; through *J. Soc. Chem. Ind.*, 56 (1937), B., 756. (E. G. V.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

Pharmacology

Adrenal Insufficiency—Experimental and Clinical Studies on. The assay of cortical extract on adrenalectomized dogs requires careful control of diet; moreover, dogs may vary by 300% in their requirements for maintenance per Kg. body weight. Cats require approximately ten times as much extract per Kg. as dogs.—R. A. Cleghorn, E. W. McHenry, G. A. McVicar and D. W. Overend. *Can. Med. Assoc. J.*, 37 (1937), 48–52; through *Physiol. Abstr.*, 22 (1937), 828. (F. J. S.)

Biscoclaurine Alkaloids—Pharmacological Action of. I. Trilobine and Its Degradation Products. The alkaloids from biscoclaurine are a new class, being derived from biphenylene oxide. Trilobine (I) from *Cocculus trilobus* D. C. and *C. sarmentosus* Diels, has the formula $C_{36}H_{36}N_2O_5$, m. p. 235°, $[\alpha]_D^{29}$ plus 282.2°. I furnishes trilobinemethylmethine, $C_{38}H_{40}N_2O_5$, m. p. 106° (II). On oxidation with ozone, II yields methylbiphenylene oxide ether-dialdehyde (III) and aminoaldehyde (5,5′-dimethylethylamino-4,4′-diformyl-3′-methoxy-1,1′,2,2′-diphenylene dioxide), $C_{23}H_{28}N_2O_5$, m. p. 24° (IV). Further oxidation of III gave 2-methoxy diphenylene oxide-5,4′-dicarboxylic acid (V), $C_{15}H_{12}O_6$, m. p. 305°. The action of these products was compared with diphenylene dioxide, $C_{12}H_8O_2$, m. p. 119° (VI), biphenylene oxide, $C_{12}H_8O$, m. p. 28° (VII), 2-aminodiphenylene dioxide (VIII), $C_{12}H_9NO_2$, m. p. 288° and 4-aminobiphenylene oxide (IX), $C_{12}H_9NO$, m. p. 222°. The toxicity was determined after subcutaneous injections to frogs and mice, the minimum lethal doses for I being 500 and 1000 mg. per Kg.; (II).HCl 50 and 100; (IV).HCl 100 and 80; studies on intact frogs, mice, toads, paramecia and rabbits indicated that all of these products were depressants, which was confirmed by studies on isolated tissues. Death of frogs and mammals was due to respiratory failure. Motor paralysis and occasional convulsions were observed in mice and frogs.—Masahiro Okada and Sadao Fuse. *Japan J. Med. Sci. IV. Pharmacol. Trans.*, 9 (1936), 9–12; through *Chem. Abstr.*, 31 (1937), 8020. (F. J. S.)

Conditioned Responses—Changes in, Brought about by Anesthetics and Sedatives. Cats and dogs were trained to open a box lid in search of food when certain stimuli (auditory, visual or tactile) were applied; they learned not to open the lid between stimuli ("interval inhibition"). Injections of sodium amytal, 10 mg. per Kg., caused ataxia and loss of interval inhibition; 25 mg. might inhibit the positive responses and 35 mg. the unconditioned response. Nembutal, paraldehyde, alcohol (orally) and avertin (rectally) acted similarly, the dose required to abolish interval inhibition and weaken discrimination being 45 mg. avertin per Kg., or 10 mg. nembutal, or 3 cc. alcohol. Morphia and hyoscine, in doses around one mg. per Kg., abolished conditioned responses without causing ataxia, possibly by producing nausea. Bulbocapnine (1 mg. per Kg.) suppressed all conditioned responses without deranging appetite or decreasing apparent alertness; carbon dioxide, nitrous oxide and ethylene caused depression.—S. Dworkin, W. Bourne and B. B. Raginsky. *Can. Med. Assoc. J.*, 37 (1937), 136–139; through *Physiol. Abstr.*, 22 (1937), 865. (F. J. S.)

Digitalis Leaves—Relative Potencies of, by Various Bioassays. Variations in potency of different lots of digitalis are due to differences in rate of absorption and action of digitoxin, and of gitoxin, gitalin and the genines. In a series of tests using digitalis leaves F as a standard with value 1.0 preparations D. T. and digitoxin had the relative values: frog Focke method, 1.8, 40; four-hour frog method, 0.5, 125; amplitude isolated frog heart, 0.5, 50; minimum lethal dose rabbit, 0.56, 236; amplitude increase, 0.5, 250; amplitude increase isolated heart, 0.5, 12.5; stoppage isolated rabbit heart, 0.4, 140; amplitude isolated guinea-pig heart, 0.17, 330; minimum lethal dose rats, 0.6, 184; amplitude isolated rat heart, 0.5, 25; minimum lethal dose mice, 0.3, 250; amplitude dog heart, 0.7, 140; minimum lethal dose dogs, 0.72, 260; pigeon emesis, 0.38, 210. In comparing the potency of 4 digitalis leaves against the English 1928 standard leaf by minimum lethal dose methods, with the value 1.0 for the standard Focke's method showed 1.7, 1.7, 1.4, —; the four-hour frog method 1.7, 1.3, 1.2, —; in 1933. In 1935–1936, the four-hour method showed 1.4, 0.9, 0.7, 1.0; the rat method 1.3, 1.0, 1.1, —; the dog method 1.3, 1.0, 0.8, 0.9. The Japanese frog, *Rana nigromaculata*, showed a minimum lethal dose value of 240 mg. per Kg. or $^1/_8$ the minimum lethal dose for the European *Rana temporalis*. In a series of determinations of minimum lethal doses in mg. per Kg. for standard leaf, preparations D. T., digitoxin and ouabain, after one-half hour the minimum lethal dose values were 450, 420, 3.2 and 0.96; one hour, 300, 420, 2.0 and 0.5; after 2 hours, 210, 420, 1.8 and 0.36; and after four to twenty-four hours, 210, 420, 1.8 and 0.25, respectively. Japanese cats were of the same sensitivity as European cats: guinea pigs required twice the dose killing cats: rabbits ten times: rats twenty times. Dogs are somewhat less resistant than cats.—TOKUSHI FUKUDA, BUNZABURO NUKI, MASAKATSU TAMAKI, MASARU HAYASHI, TEISUKE TAKEZAKI, TOYOHARU TANAKAMURA, HIROMICHI TANAKA, YASUAKI YAMANOUCHI and JURO KAWAHARA. *Japan. J. Med. Sci. IV. Pharmacol. Trans.*, 9 (1936), 145–152; through *Chem. Abstr.*, 31 (1937), 8115. (F. J. S.)

Digitalis Preparations—Properties of. The digitoxin (I) content varies from 0.240 to 0.643%. No constant ratio exists between the I content and the biological activity. Seventy per cent ethyl alcohol produces the most effective tinctures.—S. I. ORDINSKI. *Chim. Farm. Prom.*, No. 1 (1935), 49; through *J. Soc. Chem. Ind.*, 56 (1937), B., 839. (E. G. V.)

Epinephrine—Effects of, on Urine Excretions in Dogs. For the injection of the adrenaline a burette with the adrenaline solution was connected by a narrow rubber tubing to a cannula in the femoral vein of the dog. In one series of experiments the plunger of a one cubic centimeter syringe was connected to a micrometer screw which was turned at a constant rate by hand. Subcutaneous and intramuscular injections (1:1000 adrenaline solution) were given all at one time. Intravenous infusions of adrenaline into anesthetized dogs resulted in oliguria or polyuria; a rapid rate resulted in the former and a slow rate in the latter. Intramuscular and subcutaneous injections resulted in polyuria, while injecting the adrenaline in two places or massaging the injected area had no permanent effect on the polyuria. Rapid rates of injection resulted in oliguria, decreased the urea concentration, even though the concentration again decreased. Temporary proteinuria usually accompanied oliguria.—L. A. TOTH. *Am. J. Physiol.*, 119 (1937), 140–148; through *Physiol. Abstr.*, 22 (1937), 817. (F. J. S.)

Ergot Alkaloids—Effects of, on Diuresis. Hypodermic injection of ergotamine tartrate markedly decreases, in bitches having permanent vesical fistulas, the diuresis produced by ingestion of water or of sodium chloride solution. Ergoclavine behaves in exactly the same manner; on the other hand, it generally increases diuresis following upon the ingestion of urea solution, whereas ergotamine decreases it. Ergotaminine has little or no effect on the diuresis produced by absorption of water, but increases (at times to a considerable extent) the amount of urine passed when fasting. Sensibamine exerts on diuresis an effect intermediate between that of its two constituents (ergotamine and ergotaminine). Ergometrine has a high diuretic power; from the standpoint of the kidney functions it is to be preferred to the other ergot alkaloids.—ED. ZUNZ and OLGA VESSELOVSKY. *Ann. Physiol.*, 12 (1936), 795–797; through *Chimie & Industrie*, 38 (1937), 105. (A. P.-C.)

Heroine Solutions—Chemical Composition and Pharmacological Action of. Aqueous solutions of heroine even when carefully protected from light are completely converted into α-acetylmorphine, which changes more slowly into morphine. In chemical assays upon eight commercial lots of heroine ampuls, labeled to contain 1% of heroine, the strongest contained 70% of the claimed amount; two contained no heroine. In toxicity tests on rabbits the first solution was $^1/_2$ as toxic as freshly prepared 1% heroine solution, and the weakest solutions were $^1/_{11}$ as toxic. Because of the undesirable side actions from injection of freshly prepared solutions, the use of heroine solution in France is decreasing.—GIOVANNI RIZZOTTI. *Atti. Soc. Med.-chir. Padova*, 13 (1935), 21–23; through *Chem. Abstr.*, 31 (1937), 8115. (F. J. S.)

Lu-jug, the Chinese Drug. II. History in Japan. T. MINESHITA. *Folia Pharmacol. Japon.*, 21 (1935), 223; through *J. Soc. Chem. Ind.*, 56 (1937), B., 840. (E. G. V.)

Paraldehyde and Benzyl Alcohol—Effect of, on Uterine Activity. Paraldehyde first stimulates then depresses the isolated uterus of the non-pregnant guinea pig, the stimulant effect being manifested mainly in the horn segment, depression occurring in both the horn and cervical segment. Benzyl alcohol was practically without effect on the isolated uterus of both the rabbit and the guinea pig in small doses, but caused depression in larger doses.—G. B. ROTH and H. F. KANE. *J. Lab. Clin. Med.*, 22 (1937), 477–484; through *Physiol. Abstr.*, 22 (1937), 840. (F. J. S.)

Progestin—Bioassay of, Quantitative Method for. Quantitative measurements of progesterone effects in rabbits are made by measuring ovum size and the degree of glandular proliferation of the mucosa. Combining the two sets of measurements gives an index of hormone activity.—Gregory Pincus and N. T. Werthessen. *Am. J. Physiol.*, 120 (1937), 101–104; through *Chem. Abstr.*, 31 (1937), 7605. (F. J. S.)

Quinidine—Biliary Elimination of. Quinidine administered intravenously to the dog in chloralos narcosis is partially eliminated by the bile. The quantity found during the first 10 hours after injection amounted to 1.2% of the quinidine.—F. Caujolle. *Bull. sci. pharmacol.*, 44 (1937), 376–379; through *Chem. Abstr.*, 31 (1937), 8015. (F. J. S.)

Sympathiocolytics—True, Difference between the Physiological Behavior of, of the Ergotoxin Group and Those of the Yohimbine Type. Contrary to yohimbine, ergot alkaloids, in small doses at least, exert a more marked inhibiting action on the adrenalinosensitive vasodilators than on the vasoconstrictors. Yohimbine and alkaloids of the same group (apoyohimbine, corynantheine, gambirine, etc.) are more preferable to the ergot alkaloids because they do not produce, like the latter, high cardiac depressions.—R. Hamet. *Compt. rend. soc. biol.*, 122 (1936), 1277–1279; *Chimie & Industrie*, 38 (1937), 105. (A. P.-C.)

Tinctures—Comparison of, Made with 70 and 45 Per Cent Alcohol. Tinctures of *Digitalis purpurea* and *Adonis vernalis* are richer in glucosides and more active biologically if made with 45% ethyl alcohol.—J. Petrovski, K. Schulshenko and H. Biloschita. *Farm. Zhur.*, No. $^{2}/_{3}$ (1935), 71; through *J. Soc. Chem. Ind.*, 56 (1937), B., 840. (E. G. V.)

Verruga Humana—Case of, by Experimental Autoinoculation. Accidental inoculations formerly made from blood of an ill patient. Present experiment, inoculation by culture of Bartonella from blood-agar. Eruptions appeared promptly some of which on excision and injection proved active in monkeys. Other symptoms, fever, lowered globulin and hemoglobin, also appeared. Eruptions also appeared at sites distant from that of injection. Concluded dissemination is by lymphatics as well as blood stream.—Daniel Mackehenie. *Reforma Medica*, 23 (1937), 741. (G. S. G.)

Vitamin D—Determination of. A comparison of the prophylactic unit and the international unit of vitamin D. Tests carried out on rats using the Schermann-Pappenheimer diet showed that the minimum prophylactic dose (unit) corresponds to 0.38 international unit.—S. N. Matsko. *Voprosy Pitaniya*, 5 (1936), 57–58; through *Chimie & Industrie*, 38 (1937), 106. (A. P.-C.)

Toxicology

Blacktongue—Production of Canine, on Purified Diets. Blacktongue involves in its etiology a lack of some water-soluble factor found in the so-called vitamin B complex and distinct from vitamins B_1 and G.—Harold R. Street. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 602. (A. E. M.)

Convolvula—Wild, Toxicity of. The dried, impure extracts of a Formosan convolvula, *Breynia officinalis* Hemsel, in 4% solution was toxic to rabbits after oral administration of 0.4 cc. per Kg. or subcutaneous injection of 0.01 cc. per Kg. Autopsies showed marked fatty degeneration and cloudy swelling of the liver and kidneys. The degree of pathological change of the tissues was proportional to the dose of material administered.—Ch. Uchida. *J. Med. Assoc. Formosa*, 34 (1935), 525–532; through *Chem. Abstr.*, 31 (1937), 8022. (F. J. S.)

Insecticides—Lonchocarpus Species (Barbasco, Cubé, Haiari, Nekoe and Timbo) Used as. Of four identified and several unidentified species showing toxicity, *Lonchocarpus nicous*, appears to be the richest in insecticidal constituents. Activity is due mainly to rotenone and deguelin, but other toxic compounds of uncertain composition are also present. Rotenone content of 14 samples of commercial cubé root ranged from 0.5 to 7.7%, and total matter extractable with carbon tetrachloride from 11.6 to 21.6%. The literature relating to Lonchocarpus is reviewed.—R. C. Roark. U. S. Dept. Agric. (March 1936); through *J. Soc. Chem. Ind.*, 56 (1937), B., 846. (E. G. V.)

Lead Poisoning—Liver Lesions Due to. The investigation bore on 106 male subjects aged 20 to 50 years, and suffering from saturnism. The functioning of the liver was studied from the following standpoints: pigment exchanges (determination of bilirubin in the serum and of urobilinogen and porphyrin in the urine); carbohydrate exchanges (galactose assimilation test from the double standpoint of galactosuria and galactosemia); fat exchanges (determination of cholesterol in the blood and of ketonic compounds in the serum and urine); stability of the serum colloids. It follows from the tests that only the determination of bilirubin permits of identifying the slightest liver lesions. The normal bilirubin content of the serum is not more than 0.7 mg. per 100 cc.; in most cases of saturnism it varies from 0.8 to 2.9 mg.—K. FELLINGER. *Arch. Gewerbepath.*, 7 (1936), 414–420; through *Chimie & Industrie*, 38 (1937), 57. (A. P.-C.)

Metallic Salts—Toxicity of Dissolved, to Polycelis Nigra (Muller) and Grammarus Pulex L. In the case of heavy metal salts the toxic effect at concentrations below isotonicity is due almost entirely to the cation, the toxicity of the anion being relatively small. At concentrations above isotonicity the anion and the osmotic pressure of the solution act as additional lethal factors. Salts of the metals of the alkalies and alkaline earths are shown to be comparatively harmless below isotonicity, with the exception of salts with a toxic anion such as potassium chromate. This salt is highly toxic at low concentrations. In the case of nitrates and sulfates of the heavy metals, the toxicity is determined by the product of the normality and the electrical conductance ratio at that normality. Survival curves for *Grammarus pulex* in salts of copper and zinc are described.—J. R. ERICHSON JONES. *J. Exptl. Biol.*, 14 (1937), 351–363; through *Physiol. Abstr.*, 22 (1937), 858. (F. J. S.)

THERAPEUTICS

Addison's Disease—Adrenal Transplantation in. G. and B. report a case of Addison's disease in which the patient was kept alive and in comparatively good health for two years, first by the treatment with cortical extract and sodium chloride and later by transplantation of adrenal tissue into the rectus muscle. Post-mortem examination showed complete atrophy of the adrenal glands but the transplanted cortical tissue appeared to be in a state of adequate preservation.—M. A. GOLDZIEHER and S. B. BARISHAW. *Endocrinology* (1937), 394–400; through *Prescriber*, 31 (1937), 306. (A. C. DeD.)

p-Aminobenzenesulfonamide Therapy in Experimental Type III Pneumococcal Pneumonia. Oral treatment reduced the mortality in infected rats and increased the survival period. —FRANK B. COOPER and PAUL GROSS. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 678. (A. E. M.)

Arsenobenzene Preparations—Comparative Investigations on the Spirocheticidal Power of. The preparations can be evaluated on the basis of (1) the length of time between administration of the preparation and the final disappearance of *Spirochaeta pallida*, (2) disappearance of skin symptoms characteristic of lues and (3) change of serological reactions and cerebrospinal fluid tests. On treatment of primary cases with a German brand of neoarsphenamine spirochetes disappeared within three to seven days; with a Hungarian brand within four to seven days. Treatment of secondary cases required three to seven and five to six days, respectively. There was no significant difference in healing effect on the two preparations.—ARPAD OSGYANI. *Orvosi Hetilap*, 81 (1937), 918–920; through *Chem. Abstr.*, 31 (1937), 8112. (F. J. S.)

Atophan-Cinchophen. Chemically it is 2-phenyl-4 quinoline carbonic acid or 2 phenylcinchonine. Synthesis opened way to numerous derivatives. Atophan is used much in treatment of rheumatism. Graphic description of several methods of synthesizing atophan. Chief action of atophan is to augment excretion of uric acid. Also reduces uric acid of blood.—EDUARDO BRAU. *Rev. centro estud. farm. bioquim.*, 27 (1937), 145. (G. S. G.)

Calcium and Iodides—Ionized, Studies of Use of, in Epilepsy. Insufflation of subarachnoid space in seven cases, produced improvement in 3 and no improvement or worse in 4.—MARIO JAHN and CELSO PEREIRA DA SILVA. *Arquivos da Assist. Geral a Psicopatas do S. Paulo*, 1 (1936); through *Laboratorio Clinico*, 17 (1936), 313. (G. S. G.)

Catalpa Seed—Diuretic Action of. An aqueous extract of catalpa seed orally administered to rabbits caused diuresis, but subcutaneous and intravenous injections did not. The diuretic principle is soluble in water, acetone, 70% methanol and 70% ethanol but not in absolute ethanol, chloroform or ether. The active principle was obtained as needles.—SHIGEO IKESHIMA and KANAE UCHIDA. *Japan J. Med. Sci. IV. Pharmacol. Trans.*, 9 (1936), 37; through *Chem. Abstr.*, 31 (1937), 8021. (F. J. S.)

Colitis—Amebic, Iodoform in the Treatment of. Eight cases of amebic colitis were treated with iodoform. It is easily administered, is cheaper than preparations generally used and is well tolerated.—CIRO SCOTTI. *J. Trop. Med. Hyg.*, 40 (1937), 174–176; through *Chem. Abstr.*, 31 (1937), 8004. (F. J. S.)

Copper—Use of, in Tuberculosis. Copper phosphate, acetate and sulfate used 50 years ago, but too irritant for benefit. Later experiment proved copper reduces resistance of *Bacillus tuberculosis* to acids. Copper improves classic calcium therapy in tuberculosis.—ANON. *Rev. quim. farm.*, 2 (1937), 68. (G. S. G.)

Diabetes Mellitus—Treatment of, with Insoluble Insulin Compounds. II. Histone Insulin. Histone insulin is capable of controlling human diabetes when used alone. Its action on the blood sugar is more delayed and prolonged than that of commercial insulin. No local or systemic reactions were noted with large doses or over long periods of time. In 30 patients an average of 2.7 injections of commercial insulin per day was reduced to an average of 1.2 injections of histone insulin.—P. A. GRAY, FRITZ BISCHOFF and W. D. SANSUM. *Ann. Internal Med.*, 11 (1937), 274–284; through *Chem. Abstr.*, 31 (1937), 8026. (F. J. S.)

Fir Needles—Antiscorbutic Properties of. Fir needle concentrate was prepared by concentrating in presence of carbon dioxide infusions obtained by treating 1 part of pulverized needles with 3 parts of 0.02% hydrochloric acid. One kilo of the concentrate has a potency of about 5000 vitamin C units. Concentrates prepared without hydrochloric acid and without carbon dioxide had a potency of only about 3000 vitamin C units per kilo.—N. CHEPILEVSKAIA. *Voprosy Pitaniya*, 5 (1936), 25–28; through *Chimie & Industrie*, 38 (1937), 106. (A. P.-C.)

Hemorrhage—Pulmonary, Acacia Solution in Treatment of. Two cases of severe recurring pulmonary hemorrhage are reported in which the intravenous injection of 30 Gm. of acacia in 500 cc. of physiological saline solution was followed by a cessation of the hemorrhage.—OSCAR BERGHAUSEN. *Am. Rev. Tuberc.*, 36 (1936), 276–278; through *Chem. Abstr.*, 31 (1937), 8005. (F. J. S.)

Insulin in Ocular Therapy. Among other defects, keratitis and trachoma have benefited by local application of insulin. Insulin also instilled in eyes in cases of opacity of cornea, with encouraging results.—*Notas Praticas, Laboratorio Clinico*, 17 (1937), 306. (G. S. G.)

Lead Poisoning—Calcium Therapy in. Intravenous injection of large amounts of 10% calcium gluconate solution into animals poisoned with lead showing symptoms of anemia and loss of weight which would otherwise lead to death produces almost complete recovery. Similarly the simultaneous administration of large amounts of calcium together with a dose of lead which by itself would have been fatal suppressed the symptoms of lead poisoning.—A. SCHRETZENMAYR and G. BAUER. *Z. ges. exptl. Med.*, 98 (1936), 478–488; through *Physiol. Abstr.*, 22 (1937), 863. (F. J. S.)

Phenobarbital Sodium—Influence of Diet upon Action of. Injection of phenobarbital sodium in doses of 0.8 Gm. per Kg. of body weight produce prolonged, general narcosis in a large number of rabbits maintained on an oat diet. A smaller number of those on a diet of carrots undergo complete narcosis. Those on a mixed diet undergo narcosis more quickly, but the narcosis is of shorter duration.—A. J. NEDZEL. *J. Lab. Clin. Med.*, 22 (1937), 1130–1132; through *Chem. Abstr.*, 31 (1937), 8014. (F. J. S.)

Silica—Diverse Uses of. Clay used as excipient, absorbent, astringent. Also as hemostatic, and in dentifrices. At present used in intestinal disorders such as cholera, dysentery, etc. Aluminum silicate obtained in pure form superior to natural kaolin, for therapeutic uses. Has been used in cases of diphtheria, ulcers, eczemas, etc., as bactericide. Should be freed of iron, calcium and magnesium, of natural clay and sterilized to destroy any bacteria. In addition to these and industrial uses, kaolin has been mixed with flour to make bread in certain localities.—JOAQUIN MAS-GUINDAL. *Tribuna farm.*, 5 (1937), 97. (G. S. G.)

Silicosis—Prevention of, by Metallic Aluminum. The solubility of silica (powdered quartz) in water can be greatly reduced by the addition of 0.1% of finely powdered metallic aluminum. Feldspars and other silicates are similarly affected. Aluminum oxide and hydroxide and bauxite are also efficacious in higher concentrations. Six rabbits exposed to atmospheres charged with powdered quartz develop well-marked typical silicosis, while seven animals similarly treated with quartz containing less than 1% metallic aluminum showed practically no fibrosis, although the lungs contained even more silica than those of the controls.—J. J. DENNY, W. D. ROBSON and D. A. IRWIN. *Can. Med. Assoc. J.*, 37 (1937), 1–11; through *Physiol. Abstr.*, 22 (1937), 797 (F. J. S.)

Some α-[6-Methoxyquinolyl-8]-β-Alkylureas. Several α-[6-methoxyquinolyl-8]-β-alkylureas have been prepared by the action of the appropriate alkyl isocyanate on 6-methoxy-8-aminoquinoline, and their activity toward bird malaria was examined. Only α-[6-methoxyquinolyl-8]-β-methylurea appears to have some action on plasmodium relictum.—J. W. BOEHMER. *Rec. trav. chim.*, 56 (1937), 901. (A. C. DeD.)

Sulfanilamide. The new synthetic remedy known commercially as Prontosil, Sulfonamide has a specific action on the hemolytic streptococcus, and has been successfully used in a number of cases of erysipelas.—ANON. *Prescriber*, 31 (1937), 318. (A. C. DeD.)

Syphilis—Treatment of, in Infancy. Treatment of congenital syphilis should begin before birth, by giving pregnant mother proper therapy. Recommend treatment to 4 or 5 years, with mercury, bismuth or arsenicals, and use caution in terminating treatment before cure is complete. —*Notas Praticas, Laboratorio Clinico*, 17 (1937), 303. (G. S. G.)

Urotherapy. An auto therapy in cases of ascites and cirrhosis of liver. Consists in injecting intramuscularly urine, freshly excreted, and sterilized by phenol or alcoholic iodide solutions 1 to 100, 23 drops to every 20 cc. of urine. In the case of nursings, the mother's urine is substituted. Is a form of desensitization useful also in cases of eczema, asthma, psoriasis or similar manifestations. Contraindicated in dry eczema, furunculosis or impetigo. Of 456 cases treated, 342 were considered cured and 75 improved.—ALFREDO NASCIMENTO. *Rev. Syniatrica*, 30 (1937), 97. (G. S. G.)

Xerophthalmia—Clinical Observations on. Chiefly an infirmity of malnourished children due to lack of vitamin A. Three stages: night blindness, dryness of conjunctiva and keratoma. Almost always fatal to vision, but responds promptly to treatment consisting in foods containing vitamins A, B and C.—CONRADO D. AYUYAO. *J. Philippine Isls. Med. Assoc.*, 17 (1937), 399; through *Rev. Filipina De Med. y Farm.*, 28 (1937), 272. (G. S. G.)

NEW REMEDIES

SYNTHETICS

Amphyl, a solution of chlorhydroxymethaxylene, has a Rideal-Walker co-efficient of 6 determined with *Bacillus typhosus*. It is miscible with water or alcohol, and its bactericidal value is stable in the presence of blood, pus or other body fluids. The concentrated solution is non-irritant to unbroken skin, solutions up to 5% do not injure abraded inflammatory lesions. Solutions of a strength of 1 to 2% are of sufficient bactericidal power for all purposes and mucous membranes are unaffected by this strength. Amphyl antiseptic is non-toxic even if taken internally in reasonable dosage. It is recommended for use on infected wounds, cuts and abrasions, and for bacterial infections of the skin. It is also of use for the sterilization of utensils and instruments; no corrosion of steel, chromium or nickel-plated instruments takes place after prolonged immersion in a 2% solution.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 153. (S. W. G.)

Barbibrom Astra (Chemische Fabriek "Astra") is bromisovalerianylurea.—*Pharm. Weekblad*, 74 (1937), 635. (E. H. W.)

Barbimon Astra is the diethylbarbituric acid compound of dimethylamidoantipyrine which is also known as veramon.—*Pharm. Weekblad*, 74 (1937), 635. (E. H. W.)

Barbityl Astra is diethylobarbituric acid.—*Pharm. Weekblad*, 74 (1937), 635. (E. H. W.)

Camygdal (H. R. Napp Ltd., London) is a flavored granular calcium mandelate, each teaspoonful containing 2 Gm. calcium mandelate.—*Australas. J. Pharm.*, 52 (1937), 649. (E. V. S.)

Cardatone (Evans, Sons, Lescher and Webb Ltd., Liverpool) is an aqueous solution containing 15% sodium camphosulfonate. It is a non-toxic analeptic, for use as a cardiac and respiratory stimulant. Two forms of solution are marketed, one for subcutaneous, intramuscular or intravenous injection, and the other for oral administration. The dose is 1 or 2 cc. by injection, or 1.5 to 6 cc. by mouth.—*Australas. J. Pharm.*, 52 (1937), 548. (E. V. S.)

Cryptargol-Lumière (Laboratoires Lumiére, Lyon) is pure silver thioglycerin-sodium sulfonate, found on the market in pills, granules, collyra and as ovules.—*Pharm. Weekblad*, 74 (1937), 374. (E. H. W.)

Ephetoninum Liquidum Merck is a solution intended for internal use containing 2% ephetonine and 2% pyrazinecarbonic acid-isopropylidinehydrazide. 15 drops or 1 cc. contain

20 mg. of the two substances. Ephetoninum Liquidum is a tonic to the heart and the vascular system.—*Pharm. Weekblad,* 74 (1937), 374. (E. H. W.)

Formoiodin Dusting Powder (Chem. pharm. A. G., Rave, Agram.) contains 20% of hexamethylenehexaminehexaiodide in talc. The packages contain 10 Gm.—*Pharm. Presse,* 43 (1938), 32. (M. F. W. D.)

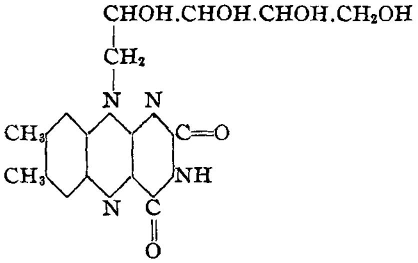
Hildicon (H. Trommsdorff Chemical factory at Aken) is a paste containing diozol as the active constituent. It is used in insect bites and in chilblained hands.—*Pharm. Weekblad,* 74 (1937), 323. (E. H. W.)

Hydropyrin Tablets contain water-soluble lithium acetylsalicylate which is non-poisonous. They are indicated where elimination of uric acid is of importance, as in rheumatism, gout, sciatica and arthritis. The dose is 1 to 2 tablets in a tumblerful of water three times a day.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 156. (S. W. G.)

Iodatol is an iodized oil, formed by the addition of iodine to an unsaturated glyceryl ester. It gives no characteristic tests for free iodine, but slowly decomposes in the presence of light and air. When the solution becomes discolored it should not be used. Iodatol is supplied for use in radiography for making visible the lung tissue for the diagnosis of bronchiectasis; for the localization of spinal cord tumor, and for radiological examination of the uterus. Iodatol can also be used for therapeutic purposes for iodine administration, by injection or by oral administration. Iodatol is issued for diagnosis in 20- and 30-cc. bottles of the oil containing 40% of iodine. For treatment it is supplied in boxes of 6 and 12 1-cc. and 2-cc. ampuls of 10% iodine. For oral administration it is supplied in 3-, 5-, 10- and 20-minim capsules, in boxes of 25, 50 and 100 containing 25% of iodine in organic combination.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 157. (S. W. G.)

Kloramin A, Astra, is sodium benzolsulfochloramide in tablet form. It is used as a disinfectant in solutions containing from 0.1 to 1% of kloramin. A 0.5% solution is satisfactory for mouth disinfection. A 0.1% solution is used as a gargle. For the disinfection of the nose and ears a 0.25% solution is used; for the skin 0.05 to 1% and for the disinfection of instruments and glassware a 1% solution is used. The tablets contain 0.5 Gm. and 1 Gm. each.—*Pharm. Weekblad,* 74 (1937), 636. (E. H. W.)

Lactoflavin. Lactoflavin is vitamin B_2, which has been shown to be 6:7-dimethyl-9-(1′-*d*-ribityl-) isoalloxazin of the formula



The phosphoric ester, combined with protein, forms an oxidation ferment of the cell and is able to oxidize a large number of compounds. Although human lactoflavine-avitaminosis has never been observed, the daily requirement has been estimated at 150 rat units. A rat unit is the smallest daily amount necessary to cause a young rat suitably starved to gain 20 Gm. in weight in twenty days. The excretion of the compound can be followed by the fluorescence of the urine a few hours after administration. Lactoflavin is issued in packages of five ampuls, each containing 1 mg. in 2 cc., equivalent to 250 rat units. The normal dosage is 1 to 2 ampuls per diem intramuscularly; if no effect is observed, the dose may be increased without danger. It is suggested for the treatment of skin diseases due to nutritive disturbances, eczema, etc., and sundry anæmias.—*Pharm. Ztg. Berl.,* 81 (1936), 1126; through *Quart. J. Pharm. Pharmacol.,* 10 (1937), 301. (S. W. G.)

Nakodylaat Ampuls ("Astra" Amsterdam) are 1.2-cc. ampuls filled with a 5 per cent solution of sodium cacodylate.—*Pharm. Weekblad,* 74 (1937), 637. (E. H. W.)

Percalcin (Evans, Sons, Lescher and Webb Ltd., Liverpool and London) is a concentrated solution of calcium in organic combination, containing in each 25 cc. the equivalent of 1 Gm. of calcium hydroxide, or as much calcium as is present in 25% solution of calcium gluconate. It is used in colic, renal colic and gall-stone colic; acute cirrhosis of the liver, in jaundice and in some forms of Bright's disease; eases pain and increases the coagulability of the blood; also used in epididymitis, orchitis; convulsions, bronchial spasms and laryngismus in children; infantile tetany; debility and some forms of neurasthenia. The intravenous dose is 4 to 25 cc.; intramuscular dose, 2 to 4 cc. daily or oftener, followed by massage. Percalcin is marketed in rubber-capped bottles of 5 (boxes of 6) and 25 cc.—*Australas. J. Pharm.*, 52 (1937), 760. (E. V. S.)

Rossium is described as di-phenylmethylpyrazolonyl, and is suggested for the treatment of acute and chronic alcoholism, barbiturism and drug addiction. For alcoholism 1 Gm. of rossium is administered orally every four hours for five or six days. Alcohol is stopped completely twenty-four to forty-eight hours after commencement of the treatment. Administration of dextrose either by intravenous injection of 50 cc. of 10 to 50% solution, or by mouth is recommended as an adjunct to rossium. One to 2 grains of codeine should be given in cases of extreme sleeplessness. The treatment for drug addiction is the same, except that the dose recommended is one capsule (0.5 Gm.) for every 10 lb. of body-weight, taken during twenty-four hours in four doses. It is suggested that sedormid, nembutal or amytal with codeine be given to ensure sleep. Rossium should be discontinued in cases of marked skin idiosyncrasy. Rossium is supplied in 0.5-Gm. capsules in bottles of 75, the average quantity required for five to six days' treatment.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 159. (S. W. G.)

Septurit Ampuls (Sanabo, G.m.b.H., Vienna, 12th dist.) contain 0.75 Gm. of the molecular compound of *p*-aminobenzosulfamide and hexamethylenetetramine dissolved in a hexamethylenetetramine solution containing 33% of the latter. The packages contain 5 ampuls of 5 cc. each. *Septurit Tablets* contain in each 0.75 Gm. of the molecular compound of *p*-aminobenzosulfamide and hexamethylenetetramine and are put up in packages of 20 tablets.—*Pharm. Presse*, 43 (1938), 32. (M. F. W. D.)

Spasmo-Cilbalgin (Ciba) is found on the market as suppositories containing a combination of cibalgine with trasentine, the hydrochloric acid compound of diphenylacetyldiethylaminoethanolester.—*Pharm. Weekblad*, 74 (1937), 637. (E. H. W.)

Sulfobit (Ammonium sulfobituminosum) (A. Hartmann Fabrik, chem.-pharm. Erzeugnisse at Dusseldorf) is a sulfide preparation made from organic substances. It contains 10% of sulfur.—*Pharm. Weekblad*, 74 (1937), 324. (E. H. W.)

Tegamine Tablets (Beiersdorf & Co., G.m.b.H., Vienna, 10th dist.) contain in each 0.15 Gm. phenylmethylcyclotetramethylenepyrazolon, 0.25 Gm. *p*-acetphenetidine, 0.05 Gm. caffeine, 0.10 Gm. bromdiethylacetylcarbamide and are put up in packages of 10 and 20.—*Pharm. Presse*, 43 (1938), 32. (M. F. W. D.)

Uliron Tablets (Bayer, I. G. Farben.-A. G., Leverkusen a. Rhein) contain in each 0.50 Gm. of 4-(4′-aminobenzosulfamido)-benzosulfondimethylamide and are put up in packages of 10 and 20 tablets.—*Pharm. Presse*, 43 (1938), 32. (M. F. W. D.)

Verodigen Compositum (C. F. Boehringer & Sons, Mannheim-Waldhof) is the name given to suppositories containing verodigen and sugar of milk (1:125). They also contain 0.75 Gm. theophyllinetriethanolamine.—*Pharm. Weekblad*, 74 (1937), 324. (E. H. W.)

SPECIALTIES

Abidon (Parke, Davis & Co., London) is a mixture of natural vitamin A and D with vitamin B extract (B_1 and B_2) put up in capsules. They serve as an automatic preventative in growing children and in expectant and nursing mothers and as a prophylactic toward infections of the respiratory organs. Dose for children 1–3 capsules per day.—*Pharm. Weekblad*, 74 (1937), 373. (E. H. W.)

Adrianol-Emulsion (C. H. Boehringer Son, Nieder-Ingelheim) consists of liquid paraffin, gum arabic and water to which 0.25% of adrianol has been added, and a preservative, sodium benzoate. Adrianol is *l*-methylaminoethanolphenolchloral hydrate. It is closely related to adrenalin and sympatol. Like adrenalin it swells up the mucous membrane within a few minutes, the increased secretion in nasal catarrh thus being lessened. It is therefore employed in acute and chronic rhinitis and also in allergic rhinitis.—*Pharm. Weekblad*, 74 (1937), 322. (E. H. W.)

Adsorbinal Tablets (Chemische Fabriek "Astra," Amsterdam) contain 0.4 Gm. colloidal calcium silicate per tablet. Each tablet neutralizes 35 cc. 0.1*N* hydrochloric acid. Adsorbinal with belladonna contains 5 mg. extract belladonna per tablet.—*Pharm. Weekblad*, 74 (1937), 635. (E. H. W.)

Aglutonicum (Associatie Aglucosol, Haarlem) is a tonic containing extract of kola, extract of nux vomica, sodium methylarsenate and phosphates.—*Pharm. Weekblad,* 74 (1937), 373. (E. H. W.)

Alka-Seltzer Tablets contain in each, acetylsalicylic acid, 5 grains; sodium bicarbonate, 31 grains; and citric acid, 21 grains; and are intended as a pleasant and effective method of administering acetylsalicylic acid. The brisk effervescence in water carries the aspirin rapidly into the intestine and tends to lessen gastric disorders, a reaction which is also minimized by the presence of sodium citrate, which at the same time alkalinizes the patient, bringing about a more rapid response in the treatment of colds. The dose is 1 to 2 tablets in two-thirds of a tumbler of water, taken while effervescence continues, and this dose may be repeated at fairly frequent intervals if required. Alka-seltzer tablets are supplied in tubes containing 8 or 25 tablets.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 153. (S. W. G.)

Antuitrine (Parke, Davis & Co., London) is an extract of the anterior lobe of the hypophysis. One distinguishes between Antuitrine "Growth," put up in bottles of 20 cc. and used for growth promotion and Antuitrine S, also called Antroidine, in 10-cc. bottles which also emphasizes the follicle-promotion properties as well as the lutein action.—*Pharm. Weekblad,* 74 (1937), 373. (E. H. W.)

Apisarthren (Dr. Biell & Co., Maagdenburg-Neustadt.) is an ointment prepared from bee-toxin. It is employed in rheumatism and gout.—*Pharm. Weekblad,* 74 (1937), 322. (E. H. W.)

Argycuprol Ampuls (Laboratorie de l'Angiolymphe, E. Moro, Paris) contain in 1 cc. 0.10 Gm. silver vitellinate, 0.001 Gm. copper nucleinate, 0.004 Gm. sodium carbonate and 0.004 Gm. sodium citrate; the packages contain 3 ampuls.—*Pharm. Presse,* 43 (1938), 32. (M. F. W. D.)

Asmolin tablets contain in each disodium fluorescein 0.0015 Gm., ephedrine hydrochloride 0.02 Gm., trimethylxanthine 0.032 Gm., theobromine 0.04125 Gm., calcium gluconate 0.04125 Gm. with maranta and lactose. They are recommended for the treatment of asthma, catarrh and bronchitis. The adult dose is 1 to 2 tablets swallowed whole; for children $^1/_2$ to 1 tablet is suggested. Asmolin is supplied in tubes of 15, 36 and 100 tablets.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 154. (S. W. G.)

Astrocol (Chemische Fabriek "Astra," Södertelje and Amsterdam) contains extractum cola glycerin, obtained from fresh kola nuts 20 Gm.; arsenious acid 25 mg.; extract of ignatia 25 mg.; manganese hypophosphite 50 mg.; acid sodium phosphate 4 Gm.; saccharum 42.8 Gm.; vinum oporto 47.2 Gm.; aqua distillata 6 Gm.; aroma cerasorum 0.7 Gm. The dose is 1–2 teaspoonfuls 3 times a day.—*Pharm. Weekblad,* 74 (1937), 635. (E. H. W.)

Betabion (E. Merck, Darmstadt.) is a solution of the hydrochloride of the pure crystallized vitamin B_1. Vitamin B is the long known vitamin discovered in 1897 by Prof. Dr. Eykman. Vitamin B_1 is found in the silver-skin of rice and in yeast. It was first obtained in pure crystalline form and described by Jansen and Donath; the empirical formula was found by Windaus and the structural formula by R. Williams. Betabion, the pure crystallized Vitamin B_1, has the formula $C_{12}H_{18}ON_4SCl_2$. It crystallizes in colorless, needle-shaped crystals which melt at 250°. Betabion is a chloride which dissolves in water with a weakly acid reaction. It is found on the market in tablets of $^1/_2$ mg.: dose 1–3 tablets per day; in ampuls containing 1 mg. of betabion which are given 1–2 times per day and in ampuls, and Betabion forte, which contain 5 mg. and are given the following day in neuritis, ischias and funicular myelose.—*Pharm. Weekblad,* 74 (1937), 322. (E. H. W.)

Calcination Tablets (Chemische Fabriek "Astra," Södertelje and Amsterdam) is the name given to tablets which contain 0.5 Gm. of calcium gluconate, 0.5 Gm. of saccharum and oil of anise and oil of peppermint. Calcination is the name given by this company to calcium gluconate. —*Pharm. Weekblad,* 74 (1937), 635. (E. H. W.)

Calsil (Chemische Fabriek "Astra," Södertelje and Amsterdam) is a white powder consisting of calcium silicate. It is used in hyperacidity of the stomach, in ulcus ventriculi and in nervous hypersecretion. It is found on the market in powder and in the form of (0.4 Gm.) tablets. One to two tablets are given half an hour before meals.—*Pharm. Weekblad,* 74 (1937), 635. (E. H. W.)

Carcine (Dr. Pawlotsky, Monaco) is a remedy for carcinoma prepared from the organs of white mice vaccinated with cancer cells. It serves as a medium for passive immunization in cancer sufferers.—*Pharm. Weekblad,* 74 (1937), 374. (E. H. W.)

Cavolysin is a glandular preparation for the treatment of obesity, and is prepared in tablet, capsule and ampul form in two types for male and female use, respectively. The preparation contains the active principles of the thyroid, anterior pituitary and thymus glands, and in addition the male preparation contains orchitic substance, and the female, ovarian substance. The preparation should not be given where disturbance of the kidney function due to hypofunction of the pituitary exists. The dose of the tablets or capsules is 1, rising gradually to 2, and later to 3, taken three times a day after meals. In the parenteral treatment, the contents of one ampul are injected intramuscularly, once a week; this may later be increased to 1 ampul on alternate days, and simultaneously 1 tablet or capsule should be administered twice daily, after meals. Cavolysin is supplied in bottles of 100 tablets or 50 and 120 capsules, or in boxes of 12, 1-cc. ampuls.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 155. (S. W. G.)

Chinin-Redoxon (Hoffmann-La Roche) is found on the market in the form of tablets which contain 0.03 Gm. of quinine and 0.02 Gm. of redoxon (vitamin C).—*Pharm. Weekblad,* 74 (1937), 635. (E. H. W.)

Cholparin Tablets (Sanabo, G.m.b.H., Vienna, 12th dist.) contain in each 0.002 Gm. choline chloride, 0.02 Gm. perparin, 0.15 Gm. aliodan and 0.25 Gm. theobromine. The packages contain 20 tablets.—*Pharm. Presse,* 43 (1938), 32. (M. F. W. D.)

Creosotaan (Chemische Fabriek "Astra," Södertelje and Amsterdam) is a cough syrup containing creosote lactate 9.68 Gm.; calcium lactophosphate 5.16 Gm., codeine phosphate 0.3 Gm., tincture aconite 0.68 Gm.; oleum citri 1.53 Gm. and simple syrup to make 1000 Gm. Dose for adults, 1 tablespoonful three times a day; for children 1 teaspoonful three times a day.—*Pharm. Weekblad,* 74 (1937), 635. (E. H. W.)

Diagnostic for Hay Fever and Asthma (N. V. Pharmaceutische Producten-Maatschappij Philips-van Houten) consists of three capillary tubes filled with mixed extracts of pollen from grasses and from various flowers and blossoms, also a control liquid. The diagnostic is employed (skin scarification) to determine which vaccine should be used.—*Pharm. Weekblad,* 74 (1937), 374. (E. H. W.)

Emplets is the name given by Parke, Davis & Co. to tablets containing desiccated glandular preparations.—*Pharm. Weekblad,* 74 (1937), 374. (E. H. W.)

Eschatine (Parke, Davis & Co., London) is a preparation obtained from adrenal cortex containing the hormone described by Swingle and Pfifner. It is standardized physiologically and biologically on dogs deprived of their adrenals. 1 cc. is equivalent to 40 Gm. of fresh adrenal. —*Pharm. Weekblad,* 74 (1937), 374. (E. H. W.)

Ferradol (Parke, Davis & Co., London) is a liver oil and vitamin B containing malt extract; 100 cc. contain 1 cc. liver oil (100 A, 500 D); vitamin B extract 5.7 Gm.; iron-ammonium citrate 0.9 Gm.; manganese citrate 0.057 Gm. and further malt extract constituents. The dose for children is $^1/_2$ to 1 teaspoonful.—*Pharm. Weekblad,* 74 (1937), 374. (E. H. W.)

Halibut Oil Ointment contains halibut liver oil in combination with kaolin, resorcin and oil of white birch. It is standardized to contain 500 international units of vitamin A per Gm. It is claimed that vitamin A has marked healing properties, and the ointment has a wide utility for the treatment of skin diseases, wounds and burns. Compound halibut oil ointment is supplied in 1-oz. pots.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 156. (S. W. G.)

Halivitan is a standardized product made from halibut liver oil, having a vitamin A potency 80 times that of cod liver oil. It is indicated in conditions due to vitamin A deficiency. The adult dose is 3 to 5 minims, or 1 tablet three times daily; for children 5 to 10 minims, or 2 tablets three times daily.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 156. (S. W. G.)

Hay Fever and Asthma Vaccine (N. V. Pharmaceutische Producten-Maatschappij Philips-van Houten) is a desensitized therapeutic agent consisting of à mixture of grass-pollen extracts in increasing concentrations. Three bottles are necessary for each case. Other allergic extracts are also obtainable provided the sensitivity of the patient to other materials has been shown by diagnostic test.—*Pharm. Weekblad,* 74 (1937), 375. (E. H. W.)

Hepferol is a granular preparation containing in each 100 Gm. as much vitamin B-containing liver substance as corresponds to 35.2 oz. of fresh liver, besides 5 Gm. of active iron. It is a palatable preparation which does not strain the teeth. It is taken dry, as it dissolves rapidly in the mouth. Hepferol is suggested for the treatment of pernicious anemia and anemic conditions which do not respond to iron therapy alone. The dose is one teaspoonful three times a day after meals. Hepferol is supplied in 4-oz. and 8-oz. packages.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 156. (S. W. G.)

Iminol Tablets (0.25 Gm.) contain in each, agaricine 0.005 Gm.; papaverine 0.02 Gm.; theophylline 0.1 Gm.; caffeine 0.1 Gm. This combination is recommended for the treatment of asthma, and it is claimed that taken in time, it will prevent an attack. One tablet should be taken at the first sign. If attacks occur during the night, 1 tablet should be taken on retiring. Iminol tablets are supplied in vials of 10 tablets, and hospital packages of 100.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 157. (S. W. G.)

Jodbismol (Chemische Fabriek "Astra," Södertelje and Amsterdam) is dispensed in 2.2-cc. ampuls. They contain sodium bismuth iodide 6 Gm.; sodium iodide 12 Gm.; phenylethyl alcohol 2 Gm. and ethylene glycol to make 100 Gm.—*Pharm. Weekblad*, 74 (1937), 636. (E. H. W.)

Kwajatine is the name given by the Pasar Besar pharmacy at Solo to tablets which contain, in each tablet, 250 mg. extractum curcumæ indicæ recenter parat. (Temoe Lawak). Use: 2 tablets 4 times a day in gall- and liver-affections.—*Pharm. Weekblad*, 74 (1937), 323. (E. H. W.)

Luteoantins (Gedeon Richter, Budapest), is the gonadtropic hormone present in the serum of pregnant mares. The activity of this gonadtropic hormone surpasses that obtained from the urine of pregnant women. The urine-hormone was almost inactive in animals having the hypophysis removed while the serum-hormone showed complete activity. It is found on the market in stable solution in ampuls containing 50 and 200 mouse units and in vials of 1000 units. It is employed in defective functioning of the ovaries and the testicles.—*Pharm. Weekblad*, 74 (1937), 375. (E. H. W.)

Menolgine Tablets (Chemische Fabriek "Astra," Södertelje and Amsterdam) contain ephedrine hydrochloride 0.015 Gm.; calcium benzylphthalate 0.15 Gm.; phenylethylbarbituric acid 0.025 Gm.; dimethylamidoantipyrine 0.185 Gm. and saccharum lactis *q. s.*—*Pharm. Weekblad*, 74 (1937), 636. (E. H. W.)

Mycolactine (Anglo-French Drug Co., London) is a combination of bile extract, lactic ferments, yeast, extract frangula and agar agar. The dose is one or two tablets before each meal for constipation, intestinal stasis and alimentary toxemias. It is packaged in 50, 500 and 1000 tablets to the box.—*Australas. J. Pharm.*, 52 (1937), 548. (E. V. S.)

Neo-Hepatex (parenteral) is an extract of liver containing the maximum amount of the hemopoietic fraction freed from inert protein, and purified to make it suitable for intravenous or intramuscular injection. It is recommended for the restoration and maintenance of health in cases of pernicious anemia, at a reasonable cost. In severe cases immediate response can be obtained by intravenous injection, in mild cases 1-cc. doses given intramuscularly will be adequate. Larger or "depot" doses can be given at less frequent intervals. Neo-Hepatex is supplied in ampuls of 1 cc., 2 cc. and 4 cc. The 1-cc. and 2-cc. ampuls are issued in boxes of 6 or 50 ampuls, the 4-cc. ampuls are issued in boxes of 3.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 157. (S. W. G.)

New Remedies. The following new remedies have appeared on the market recently: *Antostab*, a preparation of the gonad-stimulating hormone made from pregnant mares' serum, containing 100 mouse units per ampul; it is used in the treatment of conditions associated with anterior-pituitary and ovarian disfunction. *Emulsion of Sulfonamide*, para-amino-benzene-sulfonamide in a pleasantly flavored emulsion. Each fluid dram contains $7^1/_2$ gr. It is used in the control of infections by hemolytic streptococci such as are present in puerperal fever and peritonitis. *Gonococcus Antitoxin*, an unconcentrated antitoxin from the serum of horses immunized against the specific extracellular toxin of the gonococcus. Used for the treatment of gonococcal infections. *Hormotone T*, each "Enterosol" coated tablet contains suprarenal $^1/_{20}$ gr., entire pituitary $^1/_{20}$ gr., thyroid $^1/_{10}$ gr., biologically standardized ovarian follicular hormone 200 international units. Used in irregular menstruation, hypomennorhea, amenorrhea and menopausal disorders. *Zephiran Concentrate Antiseptic*, an aqueous solution of a mixture of alkyl-dimethyl-benzyl-ammonium chlorides; a non-poisonous, non-irritating, faintly perfumed antiseptic.—ANON. *Pharm. J.*, 139 (1937), 72. (W. B. B.)

New Remedies. The following new remedies have appeared on the market recently: *Nadola Capsules*, equivalent to 9400 international units of vitamin A and 940 international units of vitamin D. *Panglandine*, gluten-coated capsules each containing pituitary substance 0.004 Gm., thyroid substance 0.004 Gm., suprarenal substance 0.0016 Gm., parathyroid substance 0.0001 Gm., thymus substance 0.024 Gm., spleen substance 0.012 Gm., medulla rubrum 0.0125 Gm., liver substance 0.0774 Gm., pancreas substance 0.0048 Gm., duodenal substance 0.0033 Gm., ovarian substance 0.0003 Gm., orchitic substance 0.042 Gm. *Perhepar,* a liver preparation containing in high concentration the anti-pernicious-anemia fraction of liver (G fraction). *Tellangin,* containing acridine and tannin, the acridine being compressed in tablet form and coated with tannic acid.—ANON. *Pharm. J.,* 140 (1938), 24. (W. B. B.)

Optalidon (Chemische Fabriek Sandoz) is now also found on the market in the form of suppositories.—*Pharm. Weekblad,* 74 (1937), 323. (E. H. W.)

Ovacliman Tablets contain in each, brom-ovarian substance, 0.05 Gm.; theobromine, 0.05 Gm.; calcium lactate, 0.19 Gm.; and benzyl succinate, 0.03 Gm. They are indicated in the oral treatment of climacteric disorders by substitution therapy. Apart from the effect of the ovarian substance, the theobromine present is a powerful diuretic, and the benzyl succinate has a valuable spasmolytic effect. The dose is 1 to 2 tablets three times daily. Ovacliman is supplied in vials of 50 tablets.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 157. (S. W. G.)

Panopsin Tablets contain a preparation of pancreatic amylopsin and are a potent digestant, digesting 500 times their own weight of starch and 90 times their own weight of protein in 45 minutes. They are indicated in all cases of indigestion. Panopsin is supplied in bottles containing 50 tablets.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 158. (S. W. G.)

Paroidine (Parke, Davis & Co., London) is Extractum Gland. Parathyroid., obtained from the fresh glands and standardized by the method of Dr. A. M. Hanson. It is sold in 5-cc. vials.—*Pharm. Weekblad,* 74 (1937), 375. (E. H. W.)

Pellurin (Chemische Fabriek Katwijk) is the name given to tablets containing 0.25 Gm. hexamethylenetetramine, 50 mg. caffeine, 75 mg. camphoric acid and 125 mg. acetyl-*p*-phenetidine per tablet. They are used in acute, subacute and chronic affections of the urinary tract including the prostate, diseases of the kidneys, urethra and bladder, endothelial and epithelial affections of the prostate and submucous and parenchymatous affections of these organs.—*Pharm. Weekblad,* 74 (1937), 637. (E. H. W.)

Perlumin Tablets (Chemische Fabriek "Astra," Södertelje and Amsterdam) contain phenylethylbarbituric acid 0.01 Gm.; reduced iron 0.25 Gm.; calcium glycerophosphate 0.05 Gm.; strychnine nitrate 1 mg.; arsenious acid 1 mg.; and saccharum lactis and amylum qs. They are employed in nervous weakness accompanied by sleeplessness and psychic depression. Dose: 2 tablets twice a day. These tablets are found on the English market under the name of Lumifer.—*Pharm. Weekblad,* 74 (1937), 637. (E. H. W.)

Pitressine (Parke, Davis & Co., London) is the blood pressure increasing constituent from the posterior lobe of the pituitary gland, physiologically standardized to 20 international pressor units. It appears in ampuls of 0.5 and 1 cc. Pitressine is used in the treatment of postoperative shock, in diabetes insipidus and in general in all cases where an increase in blood pressure is desired.—*Pharm. Weekblad,* 74 (1937), 375. (E. H. W.)

Referaal Comp. Tablets (Chemische Fabriek "Astra," Södertelje and Amsterdam), contain: reduced iron 0.25 Gm.; calcium glycerophosphate 0.05 Gm.; strychnine nitrate 1 mg. and arsenious acid 1 mg. They are used in weakness as a stimulant to the nervous system. Dose: 2 tablets 2–3 times a day. In the English market they are known as Redufer Comp.—*Pharm. Weekblad,* 74 (1937), 637. (E. H. W.)

Salicylysin liniment and ointment contains 20% of glycol iodosalicylic ester in readily absorbable bases. It is non-irritant, non-staining and practically odorless. It is indicated for the treatment of fibrositis, rheumatism and sciatica and other forms of neuritis. Salicylysin is supplied as a liniment in 2-oz. and 4-oz. bottles, and as an ointment in 1- and 2-oz. tubes.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 159. (S. W. G.)

Sedamyn Syrup is a cough sedative containing tolu, squills, sanguinaria, wild cherry, balm of gilead buds, and $^1/_{16\text{th}}$ grain of codeine sulfate to each teaspoonful. It is recommended as a palatable cough sedative which inhibits the cough due to reflex nervous irritability, but will not prevent expectoration of excess mucus. The dose suggested is graduated from 10 minims to 1 teaspoonful for children, and 1 to 3 teaspoonfuls for adults, repeated every three hours if necessary. Sedamyn syrup is supplied in 4-oz., 8-oz. and 16-oz. bottles.—*Quart. J. Pharm. Pharmacol.,* 10 (1937), 159. (S. W. G.)

Sol-vit-ax is a brand of cod liver oil which is practically tasteless and odorless. It has a guaranteed vitamin potency of 1000 international units of vitamin A, and 100 units of vitamin D per Gm. It is claimed that this oil is readily assimilated, and children take it without trouble. —*Quart. J. Pharm. Pharmacol.*, 10 (1937), 159. (S. W. G.)

Sulferphil (Associated Physicians Lab., Ltd., San Francisco) is a 5% colloidal sulfur with traces of pentathinic acid in water. It is transparent, greenish yellow in color; free from odor of sulfur dioxide or hydrogen sulfide. Sulferphil is used as topical application in the treatment of acne vulgaris, seborrheic dermatitis, dermatophytosis and other conditions in which sulfur is indicated. It is supplied in bottles of 6, 16 and 128 oz.—*Drug. Circ.*, 81, No. 10 (1937), 43. (E. V. S.)

Sympacrinol dragees contain in each, calcium magnesium inositohexaphosphate 1.543 grains; boldo extract, 0.154 grain; podophyllum resin, 0.0463 grain; eserine salicylate (sympagerine), 0.00077 grain; strychnine arsenate, 0.00385 grain. The combined synergic effect of these substances is of value for "the correction of all disorders arising from neuro-vegetative disequilibrium." The dose is 1 to 6 dragees per day taken with water before meals, the maximum dose being 6 dragees.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 160. (S. W. G.)

Tannol is an emulsion of acriflavine containing 10% of tannic acid. It is recommended for the treatment of burns and scalds, combining the antiseptic properties of acriflavine with the healing, non-scarring properties of tannic acid. It can be easily applied in the home as the redressing is simple and painless. Tannol is applied on lint, and lightly bandaged. It is supplied in 4-oz., 16-oz. and 80-oz. bottles.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 160. (S. W. G.)

Theelol (Parke, Davis & Co., London) is a synthetic chemical having oestrus generating properties similar to those of theeline differing from it in that it is active when used internally. It is found on the market in capsules containing 200 international rat units.—*Pharm. Weekblad*, 74 (1937), 376. (E. H. W.)

Veracolate Tablets contain sodium glycocholate, sodium taurocholate, cascara, phenolphthalein and a little capsicum. They are intended as a chologogue evacuant, cause a secretion of healthy bile and increase peristalsis. The dose is 3 tablets with a glass of water on retiring, or one tablet three times daily before meals, reducing the dose as the flow of bile increases. Veracolate tablets are supplied in bottles of 50, 100 and 500 tablets.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 160. (S. W. G.)

Zephiran Concentrate (Bayer Products Ltd., London) is a watery solution of a mixture of alkyl dimethylammonium chlorides. Zephiran is for use in connection with all surgical and gyneological procedures, sterilization of the hands—an all-round germicide for medicinal purposes. For ordinary disinfection of hands, a 1% solution; for surgical procedures, 10% solution for 5 minutes; for irrigation, $^1/_2$%. The solution may also be used for storing instruments and rubber catheters.—*Australas. J. Pharm.*, 52 (1937), 433. (E. V. S.)

BACTERIOLOGY

Antiseptic Test Data—Random Sampling Error as a Possible Answer to the Apparent Variations in. Attention is directed to the lack of uniformity in results of duplicate antiseptic tests and the incorporation into N. F. VI of a standard of resistance for the test organism *Staphylococcus aureus* which appears to be inferior to the standard set by the Food and Drug Administration. The author has made a study of his data collected over a period of years and concludes that the apparently contradictory sets of data of those concerned with the controversy may be in rather close agreement. Workers have failed to interpret data mathematically and have ignored the error in "random sampling." The probable number of organisms can be determined by applying the formula: $q/n = e^{-ax}$, q being the number of tubes showing no growth, n the total number of tubes inoculated and e^{-ax}, the percentage of sterile tubes. Calculation of the value of x (where $a = 1$) has been made for various values of e^{-ax}. The author discusses Gathercoal's latest paper and submits a table of his own findings showing negative results 31% of the time. Theoretically negative results should come 13.5 to 36.7% of the time. Other tables are given and findings discussed: plate counts of loopfuls transferred from seed cultures of strengths and for contact times as noted; variations in the standard phenol solution.—ARTHUR R. CADE. *J. Am. Pharm. Assoc.*, 26 (1937), 1233. (Z. M. C.)

Germicidal Substances—a New Method for the Evaluation of. The determination of the phenol coefficient is not an accurate basis for evaluation of disinfectants except those employed for the sterilization of non-living material. A more valuable expression would be based on the combination of the killing power of the disinfectant (A) with its toxic action toward living embryonic tissue (B). A/B is called the toxicity index. The smaller the index the more perfect is the germicide. Aqueous iodine is best of all germicides studied. Of the newer organic preparations examined hexylresorcinol gave the lowest index when tested against *Staphylococcus aureus*, and metaphen the lowest when tested against *E. Typhosa*.—A. J. SALLE, W. A. MCOMIE and I. L. SCHECHTMEISTER. *J. Bact.*, 34 (1937), 267–273; through *Chem. Abstr.*, 31 (1937), 8827. (F. J. S.)

Glycine—Bacterial Decomposition of. *Pseudomonas fluorescens, B. mycoides, B. coli and B. vulgare* will deaminate glycine. The deamination brought about by *B. coli* or *B. mycoides* is optimal at p_H 7.5–8, and occurs in aerobic circumstances only. Glyoxalic acid was identified among the reaction products, but formaldehyde, formic acid and methyl alcohol could not be detected.—A. JANKE and W. TAYENTHAL. *Biochem. Z.*, 289 (1936), 76–86; through *Physiol. Abstr.*, 22 (1937), 984. (F. J. S.)

Influenza and Other Viruses—Chemistry of. Influenza may be propagated by the transmission of specific enzymic proteins from one organism to another, mainly through the impinging of such colloidal particles upon the mucous membrane of the nose and throat, leading by catalysis to the rapid transformation of inactive fibrillar gel proteins into active enzymic proteins in a sol condition.—M. COPISAROW. *Chemistry and Industry*, 56 (1937), 641. (E. G. V.)

Micro-Organisms—Filtration of Suspensions of, through Filter Paper and "5 on 3" Jena Sintered Glass Filter. The purpose of the work done by the author was to determine how far micro-organisms are removed from their suspensions in liquids by filtration through ordinary filter papers and through the recently introduced sintered glass filters. It was found that ordinary filter papers had little effect in removing micro-organisms from their suspensions, but that sintered glass was comparable in its effects to the more commonly used types of bacterial filters. It was concluded that *B. megatherium*, its spores, and *B. coli* are unable to pass through a "5 on 3" membrane of sintered glass. An illustration of the filtration apparatus is given. The results of the experiments conducted are recorded in table form.—G. R. MILNE. *Pharm. J.*, 140 (1938), 5. (W. B. B.)

Titers—Real and Apparent, of Antitoxic Serums. The usual methods of determining the titer are inaccurate. Possible improvements in method are discussed.—M. WEINBERG and M. GUILLAUMIE. *Compt. rend. soc. biol.*, 123 (1936), 661–664; through *Chimie & Industrie*, 38 (1937), 241. (A. P.-C.)

Virus Research—Use of the Developing Egg in. An abstract of Medical Research Council Special Report No. 220.—*Analyst*, 62 (1937), 555. (G. L. W.)

BOTANY

Eloxanthin, a New Carotenoid Pigment from the Pondweed, Elodea Canadensis. This xanthophyll, which is isomeric with flavoxanthin, was isolated from the leaves of the flowering pondweed and was accompanied by carotene, but not by lutein. Having the formula $C_{40}H_{56}O_3$, it contains three hydroxyl groups and eleven double bonds, nine of which are in conjunction according to light absorption data.—D. HEY. *Biochem. J.*, 31 (1937), 532–534; through *Physiol. Abstr.*, 22 (1937), 881. (F. J. S.)

Environmental Factors—Individual, Effects of, on the Chemical Constituents of Plants. I. Glucoside of Flax. The present study deals with the effect of moisture and light and artificial light of certain wave-lengths. Experimental work is reported in detail. It was found that flax grown in soil with a low percentage of moisture produced a high dry-weight percentage but lowered the glucosidal content slightly from the control. Similar sets grown in soil containing high percentage of moisture showed low dry-weight percentage and an increase in percentage of glucoside over that of the control. This may be due to the fact that the enzyme producing the glucoside is secreted in greater quantities in plants under high moisture condition. Glucoside is probably produced only in actively functioning cells like those in leaves. Plants grown in full light showed marked increase of glucoside. Long ultraviolet radiations during the day increased the percentage; at night either there was no effect or the opposite. Effect of ultraviolet seems to be an activation of glucoside-producing mechanism and is only a temporary one. The glucoside of flax largely disappears during forty-eight hours in the dark. The rate of decomposition of glucoside from rayed flax seems to differ somewhat from that of unrayed flax.—NOEL M. FERGUSON. *J. Am. Pharm. Assoc.*, 26 (1937), 797. (Z. M. C.)

Hortomone-A. The principle use of Hortomone-A is for the treatment of plant cuttings, which depend for their successful development upon their ability to put out vigorous roots before they are attacked and destroyed by fungi and bacteria.—ANON. *Chemistry and Industry*, 56 (1937), 760. (E. G. V.)

Potassium—Physiological Activity of. Theoretical paper on the site of action of potassium in plants.—O. LOEW. *Biochem. Z.*, 289 (1936), 176–178; through *Physiol. Abstr.*, 22 (1937), 986. (F. J. S.)

Stomata of Dicotyledons—a Little Known Type of. II. Occurrence of Dumb-bell Type Stomata. None of the leafy or herb drugs of the Swedish Pharmacopœia X are found to have the dumb-bell shaped stomata described by the authors in paper I (*Farm. Revy*, 36 (1937), 501–513). In the Magnoliales, and especially in the genera, *Magnolia*, *Micheria*, *Tauluma* and *Svenhedina*, this type is found. In the Gruinales (*Rutaceæ*, *Simarubaceæ*, *Burseraceæ*, *Anacardaceæ* and *Erythroxylaceæ*) the type is also frequently found. The guard cells are often silicified, or may be woody. They often have a polar, anchor-shaped appearance. When silicified the walls of the guard cells may be more or less rigid. It is noted that the abundant occurrence of this type of stoma in the leaves of such drug plants as Folium Boldi, Folium Jaborandi, Folium Cocæ and species of *Rhus*, may be of use in pharmacognosy.—E. OHLSSON and S. H. STEINECK. *Farm. Revy*, 36 (1937), 569–573. (C. S. L.)

CHEMISTRY

GENERAL AND PHYSICAL

Burette—an Improved. The burette consists of two suitably graduated tubes, one of which is of substantially smaller diameter (micro-burette) than the other (ordinary burette), the tubes being provided with an outlet common to both and a stop-cock by means of which the liquid can be discharged from the tube of large diameter to the outlet or to the tube of small diameter or the liquid from the tube of small diameter independently discharged through the outlet as desired. The standard 50-cc. burette with divisions for $^1/_{10}$ cc. is provided with a micro-burette of 0.5 cc. capacity with 20 divisions on it, fused on to it on the stop-cock, the 20th division on the micro-burette being a little lower than the 50-cc. mark on the burette. The stop-cock has a "Y" hole bored through it, which allows connection to be made between the burette and the micro-burette or the burette and the delivery tube or the micro-burette and the delivery tube when suitably turned. The burette is filled in the ordinary way and liquid is then allowed to flow into the micro-burette until it reaches the zero mark; then the level of the liquid in the large burette is adjusted to the zero mark. The titration is carried out as usual. If in titration between 41 and 41.5 cc. of liquid has been delivered, then the liquid is allowed to flow in the micro-burette until it falls to the 41.5-cc. mark. From the difference between the two burette readings, the volume of liquid delivered is obtained.—S. L. PHANSALKAR. *Chemistry and Industry*, 56 (1937), 723. (E. G. V.)

Burner with Permanent Adjustable Flame-Spreader. The burner is fitted with an inner movable stem terminating outside with a circular disk; the lower inside end is bent at right angles and after passing through a vertical slot in the gas-tube is attached to a tube-ring which completely covers the slot so that no gas can escape in any position; the bend engages or fits into niches at intervals in the slot. This can be raised to various heights by moving the outer tube-ring causing the flame to assume an ovoid to spheroid shape. The flame is not a hollow ring; it covers a wide space, the area depending on the distance of the surface heated, and the advantage of the heating uniformly of a big surface is obvious. By combining the heights to which the stem is raised with the regulation of the gas-tap a great variety of flame forms (*i. e.*, shapes and sizes) can be produced.—P. BLACKMAN. *Chemistry and Industry*, 56 (1937), 656. (E. G. V.)

Constant-Yield Mixtures—Synthetic, Preparation and Characteristics of. A method has been devised for the preparation of pure triglycerides or mixtures of glycerides, which requires no catalyst and proceeds at temperatures substantially lower than the esterification procedures hitherto described. The method prevents almost completely the so-called bodying reactions that glycerides undergo when heated above 200° C. in air. Furthermore, the reaction is readily adaptable to operation on a large scale. The method has been applied to the preparation of glyceride mixture, the so-called constant-yield oil, which boils in controlled quantities at temperatures ranging from 100° to 260° C. under molecular vacuum. This oil is suitable for the analytical distillation of a variety of compounds and mixtures of compounds whose elimination curves may be desired. It has found particular use in the analytical distillation of dyes and vitamins A and D.—J. G. BAXTER, E. LEB. GRAY and A. O. TISCHER. *Ind. Eng. Chem.*, 29 (1937), 1112. (E. G. V.)

Leaks—Rapid Detection of, in Evacuated Systems. The "Cesco" high frequency generator vacuum tester works by direct connection to either A. C. or D. C. mains. When the electrode is passed along a highly evacuated tube suspected of having a leak, the moment the stream of the high frequency discharge crosses the hole in the tube the discharge is arrested and a yellow glow around the edge of the hole indicates the leak quite clearly.—ANON. *Chemistry and Industry*, 56 (1937), 666. (E. G. V.)

Liquids with Immiscible Solvents of Greater Density—Apparatus for Extraction of. The apparatus consists of a boiling flask, A, connected to a reflux condenser, B, which fits into the main vessel, C, containing the fluid to be extracted. The condensed vapor from the boiling solvent flows down through the liquid in C, forms a separate layer at the bottom, and passes over through the siphon tube, D, into A as fast as condensation occurs. In practice the solvent drops from the condenser onto the surface of the liquid in C, breaking up into smaller drops which do not fall straight through but fan out through the liquid. The essential feature is that the siphon tube can swing about the axis, enabling the height of the liquid in the tube to be adjusted according to the amount of aqueous extract in C and the density of the solvent. Major adjustments may be made by sliding the inverted U-tube up or down and minor adjustments by tilting the U-tube, which is then clamped to hold it steady.—LINDSAY H. BRIGGS. *Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 250. (E. G. V.)

Pectin Gels. I. Method of Measurement of the Strength of Pectin Gels. The method consists of measuring the stress necessary to produce a definite strain in the gel, by displacing a set of vanes imbedded in the gel by means of a torsion wire. The stress is recorded by the torsion in the wire. Well-formed gels were obtained at temperatures up to 90°; no destruction of pectin occurs, and a gel formed at high temperatures recovered its full strength, when transferred to a lower temperature. The lowest acidity at which gel formation occurs is p_H 3.4–3.0, the strength increasing rapidly as the acidity is increased to p_H 3; no very marked differences are obtained if apple or citrus pectin be used, or if citric or hydrochloric acid be the means of regulating acidity. Over a limited range the strength bears a linear relationship with the square of the pectin concentration. With both sugar and glycerin gel formation occurs at a concentration of 50–55%, with increase in strength up to 80%.—L. H. LAMPITT and R. W. MONEY. *J. Soc. Chem. Ind.*, 56 (1937), 290T. (E. G. V.)

Precipitates—Causes of the Presence of Impurities in. II. The comprehensive literature on difficultly soluble lead compounds is reviewed, and it is shown that the contamination of precipitates is usually caused by secondary reactions.—Z. KARAOGLANOV. *Z. Analyt. Chem.*, 106 (1936), 262–272; through *Chimie & Industrie*, 38 (1937), 236. (A. P.-C.)

Silver Colloids—Reactions for Differentiating the Principle. Collargol, argyrol, vitargyl, silver vitellinate and silver proteinate, each in about 1% pseudo-solutions, are differentiated by three reagents: (1) Sodium thiosulfate crystals 10 Gm., dry sodium chloride 1 Gm., water to make 100 cc.; (2) Biuret test; (3) Glacial acetic acid. To 1 cc. of the 1% pseudo-solution add 1 cc. of reagent (1); silver vitellinate and silver proteinate remain clear; collargol, argyrol and vitargyl flocculate in a short time; after 30 minutes separate the precipitate, filter repeatedly to obtain a clear, colorless liquid. Apply reagent (2) to the filtrate; only the filtrate from collargol gives a negative test. Reagent (3) (2 drops added to 1 cc. of the pseudo-solution) differentiates argyrol (no precipitate) from vitargyl (precipitate) and silver vitellinate (precipitate) from silver proteinate (no precipitate).—R. DESCHASEAUX. *J. pharm. chim.*, 25 (1937), 29–30; through *Chimie & Industrie*, 38 (1937), 313–314. (A. P.-C.)

Soxhlet Extractors—a Simple Device for Heating a Battery of. Each flask is heated by an incandescent lamp enclosed in a cylindrical metal shield.—VICENTE COLOBRARO. *Rev. centro estud. farm. bioquim.*, 27 (1937), 87–91; through *Chem. Abstr.*, 31 (1937), 6927. (F. J. S.)

INORGANIC

Cations—New Method for the Analysis of, of Groups II and III in the Presence of the Phosphate Ion. The procedure, concerning which no experimental data are given, differs from the conventional method chiefly by precipitating phosphates of barium, strontium, calcium, magnesium, iron, chromium, aluminum, nickel, cobalt and zinc by using diammonium hydrogen phosphate as group reagent, to be added to the filtrate from the copper-tin group. In the filtrate from the phosphate precipitation, sodium and potassium are detected. The phosphate precipitate is dissolved in dilute hydrochloric acid and the solution treated with ammonium sulfide which precipitates all the above phosphates again, except in the case of iron, nickel, cobalt, maganese and zinc, which are thrown down as sulfides. This precipitate dissolves in dilute hydrochloric acid, with the exception of nickel and cobalt sulfides which are detected as usual. Then, by adding sodium carbonate and bromine, a precipitate containing either carbonates or phosphates of magnesium, calcium, strontium, barium, aluminum, iron and zinc, together with manganese dioxide, is obtained. This precipitate is treated with acetic acid leaving ferric phosphate and maganese dioxide undissolved. After this the procedure is normal. It is also possible to replace the bromine and sodium carbonate with sodium peroxide and sodium hydroxide, in which case the procedure is practically the same as that of A. A. Noyes.—W. PETRASCHENJ. *Z. Analyt. Chem.*, 106 (1936), 241–243; through *Chimie & Industrie*, 38 (1937), 236. (A. P.-C.)

Hydrogen Peroxide Production in an Electrolytic Cell. *2,091,129*—A process involving the production is an electrolytic cell of hydrogen peroxide by a reaction between oxygen absorbed by a cathode containing activated carbon and hydrogen produced at the cathode by the electrolysis of an electrolyte containing a soluble metal salt, comprises employing a current density of at least 30 amperes per sq. dm. of cathode area, withdrawing electrolyte from the cell in the neighborhood of the cathode, causing the electrolyte thus withdrawn to react with a magnesium compound having the same anion as the soluble metal salt to form magnesium peroxide, separating the magnesium peroxide thus formed from the electrolyte and returning the resulting purified electrolyte to the electrolytic cell. *2,091,130*—In the production of hydrogen peroxide in a diaphragm cell by a reaction between oxygen absorbed at a cathode and cathodic hydrogen produced by electrolysis of an electrolyte comprising an anolyte and a catholyte containing a soluble metal salt, a current density of at least 35 amperes per sq. dm. of cathode area is impressed across the cell, and the catholyte is maintained substantially saturated with oxygen, whereby the elimination of hydrogen is inhibited and the production rate of hydrogen peroxide in the cell is increased.—ERNST BERL, assignor to MATHIESON ALKALI WORKS. U. S. pats. 2,091,129 and 2,091,130, Aug. 24, 1937. (A. P.-C.)

Hydrogen Sulfide—Systematic Qualitative Procedure without the Use of. First evaporate the solution several times with concentrated nitric acid to precipitate tin and antimony as oxides; filter; fuse the precipitate with sodium carbonate and sulfur and examine the aqueous extract of the melt for antimony and tin as usual. In the filtrate from the tin and antimony oxides precipitate the silver and part of the lead with hydrochloric acid and examine the precipitate as usual. Next precipitate the phosphates of magnesium, calcium, strontium, barium, aluminum, chromium, iron, manganese, bismuth and lead by adding ammonium chloride, diammonium hydrogen phosphate and ammonium hydroxide, leaving sodium, potassium, zinc, nickel, cobalt, mercury, copper and cadmium ions in solution. Dissolve the phosphate precipitate in hydrochloric acid and heat with sodium carbonate and bromine which converts trivalent chromium into chromate which is easy to identify. Digest the precipitate containing carbonates and hydroxides of magnesium, calcium, strontium, barium, manganese, iron, aluminum, bismuth and lead with a mixture of equal parts of twice normal acetic acid and half normal disodium hydrogen phosphate which will dissolve the carbonates of barium, strontium, calcium and magnesium and the resulting solution can be tested in the usual manner. Dissolve the insoluble phosphates in hydrochloric acid, evaporate off most of the acid and add ammonium hydroxide in slight excess. Then digest with the acetic acid-sodium phosphate mixture again; this will now leave manganese in solution which can be identified as usual. Digest the insoluble phosphates of aluminum, iron and bismuth with a mixture of half-normal nitric acid and half-normal disodium hydrogen phosphate which will dissolve the phosphates of aluminum and iron but leave bismuth phosphate unattacked. Identify iron and aluminum as usual. In the treatment of the filtrate from the silver group, some iron, chromium and aluminum will remain in solution together with the sodium, potassium, zinc, nickel, cobalt, mercury, copper and cadmium. To remove these three elements and the phosphate, add to the ammoniacal solution a slight excess of barium chloride; filter off the precipitate, dissolve it in hydrochloric acid, remove barium with sulfuric acid, and apply the usual tests for chromium, aluminum and iron. In the filtrate from the barium chloride precipitation, remove excess barium with ammonium sulfate and treat with $NH_2NH_2.H_2SO_4$ to precipitate mercury; in the filtrate from this precipitate add acid and ammonium iodide, which will cause precipitation of cuprous iodide; then evaporate to dryness, heat to decompose ammonium salts, digest with a little strong hydrochloric acid and examine the residue for sodium. Dilute the hydrochloric acid solution, add sodium carbonate and sodium hydroxide and test the precipitate for nickel, cobalt and cadmium. Test the filtrate for potassium. No experimental data, but over 25 references, are given.—W. J. PETRASCHENJ. *Z. Analyt. Chem.*, 106 (1936), 330–342; through *Chimie & Industrie*, 38 (1937), 236. (A. P.-C.)

Mercuric, Silver and Stannous Ions—Induced Reduction of Silver Ion for the Rapid Detection of. To test for mercury in a solution containing other ions, add a few drops of silver nitrate and a few drops of stannous chloride solution. One cc. of thousandth-normal mercuric chloride solution will give a black precipitate containing silver. To make a spot test, moisten a piece of filter paper with one drop of stannous chloride solution and upon the spot place one drop of silver nitrate solution; a white precipitate of silver chloride forms; now, on adding one drop of the solution to be tested, a blackening will result if mercury is present. The reaction can also be used as a test for silver and for stannous tin; it is, however, not a very sensitive test for tin, particularly when ferrous iron is present, which gives a grey spot due to the formation of some silver.—N. A. TANANAEFF. *Z. Analyt. Chem.*, 106 (1936), 167–178; through *Chimie & Industrie*, 38 (1937), 234. (A. P.-C.)

Precipitates—Causes of the Presence of Impurities in. Since 1914 the author has been studying the precipitation of barium sulfate and chromate and in this paper he summarizes the results of numerous experiments and discusses the theoretical aspects with reference to the very voluminous literature on this subject. The general conclusion is that many procedures for determining barium and sulfate give good results as a result of compensation of errors but that it is possible, in nearly every case, to carry out precipitation so that sufficiently pure precipitates are obtained. The most important conditions, and this agrees with former ideas, consist in working in very dilute solutions and in adding the reagent dropwise and very slowly. Contrary to views that have prevailed for many years, the author believes that the errors result from contamination during the primary stages of the precipitation rather than from adsorption phenomena and he leans strongly to the theory that products such as $(BaCl)_2SO_4$ are formed. The solubility of these products is an important factor. Errors in connection with the precipitation of barium chromate are not as pronounced as in the case of barium sulfate, because the conditions under which all the barium or all the chromate ions can be precipitated are not as varied as in the case of barium and sulfate ions and the possibility of complexes forming is much less because of their greater solubility.—Z. KARAOGLANOV. *Z. Analyt. Chem.*, 106 (1936), 129–146; through *Chimie & Industrie*, 38 (1937), 233–234. (A. P.-C.)

ORGANIC

Alkaloids

Alkaloid Industry—a Hundred Years of. A lecture.—H. M. WUEST. *Chemistry and Industry*, 56 (1937), 1084. (E. G. V.)

Alkaloids—Critical Study of Methods Proposed for the Titration of, in Anhydrous Medium. Determination of alkaloids in chloroformic solution by titration of the amino nitrogen with alcoholic decinormal hyrochloric acid, in presence of bromophenol blue, thymol blue or neutral red, according to the nature of the alkaloid, gives accurate results which do not differ by more than 0.1% from the theoretical values.—G. N. THOMIS. *J. pharm. chim.*, 24 (1936), 162–173; through *Chimie & Industrie*, 38 (1937), 314. (A. P.-C.)

Alkaloids—Determination of, in Chelidonium Ø. N. and B. propose the following method for the total alkaloids besides berberine, chelidonin and protopin and berberine alone: Heat 20 Gm. chelidonium ø on a water-bath to remove the alcohol, transfer to a separatory funnel, make alkaline with ammonia and shake 3 minutes with 50 cc. ether. Run off the aqueous layer containing the berberine and shake the ether solution with 10 cc. water to remove the last traces of berberine, filter through cotton into a separatory funnel and wash with 2 × 10 cc. ether. Shake the united ether filtrates with 2 × 10 cc. sulfuric acid (1%) and then with 2 × 5 cc. water. Make the combined acid extracts slightly alkaline with ammonia and shake 2 minutes with 50 and 25 cc.

ether. Evaporate the ether solutions to a small volume by distillation, treat with 2 cc. 0.1*N* hydrochloric acid and 1 cc. doubly distilled water, remove the residue ether and after cooling, back titrate (= total alkaloids besides berberine calculated as chelidonin; 1 cc. 0.1*N* hydrochloric = 0.0353 Gm. alkaloid). Treat the titrated solution with 10 drops of concentrated hydrochloride acid, allow to stand over night, then 1 hour at 0° and filter through a 7-cm. filter; wash with four and two cc. of ice water. Dissolve the hydrochlorides of the alkaloids on the filter and in the flask by warming with 60% alcohol, evaporate the alcohol, extract the alkaloids with ammonia and ether, and determine as above (= chelidonin and protopin using methyl red-methylene blue as an indicator; 1 cc. 0.1*N* hydrochloric acid = 0.0353 Gm. chelidonin). Results indicate that in the different primary tinctures the absolute content of the total alkaloids can fluctuate widely and the relations of the single alkaloid to one another in the different primary tinctures also varies.—H. NEUGEBAUER and K. BRUNNER. *Apoth. Ztg.*, 52 (1937), 1038–1039. (H. M. B.)

Apomorphine—Detection of Small Quantities of, in Presence of Morphine. The method of Grimbert and Leclère is the most sensitive; it detects 1 part in 800,000. Wischo's sulfovanadic method is more convenient but detects only 1 part in 200,000. The method of the French Codex does not always detect 1 part in 20,000. The method of Krant is unreliable.—M. JARDILLIER. *Bull. Biol. Pharmaciens*, No. 32 (1936), 72–75; through *Chimie & Industrie*, 38 (1937), 315. (A. P.-C.)

Apomorphine—Presence of Traces of, in Morphine Hydrochloride. Apomorphine was present in many samples of commercial morphine hydrochloride. The amount did not increase with time. Some samples 20 years old contained none. Its presence may cause symptoms of intolerance in some patients.—M. JARDILLIER. *Bull. Biol. Pharmaciens*, No. 32 (1936), 76–85; through *Chimie & Industrie*, 38 (1937), 314–315. (A. P.-C.)

Dionine. On crystallization from water or strong alcohol, dionine retains 2 molecules of water of crystallization, not one as claimed by Merck in 1898. The dihydrate being the commercial and sole product, the formulas for dionine given in the French Codex and the Hungarian Pharm. 1909 need revision.—J. BOUILLOT. *J. pharm. chim.*, 24 (1936), 209–212; through *Chimie & Industrie*, 38 (1937), 314. (A. P.-C.)

Emetine—a New Salt of. A solution of emetine hydrochloride salt (I) in distilled water was made alkaline with sodium hydroxide and extracted with ether. The extract was added with stirring to an aqueous solution of camphosulfonic acid (2 moles on basis of anhydrous I). The aqueous layer was filtered through a sterile Chamberland filter in an atmosphere of carbondioxide into two-cc. amber ampuls. The solutions are adjusted to a final content of 2% emetine camphosulfonate (II) each ampul containing 0.04 Gm. of the salt. II, melting at 134–135°, is readily soluble in water, soluble in alcohol, almost insoluble in ether, is dextrorotatory and has p_H 6.9. The aqueous solution of II is more stable to light and heat and conserves its antiamebic action longer than the corresponding solution of I.—E. CASERIO. *Boll. chim.-farm.*, 76 (1937), 365–368; through *Chem. Abstr.*, 31 (1937), 8821. (F. J. S.)

Ergot—Active Constituents of. A review.—ARTHUR STOLL. *Pharm. Monatsh.*, 18 (1937), 146. (H. M. B.)

Ergot Alkaloids—Chemistry of. At the 10th meeting of the Federation International Pharmaceutique at Copenhagen, Denmark in August 1937, Stoll of Switzerland reviewed the state of advance of the chemistry of various ergot alkaloids. From the work of the various discoverers of these alkaloids since Tanret's day (1875) and the work of Jacobs and co-workers and that of Stoll and Hofmann, it is evident that these alkaloids all contain lysergic acid ($C_{16}H_{16}O_2N_2$) and that this is combined with various groups (ammonia, amino acids and a keto acid) in formation of the various alkaloids. Ergotoxine and ergotinine ($C_{35}H_{39}O_5N_5$) can split off ammonia, *l*-phenylalanine *d*-proline and isobutyrylformic acid. In ergotamine and ergotaminine ($C_{33}H_{35}O_5N_5$) the isobutyrylformic acid is replaced by pyruvic acid. In place of *l*-phenylalanine, ergosine and ergosinine ($C_{30}H_{35}O_5N_5$?) contain *l*-leucine. In ergobasine and ergobasinine ($C_{19}H_{23}O_2N_3$) the amino acid group is replaced by the amino alcohol related to *d*-alanine, *d*-2-amino-propanol-1 and no keto acid is present. The constitution of ergoclavine ($C_{35}H_{37}O_5N_5$) is still not established. Lysergic acid contains an indol group which is the cause of the blue reaction with ferric chloride (Keller's reaction), given by all the ergot alkaloids.—S. A. SCHOU. *Arch. Pharm. og Chem.*, 44 (1937), 173, 502. (C. S. L.)

Hordenine—Evolution of, in Malt and the Relation of This Alkaloid with Tyrosine. Quantitative studies of the progressive increase and decrease of hordenine and tyrosine in germinating barley present a strong argument in favor of the protein origin of the alkaloid.—M. Y. Raoul. *Compt. rend.*, 205 (1937), 450. (G. W. H.)

Morphine—a New Salt of. Good sedative action was obtained with a camphosulfonate of total opium alkaloids in a case of bronchitis refractory to morphine, as well as in cases of tuberculosis, emphysema, etc. The preparation in 4% solution (1 cc. = 0.0133 Gm. morphine) in general proved more satisfactory than any other morphine preparations in controlling cough. As a pre- and post-operative sedative the new preparation was not superior to other opium alkaloid preparations, *e. g.*, pantopon.—M. Thalheimer. *Anesthésie et analgésie*, 3 (1937), 262–264; through *Chem. Abstr.*, 31 (1937), 7529. (F. J. S.)

Normenisarin—Constitution of. Recently, renewed analyses revealed a higher nitrogen-content, *i. e.*, 4.98%, for the phenolic alkaloid m. p. 223°, the 4th base of the series derived from *Cocculus tsilobus*, D. C. This established its formula as $C_{35}H_{32}N_2O_6$, which differs from that of menisarim only by the decrement CH_2. The complete identity of absorption spectrograms and the great similarity in chemical properties indicate that this alkaloid is the hypolog of menisarin and it has been named "nor-menisarin." Methylation by diazo-methane converts nor-menisarin into menisarin and reduction of the latter by zinc dust yields hydromenisarin. Nor-menisarin is formulated. The author suggests a structural formula based on the formation of bis-coclaurin alkaloids like dauricin, oxyacanthin and berbamin.—M. Tomita. *J. Pharm. Soc. Japan*, 55 (1935), 170–172. (R. E. K.)

Quinine Salts—Solubility and Hydrogen-Ion Concentration of. I. Effect of the Quinoline and Quinuclidine Nitrogens. Report is made of a study undertaken with the hope of obtaining more information about the dissociation of free acid from an alkaloidal salt. Solutions were prepared and the p_H determined before and after sterilization in soft glass ampuls. The reaction of quinine hydrochloride remained constant during sterilization but becomes considerably less acid without precipitation during storage for two years. There is no relation between dissociation of the alkaloid and hydrogen-ion concentration of its salts, nor is there relation between the difference in dissociation constants of the alkaloids and the difference in acidity of the two salts. Details of experimental work are reported. Expressions were derived for (*a*) the degree of hydrolysis of an alkaloid after being freed by dissociation of a salt, (*b*) the degree of dissociation of an alkaloidal salt into free acid. The statement was verified that in quinine the first equivalent of acid adds to the quinuclidine nitrogen and the second equivalent adds to the quinoline nitrogen. The latter is responsible for the large solubility and large acidity. Based on the principles shown and verified, an attempt will be made to prepare a series of more soluble and less acid quinine salts.—Frederick F. Johnson. *J. Am. Pharm. Assoc.*, 26 (1937), 1227. (Z. M. C.)

Ragwort—Alkaloid of. An alkaloid with the empirical formula $C_{18}H_{25}O_6N$ was isolated from ragwort (*Senecio jacoboea*) growing in New Zealand. It is probably identical with the alkaloid, jacobine, isolated from Canadian ragwort by Manske. The acetate was very toxic.—Annual Report of the Dominion (New Zealand) *Analyst* for 1935. *Analyst*, 62 (1937), 609. (G. L. W.)

Essential Oils and Related Products

Angelica—Essential Oil of. The oil from White Russian *Angelica archangelica*, had α 0.868, *n* 1.4770–1.4820, saponification value 33.2, acid value 2.8 and ester value 30.4.—G. Maron. *Maslob. Zhir. Delo*, No. 3 (1937), 23; through *J. Soc. Chem. Ind.*, 56 (1937), 1133. (E. G. V.)

Essential Oils—Determination of, in Materials. Several methods are compared. The best results are obtained with a slightly modified Cocking and Middleton apparatus, with specially constructed, graduated receivers.—P. A. Rowaan and A. J. van Duuren. *Chem. Weekblad*, 34 (1937), 534–536; through *J. Soc. Chem. Ind.*, 56 (1937), 1134. (E. G. V.)

Essential Oils—Loss of, from Spices Stored in Ordinary Packing Material. Drugs and spices (anise seed, pepper, pimento, fennel, etc.) stored for 5 years in paper bags lost 47% (average) in whole form and 62% in powder form. When stored in glass vessels, the loss was 24%, but 0–5% only if hermetically sealed. Storage is optimal, in sealed containers in the dark, of the dry, well-conditioned material.—A. Torricelli. *Mitt. Lebensm. Hyg.*, 28 (1937), 117–120; through *J. Soc. Chem. Ind.*, 56 (1937), 1133. (E. G. V.)

Torilis Anthriscus, Gmel—Volatile Oil from the Fruits of. The fruits of this Umbellifera yielded 1.4% of a volatile oil: d_{22} 0.8974, α_D^{22} −95°, n_D^{28} 1.5243, acid number 0, ester number 8.2, b. p.$_H$ 40° to 120° C. The major fractions contained cadinene (dihydrochloride, m. p. 116°; mixed, m. p. no depression) and a new sesquiterpene, torilene, characterized by its sulfate. The latter was prepared by dropping 10 Gm. of oil, b. p. 109–110°, into a cold solution of 3 cc. sulfuric acid in 8 cc. ether (below +5° C.). Crystals separated after several hours: yield 0.9 Gm.; recrystallization from methanol, m. p. 145°; $[\alpha]_D^{17}$ −54.7° in chloroform; saponified by alcoholic potassium hydroxide to torilene-hydrate, m. p. 51–55°. The fruits contain also 10% of a fatty oil. The acids derived therefrom contained 65% of petroselinic acid; myristic, oleic and linoleic acids were also identified.—T. Kariyone and A. Majima. *J. Pharm. Soc. Japan*, 55 (1935), 168–170. (R. E. K.)

Vegetable Raw Materials—Ukrainian, Investigation of. II. Various Ukrainian Ethereal Oils. The properties, physical and chemical constants, and methyl number of various crude oils were determined and compared with those of European oils. Yarrow and calamus oils did not differ from European samples, sage and origanum oils were closely similar to European oils, while marjoram and tansy oils held a middle place among foreign samples. Coriander oil was found to correspond to standard requirements.—N. A. Valyashko and Yu. G. Borisyuk. *Ukraïn. Khem. Zhur.*, 12 (1937), 261–290 (in English 290–291). **III. Investigation on Rectification of Peppermint Oil.** Samples of peppermint oil obtained from dry and fresh peppermint were rectified at six to ten millimeters. In each case, fractions were obtained at 45, 45–55, 55–67, 67–73, 73–78, 78–83, 83–100°. Because of their small amounts, the constants of the first three fractions were not determined. Fractions four, five and six were colorless, with a pleasing odor, while fraction seven was yellow. From fractions four to six, the menthol content and n_D^{20}, and $[\alpha]_D^{14}$ rise sharply. For fraction six, they drop. Steam distillation of peppermint oil under plant conditions did not give satisfactory results.—*Ibid.*, 304–316; through *Chem. Abstr.*, 31 (1937), 8825. (F. J. S.)

Glycosides, Ferments and Carbohydrates

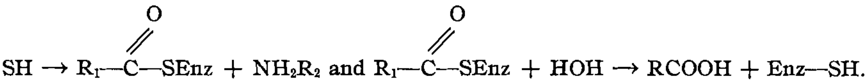
Aspergillus Oryzæ—Amylase of, a Quantitative Study of the Influence of Certain Factors upon the Activity of the. The conditions favorable for the amyloclastic and the saccharogenic activity of the amylase of *Aspergillus oryzæ* are briefly reported.—M. L. Caldwell and S. E. Doebbeling. *J. Am. Chem. Soc.*, 59 (1937), 1835. (E. B. S.)

Ascorbic Acid Oxidase and the State of Ascorbic Acid in Vegetable Tissues. Ascorbic acid oxidase was detected in banana, cabbage, carrot, cucumber, potato, string bean and vegetable marrow; it was not detected in cantaloup, green pea, lettuce, lucerne, onion, spinach and watermelon. The enzyme, which acts equally well on natural and synthetic ascorbic acid, catalyzes the reversible oxidation of ascorbic acid to dehydroascorbic acid. Dehydroascorbic acid is apparently not present in the intact vegetable but is formed when the crushed or cut vegetable containing the enzyme is exposed to the air. The presence of the oxidase in vegetables renders unnecessary the postulation of a stabilizing system for ascorbic acid; those juices which retain their vitamin activity contain no oxidase. Some observations were made on the behavior of the cabbage oxidase.—W. Stone. *Biochem. J.*, 31 (1937), 508–512; through *Physiol. Abstr.*, 22 (1937). 893. (F. J. S.)

Cosmos Bipinnatus—Constituents of. The white flower-heads of *Cosmos bipinnatus* Cav. were extracted with ethanol. After removal of resins by dilution with water, a mixture of glucosides was precipitated with lead acetate. Inosite, m. p. 225°, was separated from the filtrate by basic lead acetate. The glucoside precipitate was deleaded and the solution concentrated. Crude cosmosiin remained as granular crystals insoluble in 60% ethanol, while the solution contained a glucoside which was hydrolyzed by dilute sulfuric acid to quercitin (m. p. 306°), glucose (phenylosazone, m. p. 206°) and rhamnose (phenylosazone, m. p. 180°). Cosmosiin was purified by 2% sulfuric acid: $C_{21}H_{22}O_{11} + 1^1/_2\ H_2O$, m. p. 178° from hot ethanol; soluble in hot water, methanol, insoluble in benzene, chloroform, ether; yellow with aqueous alkali, red-brown with ferric chloride; hexa-acetate, m. p. 207–208° from methanol. Melting point of cosmosiin agrees with the apigenin-*d*-glucose from *Anthemis nobilis* (*J. Chem. Soc.*, 105, 1829), but the acetates differ. When heated many hours over water-bath with 10% sulfuric acid, cosmosiin hydrolyzes to glucose (phenylosazone, m. p. 206°), and apigenin, m. p. 347°; red-brown with ferric chloride;

triacetate (m. p. 181–182°) and tribenzoate, no depression of mixed melting points with authentic specimens. Iodoform converted cosmosiin into $C_{16}H_{12}O_5$: m. p. 205–206°. Hydrolysis yielded apigenin-4-methyl ether: m. p. 258–259°; acetate, m. p. 108°, no depression with acacetin-acetate of m. p. 203°. Diazo-methane converted cosmosiin into apigenin-dimethyl ether-glucoside, m. p. 255°, which hydrolyzed to the aglycone m. p. 267°. These results prove that cosmosiin is apigenin-7-glucoside, or trioxy-5,7,4′-flavone-7-glucoside.—T. Nakaoki. *J. Pharm. Soc. Japan,* 55 (1935), 173–176. (R. E. K.)

Enzymes—Bacterial, Variability in the Activity of. II. Factors Associated with Viability and Growth. Variation in the activities of the dehydrogenases of suspensions of washed cells of *B. coli* grown for different periods is not associated with change in the number or size of the individual cells of the different suspensions. Although viability of the cells may have an effect upon the enzymic activity of the suspensions, the indications are that the activities of the formic, lactic and succinic enzymes are relatively independent of viability, and that the enzymic activities for glucose and the amino acids are more affected by cellular viability. The activities of tryptophan, alanine and leucine enzymes vary from suspension to suspension independently of the number of viable cells. Phase of growth at time of reaping appears to be the determining factor of enzyme activity of organisms grown on the same medium. During the lag phase in the growth of a bacterial population there is development of highly active intracellular dehydrogenase systems which reaches a maximum during the logarithmic phase; the decline in enzymic activity toward the end of this phase continues during the stationary phase and the period of decline.—W. R. Wooldridge and V. Glass. *Biochem. J.,* 31 (1937), 526–531; through *Physiol. Abstr.,* 22 (1937), 887. (F. J. S.)

Enzymes—Proteolytic, Reaction Mechanism of Some. Proteolytic enzymes, such as papain and cathepsin, can hydrolyze the peptide linkage (—CO.HN—) of proteins. Thus the enzyme denoted Enz—SH attacks the protein molecule as follows:  $R_1\text{—}CO.NH\text{—}R_2 + Enz\text{—}SH \rightarrow R_1\text{—}\overset{\overset{O}{/\!/}}{C}\text{—}SEnz + NH_2R_2$ and $R_1\text{—}\overset{\overset{O}{/\!/}}{C}\text{—}SEnz + HOH \rightarrow RCOOH + Enz\text{—}SH$. The SH group of the enzyme Ur—SH reacts with urea to form ammonium carbonate, according to $NH_2.CO.NH_2 + UrSH \rightarrow NH_2.CO.SUr + NH_3$ and $NH_2.CO.SUr + NH_4OH \rightarrow NH_2.COONH_4 + Ur\text{—}SH$. The reverse processes of these last reactions have been observed experimentally.—J. Weiss. *Chemistry and Industry,* 56 (1937), 685. (E. G. V.)

Gluconic Acid Production. Improvements have been made in the development of the inoculum and the composition of the solution to be fermented for the production of gluconic acid by submerged mold growths under increased air pressure in rotary drums. The first improvement of the inoculum was the selection of a new fungus, *Aspergillus niger,* strain 67, which not only produces readily large quantities of spores but also affects a rapid fermentation; the second improvement was the germination of these spores under conditions which make possible economies in the amount of inoculum and decrease the fermentation period. The composition of the solution to be fermented, such as glucose concentration, amount of calcium carbonate present, and nitrogen sources have a pronounced effect upon the duration of the fermentation period.—A. J. Moyer, P. A. Wells, J. J. Stubbs, H. T. Herrick and O. E. May. *Ind. Eng. Chem.,* 29 (1937), 777. (E. G. V.)

Glucosides—Cyanogenetic, Determination of. Mix 50 Gm. of the drug with 400 cc. of water and add a suspension of ground sweet almonds; heat in the closed distillation apparatus to 45° C. or 50° C. for 3 hours, add 120 cc. of alcohol and distil, collecting the distillate in 10 cc. of 4% sodium hydroxide; mix an aliquot of the distillate containing 0.25 to 0.5 mg. of hydrocyanic acid with 2 drops of ammonia and 0.3 cc. of a 10% solution of sodium tetrathionate; heat to 55° to 60° C. for 5 minutes, and neutralize with 4 times normal nitric acid; add 20 cc. of water, 2 cc. of nitric acid and 1 cc. of ferrous ammonium sulfate; make to exactly 25 cc. and compare colorimetrically with a standard prepared containing potassium thiocyanate equivalent to 0.5 mg. of hydrocyanic acid. The method was used to investigate the hydrocyanic acid content in *Passiflora coerulea,* Lour., which was found to contain from 0.0118 to 0.013%.—A. J. Bandoni. *Rev. Farm. (Buenos Aires),* 78 (1936), 171–182; through *Chimie & Industrie,* 38 (1937), 317. (A. P.-C.)

Gums and Mucilages—Chemistry of. These substances form a group of polysaccharides characterized by the wide range and diversity of the sugars which are joined together by glycosidic links to form the large molecules of the gums and mucilages. A typical gum may contain five or even more different sugars. In Damson Gum there occurs an aldobionic acid which is composed of a glycuronic acid residue united by a glycosidic link to a mannose residue, and the main chain of the Damson Gum molecule is thereafter continued by two galactose residues. In addition to these units the molecule of this gum contains two arabinose residues, one of xylose and possibly another mannose residue. The arabinose units are attached as side chains to the main chain of the molecule since 2,3,5-trimethyl arabinose is obtained on hydrolysis of the fully methylated polysaccharide. This shows that the arabinose residues attached as side chains have the furanose ring structure.—E. L. HURST and J. K. N. JONES. *Chemistry and Industry*, 56 (1937), 724. (E. G. V.)

Lactuca Virosa—Enzymes of the Latex of. The fresh sap darkens unless placed immediately in 96% alcohol. The latter precipitates, among other substances, two oxidases, a tyrosinase and a laccase, which are almost or entirely absent from the commercial dried sap (lactucarium).—K. H. BAUER and K. BRUNNER. *Pharm. Zentralhalle*, 77 (1936), 598–601; through *Chimie & Industrie*, 38 (1937), 316. (A. P.-C.)

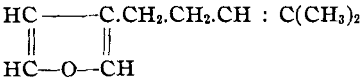
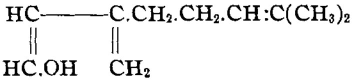
Papain—Estimation of, with Hemoglobin. The hemoglobin method for estimating trypsin can be used for estimating papain provided that the papain is properly activated with cyanide and that there is sufficient cyanide in the hemoglobin solution. Denatured hemoglobin (p_H 7.4) is digested for 5 minutes at 25° C., and the split products not precipitated by trichloracetic acid are estimated colorimetrically with the phenol reagent which gives a blue color with tyrosin, trypotophan and crystein. Only the first stages of digestion due to proteinase are measured by this method. Cyanide and cysteine increase the digestion of hemoglobin by papain but iodoacetic acid abolishes it. The inhibition by iodoacetic acid is therefore an inhibition of the proteinase; $0.2N$ sodium hydroxide, $0.1N$ hydrochloric acid, $9M$ urea, $0.1M$ ammonium sulfate and glycerin have negligible effects on the digestion of hemoglobin by papain.—M. L. ANSON. *J. Gen. Physiol.*, 20 (1937), 561–563; through *Physiol. Abstr.*, 22 (1937), 890. (F. J. S.)

Other Plant Principles

Barbaloin and Isobarbaloin—Anthrone Derivative from. The most notable differences in these isomers of aloin are that isobarbaloin is much more soluble in methyl alcohol than barbaloin and it gives a red color with aqueous solution of sodium chloride and copper sulfate in a few minutes while it takes thirty minutes or more for the other one. It has been thought that the aloe-emodin-anthrones derived from barbaloin and isobarbaloin indicated that isomeric aloins are derivatives of isomeric anthrones. Experimental work reported shows that all fractions obtained by the fractional crystallization of commercial aloin yield aloe-emodin-9-anthrone on hydrolysis with aqueous borax solution.—JOHN H. GARDNER and LIONEL JOSEPH. *J. Am. Pharm. Assoc.*, 26 (1937), 794. (Z. M. C.)

Cherry Water [Kirchwasser]. IV. Constitution and Analytical Characters of the Bouquet Substance. Further stages in the purification of the bouquet substance (I) are described. (I) is separated from wax (II) in the crude product by distillation at 160° and 0.05 mm. Benzyl alcohol (III) is removed by esterification with 3,5-dinitro benzoyl chloride and elution with pentane. Purified I is obtained by distillation of the eluate at 130° and 0.05 mm. The equivalent weights of I and II from a number of samples of kirchwasser, calculated from the saponification value, were 195–273 and 237–347, respectively. Similar fractions from warts were also examined. Part of III is present as esters.—H. MOHLER and W. HAMMERLE. *Z. Unters. Lebensm.*, 72 (1936), 504–524. **V. Absorption Spectrophotometry of Wax and Wax Acids.** Various preparations of the wax acids gave absorption maximum at 313, 300, 278.5 and 231 mμ, only the last of which was constantly present. This is attributed to the carboxyl group of an unsaturated acid. The preparation is, however, not a single substance.—H. MOHLER and J. POLYA. *Ibid.*, 73 (1937), 171–176; through *J. Soc. Chem. Ind.*, 56 (1937), B., 607. (E. G. V.)

Gypsophila—Sapogenin from. The constitution of sapogenin from saponin corresponds to $C_{25}H_{40}O_4$; it is an α-keto acid and one oxygen atom belongs to the hydroxyl group which is not next to the keto group. It does not contain an aromatic ring.—MILLARD S. TAGGART and GEORGE H. RICHTER. *Biochem. Z.*, 291 (1937), 349–353; through *Chem. Abstr.*, 31 (1937), 8540. (F. J. S.)

Perilla Citriodora—Important Constituents of. The plant *Perilla citriodora* which grows wild in Japan was collected and extracted with ether. The oily extract contained besides citral and a little sesquiterpene, a substance $C_{10}H_{14}O$ which was isolated and named perillin. This compound was a furan derivative and it contains besides a furane double bond, an ethylene bond. The line formula of the compound was: $CH_3.C_4H_2O.CH_2.CH_2.C(CH_3).CH_2$. Perillin was further hydrolyzed and di-, hexa- or octahydro derivatives were obtained. A primary alcohol was also isolated from the furane nucleus. It was oxidized to a fatty acid: $C_9H_{19}.CO_2H$. The authors synthesized 4 isomers of isocaprinic acid but none was identical with the above-mentioned acid. In oxidizing the hexahydro-perillin with potassium permanganate, the result was the separation of oxalic acid and another γ-dicarbonic acid, $C_{10}H_{18}O_4$, which is identical with isohexylsuccinic acid. The two carbonyl groups were no doubt formed through the splitting up of the nucleus of tetrahydrofurane; consequently, the furane nucleus does not carry a side chain either at α or α′ position, it does, however, carry an isohexyl group at the β position. The dihydro-perillin compound must be β-isohexylfurane compound and the acid $C_9H_{19}.CO_2H$ can be represented by: (I) $(CH_3)CH.(CH_2)_3.CH(C_2H_5).CO_2H$ or (II) $(CH_3)_2CH.(CH_2)_3.CH(CH_3).CH_2.CO_2H$. Because the amide of II melts at 108–109°, the only correct formula is that in I. The acid $C_9H_{19}.CO_2H$ is identical with synthetic isohexylethylacetic acid. Octohydro-perillin is identical with isohexylethylethenol. In the oxidation of the dihydro-perillin with potassium permanganate at 70–80°, oxalic acid and isoamylacetic acid ester were obtained. The oxidation of perillin gave oxalic and succinic acids. Because dihydro-perillin is considered to be β-isohexylfurane, consequently perillin must contain a double bond in the isohexyl group. In order to locate the position of the double bond in the compound, perillin was ozonized in acetic acid and then hydrated. The following products were obtained: Acetone, succinic acid and another compound, which had the properties of an acid, reduced Fehling's solution and was identified as 2,4-dinitrophenylhydrazone of succinic acid aldehyde. The formation of acetone during the reaction verifies the fact that perillin possesses the constitution formula  $\begin{array}{l} HC\text{——}C.CH_2.CH_2.CH : C(CH_3)_2 \\ \;\|\qquad\; \| \\ HC\text{—}O\text{—}CH \end{array}$ (III), which also explains the optical activity of the compound. The plant is also rich in citral. The enol form (IV) can easily be isomerized to  $\begin{array}{l} HC\text{———}C.CH_2.CH_2.CH{:}C(CH_3)_2 \\ \;\|\qquad\quad \| \\ HC.OH \quad CH_2 \end{array}$ (V). When the compound in V is dehydrated, III is formed.—H. KONDO and H. SUSUKI. *Ber.*, 69 (1936), 2459; through *Chem. Zentr.*, 108 (1937), 632. (G. B.)

Fixed Oils, Fats and Waxes

Angelica—Root Oil. Dry angelica roots gave 0.4–0.5% of colorless oil, d. 0.868, *n* 1.477–1.482, saponification number up to 33.2, acid number 2.8, ester number up to 30.4.—G. MARON. *Masloboĭno Zhirovoe Delo*, 13 (1937), No. 3, 23; through *Chem. Abstr.*, 31 (1937), 8968. (F. J. S.)

Oil of Abies Balsamea, Miller—Constituents of. A Source of *l*-β-Phellandrene. The freshly distilled essential oil from Canada balsam dried over sodium sulfate had the following constants: $[\alpha]^{20}_D$ −32.5° (l = 1 dm.), d^{15}_{15} 0.8605, n^{20}_D 1.4758, boiling range 60–78°/27 mm., acid value 1.23, ester value 2.24, ester value after acetylation 15.10; 10 Gm. were equivalent to 0.0108 Gm. of hydroxylamine hydrochloride. Fractionation of the oil showed the presence of *l*-α-pinene, β-pinene and *l*-β-phellandrene, the latter representing about 20% by weight of the original oil; a small amount of esters and alcohols were found on preliminary examination. The end fraction from the purification of the phellandrene remains to be examined.—G. E. SMITH and T. F. WEST. *J. Soc. Chem. Ind.*, 56 (1937), 300T. (E. G. V.)

Unclassified

Acridine Derivatives as Antimalarial Remedies. A study of compounds containing cyano- and methylmercapto groups. 2-Methoxy-6-cyano-(8-N-diethylaminopropyl)aminoacridine is highly potent; its minimum therapeutic dose is the same as that of the chloro-derivative substituted in 6-position, while the maximum tolerated dose is somewhat larger than for the latter. Introduction of a methylmercapto group in 2-position instead of the methoxy gave negative results, the toxicity increasing and the therapeutic effect decreasing.—O. I. MAGUIDSON and A. I. TRAVINE. *J. Obchtch. Khim.*, 6 (1936), 909–916; through *Chimie & Industrie*, 38 (1937), 316. (A. P.-C.)

Acridines—Water-Soluble Salts of 9-Amino- and of 9-Alkylamino. 9-Amino- and 9-alkylamino-acridines are transformed into products which are readily and rapidly soluble in water by the manufacture of their salts with alkyl sulfonic acids. The manufacture of these salts may be performed by neutralizing one molecule of the 9-aminoacridine compound with one molecule of the alkyl sulfonic acid. The alkyl sulfonates of the 9-aminoacridine compounds may also be obtained by the known method of double decomposition of 9-aminoacridine salts with salts of the alkyl sulfonic acids. As alkylsulfonic acid preferably the methane sulfonic acid is used; but also other alkyl sulfonic acids, for instance, ethane, propane and butane sulfonic acids yield readily soluble salts with the 9-amino- and 9-alkylaminoacridine compounds. These compounds are suitable for therapeutic use.—FRITZ MIETZSCH and HANS MAUSS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,092,131, Sept. 7, 1937. (A. P.-C.)

Adrenalone—Catalytic Reduction of, to Adrenaline. The catalytic reduction of adrenalone to adrenaline was studied by the action of hydrogen on adrenalone hydrochloride in water at room temperature (15° to 17° C.) in the presence of platinum, palladium and nickel, without and with carriers. Optimum results of 95% adrenaline were obtained at atmospheric pressure in 24 hours with 2% palladium-animal charcoal, and in 4 hours with 10% of palladium-animal charcoal (Mannich, *Arch. Pharm.*, 263 (1915), 181), and in 4 hours with platinum black prepared by the method of Loew (*Ber.*, 23 (1890), 289) and Willstätter (*Ber.*, 45 (1912), 1471), and in 2.5 hours with platinum black prepared by the method of Adams (*Organic Syntheses*, 9 (1929), 92). The reaction with nickel carbonate ignited at 310° C. was accelerated by the addition of one to two drops of hydrochloric acid to dissolve some of the precipitated free adrenalone, and was completed in 24 hours with a 70% yield of adrenaline. The reduction with 24% of nickel-silica gel (heated at 420° to 450° C.) at 2 atmospheres gave 60% of adrenaline in acetic acid and 64% adrenaline in alcohol in 24 hours. The ratio of catalysts to adrenalone was 1:3 and 1:5. No improvement of the catalytic action was observed at higher temperatures, nor in case of platinum and palladium at elevated pressures. Greater activity resulted by increasing the concentration of catalysts in the carriers.—S. SERGUIEVSKAIA and M. FEDOTOVA. *Prom. Organ. Khim.*, 2 (1936), 96–99; through *Chimie & Industrie*, 38 (1937), 317. (A. P.-C.)

Aminoacridines—*n*-Basically Substituted, Soluble Therapeutic Derivatives of. Soluble salts suitable for intravenous or intramuscular injection are prepared by causing basically substituted aminoacridines to react with alkyl sulfonic acids, or by double decomposition as by reaction of the sulfate of dialkyl-aminoalkyl-aminoacridine with the barium salt of an alkylsulfonic acid. Basically substituted aminoacridines containing substituents such as halogen, nitro, alkyl, amino, alkoxy or alkylmercapto groups may be converted into alkylsulfonic salts which are readily soluble in water. Details are given of the production of the neutral dimethanesulfonate of 2-methoxy-6-chloro-9-(α-diethylamino-δ-pentylamino)-acridine (melting point 125° C.), the neutral diethane sulfonate and the neutral dibutanesulfonate of the same substituted acridine (melting points 200° and 158° C., respectively), all forming yellow crystals, and general mention is made of the production of other similar derivatives, which may be used in the treatment of malaria.—PAUL E. C. GOISSEDET and ROBERT L. DESPOIS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,092,114, Sept. 7, 1937. (A. P.-C.)

Arsinic Acid—*p*-Benzylmercapto-Phenyl, Synthesis of. Because the reaction is exothermic, potassium bisulfide and *p*-chlor-nitrobenzene are reacted in ethanol preferably at room temperature, instead of at the boiling point of the solvent (Gattermann, *Ann.*, 393, 230). The resulting *p*-mercapto-nitrobenzene is precipitated by dilute hydrochloric acid and recrystallized from ethanol. One mole of benzyl chloride with potassium hydroxide in boiling ethanol produces *p*-benzylmercapto-nitrobenzene which is reduced by 15% titanous chloride solution to *p*-benzylmercapto-aminobenzene: m. p. 75°; hydrochloride salt, m. p. 265°, slightly soluble in water; benzoyl compound, m. p. 182°. The acetyl compound prepared by acetic anhydride appeared in two forms: prisms, freely soluble in ether, m. p. 105°; and pyramids, slightly soluble in ether, m. p. 133°. Diazotization followed by reaction with alkaline sodium arsenite gave *p*-benzylmercapto-phenylarsinic acid: decomposing at 250°.—T. TAKAHASHI. *J. Pharm. Soc. Japan*, 55 (1935), 163–165. (R. E. K.)

Atebrin—Synthesis of Related Acridine Compounds. In an attempt to synthesize antimalarials of the atebrin and achrichin type, 1:3:5-trichloro- and 5-chloro-1-bromo-3-methylacridine were condensed with sodium phenoxide in phenol to yield the corresponding phenoxy-derivatives, which, treated with β-diethylaminoethylamine or γ-diethylamino-*n*-propylamine gave 1:3-dichloro- and 1-bromo-3-methyl-5-(β-diethylaminoethylamino)-acridine or the corresponding γ-diethylamino-*n*-propylamino-compounds. The chloride of 2:4:4′-trichlorodiphenylamine-2′-carboxylic acid readily condensed in benzene with γ-diethylamino-*n*-propylamine to give the corresponding amide, which cyclized in phosphorous oxychloride with the formation of 1:3:7-trichloro-5-(γ-diethylamino-*n*-propylamino)-acridine. Similarly, condensation of 4′-chloro-2-bromo-4-methyl-diphenylamine-2′-carboxylic acid chloride with the same amine gave, after cyclization, 7-chloro-1-bromo-5-(γ-diethylamino-*n*-propylamino)-3-methyl-acridine and 2:5-dichlorodiphenylamine-2′-carboxylic acid chloride yielded 1:4-dichloro-5-(γ-diethylamino-*n*-propylamino)-acridine. This method of preparation of compounds of the atebrin type is very convenient, the reactions proceeding smoothly and giving good yields.—R. GOODALL and W. O. KERMACK. *J. Chem. Soc., Lond.* (1936), 1546; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 253. (S. W. G.)

5,6-Benzoretene—Synthesis of, and Some of Its Derivatives. A synthesis of 5,6-benzoretene from retene has been developed and several derivatives have been prepared. Some of the new products are being studied for carcinogenic activity.—D. E. ADELSON and M. T. BOGERT. *J. Am. Chem. Soc.*, 59 (1937), 1776. (E. B. S.)

Hydrogen Peroxide—Distilling Solutions to Obtain. The solution to be distilled is flowed downwardly on the inner wall of a heated distilling tube; resulting vapors are removed from the tube at points spaced longitudinally along the tube, and the distilling process is controlled by differentially varying the rates of removal of the vapors at the spaced points. An apparatus is described.—HEINRICH SCHMIDT, assignor to PENNSYLVANIA SALT MANUFACTURING Co. U. S. pat. 2,091,218, Aug. 24, 1937. (A. P.-C.)

Mercury Compounds—Organic. Details are given for the production of phenylmercury hexahydrobenzoate (melting point about 182° C.), the phenyl mercury alcoholate of hexahydrophenol (sinters and then melts at about 195° to 207° C.), the phenylmercury alcoholate of menthol (softens at 207° C.) and phenylmercury camphorate (melting point 175° to 180° C.), and like procedure is stated to be suitable for the production of other compounds of the general formula $(RHg)_xR_1$, in which R represents an aromatic structure to a carbon atom of which the mercury is directly attached, and in which none of the carbon atoms has direct linkage with any element other than hydrogen, carbon and mercury; in which R_1 represents a radical corresponding to an oxygenated hydroaromatic compound composed entirely of hydrogen, oxygen and carbon and containing at least one hydrogen atom linked through oxygen and replaceable by an RHg group; and in which x is the number of RHg groups in the compound and is an integer representing the number of said replaceable hydrogen atoms in the oxygenated hydroaromatic compound. Such mercury compounds have high germicidal efficiency and relatively low toxicity, and are suitable for use in soaps, mouth washes, tooth pastes, ointments, etc.—CARL N. ANDERSEN, assignor to LEVER BROS. U. S. pat. 2,090,927, Aug. 24, 1937. (A. P.-C.)

Mimosa Pudica, L.—New Constituents of. The shoots and stems of leaves were extracted and an aromatic oxyamino acid-like compound was obtained which was named mimosin. Its probable formula is $C_{16}H_{20}O_8N_4$. It crystallizes from water solution in leaflets and melts at 228°; $[\alpha]^{22}_D = -21°$; it is soluble in dilute alcohol but is not soluble in organic solvents. It gives an intense violet color with ferric chloride and a red color with diazobenzolsulfonic acid. The formula contains three acid group radicals and two primary amino groups; one of the amino group is attached to the α-position of a carbonyl group. When mimosin is reacted with diazomethane in alcohol it yields a methylated product which crystallizes out in needles (m. p. 104°).—J. RENZ. *Chem. Zentr.*, 108 (1937), 633. (G. B.)

3-*epi*-Oxycholanic Acid. Relatively large amounts of acidic substances are formed together with androsterone prepared according to Ruzicka's chromate oxidation of 3-*epi*-dihydrocholesterol acetate. The sodium salt of an acetoxy acid which is insoluble in ether and potassium hydroxide can readily be isolated from the acid mixture. The recovered acid and its derivatives exhibited the following corrected melting points: Oxy-acid $C_{24}H_{40}O_3$, 214°; acetate, 199.5°; methyl ester, 164.5°; acetoxy-methyl ester, 148°; keto-acid, 187°. These data show the identity of this acid with 3-oxy-allocholanic acid of Wieland (*Z. physiol. chem.*, 212 (1932), 41). The *epi*-configuration of the —OH group (C_3) and the allo-configuration of the H-atom (C_5) was deduced from the structure of the starting substance.—S. Kuwada and T. Joyama. *J. Pharm. Soc. Japan*, 55 (1935), 183–184. (R. E. K.)

Phenoxyethanols—Meta Arsenated. β-3-Arsonophenoxyethanol was prepared by condensing ethylene chlorohydrin with *m*-nitrophenol, reducing to the corresponding amine, and replacing the amino group by the arsono group by means of the Bart reaction. Nitration of the sodium salt of β-3-arsonophenoxyethanol gave a mixture of β-nitro-3-arsonophenoxyethyl nitrates which upon hydrolysis with 3*N* hydrochloric acid yielded β-2-nitro-3-arsonophenoxyethanol and β-6-nitro-3-arsonophenoxyethanol. The structure of the nitro compounds was determined by cleaving the ether linkage with sodium hydroxide and by replacement of the arsenious oxide group by the chloromercuri group, with subsequent replacement of the latter by hydrogen or halogen. From β-2-nitro-3-arsonophenoxyethanol were derived 2-nitro-3-hydroxy-phenylarsonic acid, *o*-nitrophenol and 3-iodo-2-nitrophenol while β-6-nitro-3- arsonophenoxy-ethanol gave 3-hydroxy-4-nitro phenylarsonic acid and *o*-nitrophenol.—S. B. Binkley and C. S. Hamilton. *J. Am. Chem. Soc.*, 59 (1937), 1716. (E. B. S.)

Selenium-Nitrogen-Sulfur Compounds—Organic. Benzenesulfonanilide is added in small portions to cooled selenic acid, and the mixture is allowed to stand for several days at atmospheric temperature. It is then diluted with water, freed from unreacted selenic acid by treatment with barium carbonate, and finally concentrated and crystallized. A diazotizable product (melting point 211° to 212° C. with decomposition) is obtained, to which the formula C_6H_5NHNH-*p*-C_6H_4-SeC_6H_4-*p*-$NH_2.C_6H_5.SO_3H$ is assigned. The product is soluble in hot water, sparingly soluble in cold water, and insoluble in ether, alcohol and benzene; it is of therapeutic value. Analogous products are obtained similarly from analogues of benzensulfonanilide.—Ernst Theobald. U. S. pat. 2,091,573, Aug. 31, 1937. (A. P.-C.)

Sterols XIX. *epi*-Ergosterol and *epi*-α-Ergostenol. *epi*-Ergosterol was prepared by the reduction of ergostatrienone with aluminum isopropylate and separation of the resulting ergosterol from *epi*-ergosterol by means of digitonin. *epi*-α-Ergostenol was prepared in the same manner by the aluminum isopropylate reduction of α-ergostenone, giving α-ergostenol and *epi*-α-ergostenol which were separated by means of their digitonides. A comparison of the properties of *epi*-ergosterol with those of lumisterol shows conclusively that the two compounds are dissimilar.—R. E. Marker, O. Kamm, J. F. Laucius and T. S. Oakwood. *J. Am. Chem. Soc.*, 59 (1937), 1840. (E. B. S.)

Sterols XX. Pregnanolones. *Epi*-Pregnanol-3-one-20, a natural product of human pregnancy urine, was prepared by the catalytic reduction of pregnandione in alcoholic solution. Pregnanol-3-one-20 was prepared by the catalytic reduction of pregnandione in acid solution. The partial hydrogenation of androstandione in acid solution gave androsterone as the main product.—R. E. Marker, O. Kamm and E. L. Whittle. *J. Am. Chem. Soc.*, 59 (1937), 1841. (E. B. S.)

Toad Venoms. IX. The dried venoms are first extracted with chloroform and the solution, after purification with alkali, is precipitated with petrolic ether. The acetone solution of the precipitate is subjected to chromatographic adsorption, which improves yields and accelerates extraction. The bufotalin thus separated quantitatively from other active ingredients is purified by an identical process. The venoms are then extracted with methanol; the extract is evaporated to dryness, redissolved in alcohol and precipitated with chloroform. Bufotoxin is obtained from the chloroform-alcohol, and bufotalinin and bufotalidin from the water-soluble precipitate. Bufotalin, $C_{26}H_{36}O_6$, is a diethylenic derivative of a cholanic lactone; treatment of the acetyl derivatives with ozone gives glyoxylic acid. Bufotalinin, $C_{24}H_{30}O_6$ forms a soluble salt with alkalies; it reduces Tollens' reagent and is broken down by alcoholic potash into a crystalline methyl ester of an enolic salt. Bufotalidin, $C_{24}H_{32}O_6$, is difficult to separate from bufotalinin; alcoholic potash gives a crystalline derivative but it is insoluble in soda and does not reduce Tollens' reagent.—H. Wieland, G. Hesse and R. Hüttel. *Liebig's Ann. Chem.*, 524 (1936), 203–222 through *Chimie & Industrie*, 38 (1937), 314. (A. P.-C.)

2,2,2-Trialkylethanols—Some Derivatives of. The phenylurethans, α-naphthylurethans, acid phthalates and acid tetrachlorophthalates of four 2,2,2-tri-alkylethonols have been prepared and analyzed.—R. V. RICE, G. L. JENKINS and W. C. HARDEN. *J. Am. Chem. Soc.*, 59 (1937), 2000. (E. B. S.)

BIOCHEMISTRY

Adrenaline—Chemical Determination of. The colorimetric method for the determination of adrenaline, depending on its oxidation by iodine or mercuric chloride to a red pigment, gives results in fair agreement with the physiological methods. On the other hand, the colorimetric method depending on the reduction of Folin's uric acid reagent often shows considerable discrepancies with the result of the physiological assay. It has been found that Folin's reagent often gives high results with suprarenal extracts because it is reduced by the uric acid, and especially by the ascorbic acid present. On the other hand, low results may be obtained if the reaction is carried out at too low a p_H. It is possible to correct for the presence of ascorbic acid, but this correction is not entirely reliable, because partially oxidized ascorbic acid also reduces Folin's reagent. It is concluded that claims that have been advanced for the presence of an adrenaline precursor in the gland rest only on discrepancies arising from doubtful methods of determination.—J. DEVINE. *Biochem. J.*, 31 (1937), 545; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 264. (S. W. G.)

Albumin—Notes on the Detection of, in Urine. Robert's reagent consists of 1 volume of nitric acid mixed with 5 volumes of magnesium sulfate solution. A false test is sometimes given owing to formation of a precipitate of magnesium ammonium phosphate at the zone of contact of the reagent and urine. This is avoided by using saturated sodium chloride instead of magnesium sulfate.—R. F. BANFI. *Anales farm. bioquím. (Buenos Aires)*, 7 (1936), No. 2, 17–20; through *Chimie & Industrie*, 38 (1937), 240. (A. P.-C.)

Alcoholic Beverages—Flavor of. The composition of the flavoring constituents, and the effects of the variety of yeast, aging in wood, and storage in bottles, are reviewed.—E. K. NELSON. *Food Research*, 2 (1937), 221–226; through *J. Soc. Chem. Ind.*, 56 (1937), 1117. (E. G. V.)

Animal Hormones and Plants. The name "plant-hormone" should not be given to substances that have not been shown to occur naturally in plants. Unless iodole-acetic acid can be proved to occur in plants, the name "hormone" for it is a misnomer. The term auximone seems to be correct for such substances.—H. NICOL. *Chemistry & Industry*, 56 (1937), 526. (E. G. V.)

Ascorbic Acid—Blood and Urinary Content of. Experiments were made by the author upon himself over a period of five months to ascertain the amount of dietary ascorbic acid needed for "saturation." Determinations were made, after precipitation of interfering impurities by mercuric acetate, by the 2:6-dichlorophenolindophenol reagent. The vitamin C-free diet used consisted of bread, butter, cheese, eggs and water, while crystalline ascorbic acid was given orally in the saturation experiments. The course of the experiment is recorded in a table showing daily outputs of ascorbic acid in the urine and faeces and the amount present in the blood, following definite intakes of the vitamin. Over a period of ninety-four days, 3250 mg. of ascorbic acid were ingested, or 34 mg. daily. During a control period when the blood content of ascorbic acid was reduced to 5.1 mg. per liter, 1712 mg. of acid were required to resaturate the blood to a figure of 13 mg. per liter of blood. Throughout the test period the capillary resistance measured by Gothlin's method, and the body weight, remained constant. The conclusions reached are that the (1) content of ascorbic acid in the blood and urine depend on the amount stored by the organism; (2) normal saturation point for the human subject is about 13 mg. per liter of blood; (3) daily intake of ascorbic acid required for an adult weighing 70 Kg. is about 60 mg. The method of applying the saturation test to patients suffering from scurvy is described in the paper.—M. VAN EEKELEN. *Biochem. J.*, 30 (1936), 2291; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 258, 259. (S. W. G.)

Ascorbic Acid—a Color Reaction of. The observations of Risak that urinary excretion of melanogen occurs after exposure to sunlight during springtime could not be confirmed (*Klin. Wochschr.*, 10 (1931), 1722). The discrepancy is explained by the finding that a Legal test gave an intense blue color after overdosage with ascorbic acid or after the addition of the acid to urine in a concentration of 15 mg. %. This reaction is not specific for ascorbic acid nor for pyrrole or indole compounds. Many strongly reducing bodies give it, cysteine does not, and glucose only after heating with alkali. The test is carried out similarly to Legal's. The nitroprusside solution must not be concentrated—$^1/_3$ dilution of a hot saturated solution—and the concentrated caustic soda must be added drop-wise until the red color due to creatinine develops. Glacial acetic is then added until a blue or blue-green color is developed. With low concentration of ascorbic acid the color disappears in about 2 minutes, especially when excess of acetic acid has been added. Comparison with the results of titration by Tillman's method showed that the blue reaction only became positive after the sudden increase in the ascorbic excretion which occurs at a variable time after overdosage. The highest titre at which the color test was negative was 30 mg. in a twenty-four-hour urine, the lowest at which it was positive was 78 mg. The reaction might be used to detect a latent C-hypovitaminosis. The positive reaction in springtime may be attributed to an increased ascorbic intake at this season.—S. DIETRICH and G. HUNDHAUSEN. *Klin. Wochschr.*, 16 (1937), 222–223; through *Physiol. Abstr.*, 22 (1937), 931. (F. J. S.)

Ascorbic Acid—Determination of, in Urine. Proposed methods for the determination of ascorbic acid in urine are examined from the viewpoint of clinical utility. The urine should be preserved on ice with the addition of 8 to 10% of glacial acetic acid and analyzed as soon as possible. Dilution with distilled water is permissible. Iodometric methods give higher values than the determination by titration with 2,6-dichlorophenolindophenol and are less specific. The latter method is recommended for the determination of the increase of ascorbic acid excretion resulting from feeding considerable amounts, but the figures in normal urines are not to be considered as true measures of the ascorbic acid excretion. The addition of formaldehyde or precipitation with mercurous acetate may increase specificity under certain conditions with known solutions. Their use in urine does not lead to better results than the simpler methods.—W. TSCHOPP. *Hoppe-Seyler's Z. Physiol. Chem.*, 244 (1936), 59–77; through *Chimie & Industrie*, 38 (1937), 240. (A. P.-C.)

Barbiturates. A review.—M. A. LESSER. *Drug and Cosmetic Ind.*, 41 (1937), 499–501. (H. M. B.)

Biochemistry and Pharmacy. Insulin and pituitary are selected as useful examples in describing the origin or pharmaceutical chemistry. The danger to diabetic patients of even small variations in the potency of insulin has caused special attention to be paid to the accuracy of methods used to standardize it, and these may now be made to give results close to the true value. The slow solubility of protamine insulin causes a considerable prolongation of its effects on the blood sugar. This is of distinct advantage to the patient, provided that care is taken to avoid production of delayed hypoglycemia, but has raised certain difficulties in the assay which are not yet completely solved. The problem encountered in the standardization of pituitary (posterior lobe) extract is rather more difficult, but its solution depends on the application of the same kind of principles which served to solve the insulin problem. The problem of standardizing pituitary extract was made more difficult by the fact that it produces three distinct physiological effects on the uterus, on the blood pressure and on the rate of secretion of the urine, all of which are used both therapeutically and as the basis of assay methods. At present it is not certain whether it would be advisable to insist on the anti-diuretic assay of all pituitary extract which is to be used or its anti-diuretic activity. However, the fact that the oxytocic method is occasionally subjected to errors as high as 100% suggests that anti-diuretic assays might at least form a useful alternative. It is becoming more evident that a great part of the advances made in the pharmaceutical field has been due to the application of biochemical methods.—F. WOKES. *Pharm. J.*, 139 (1937), 649, 679. (W. B. B.)

Bone Marrow—Yellow, Concentrate of. A concentrate suitable for oral administration is obtained by subjecting yellow bone marrow to saponification and hydrolyzation with a solution of an alkali such as potassium hydroxide in alcohol and water, to hydrolyze the proteins and saponify the fats, and recovering the unaffected compounds, as by ether extraction and agitation with nitrogen.—FREDERIC FENGER, assignor to ARMOUR AND CO. U. S. pat. 2,091,730, Aug. 31, 1937. (A. P.-C.)

Brandies—Silver in the Artificial Aging of. The use of a process which consists of dispersing minute quantities of ionic silver in the liquid is described for the artificial aging of brandy. Brandies given this silver treatment in the laboratory and held for about a week showed a mellowing effect and considerable change in flavor and aroma; the method may be used for the quick aging of distilled alcoholic beverages. There was a loss in aroma and flavor when brandies were silver-treated or stored around 45° C. Satisfactory results were obtained when brandies were silver-treated at lower temperatures from 0° to 37° C. Although there is a change in flavor and aroma brought about by the silver-treatment, apparently no significant change, as indicated by chemical analyses, takes place in the acid, ester, aldehyde or fusel oil content of the brandy.—E. ARTHUR BEAVENS, HARRY E. GORESLINE and E. K. NELSON. *Ind. Eng. Chem.*, 29 (1937), 623. (E. G. V.)

Bromine—Determination of, in Biological Substances. The method of Dixon for the estimation of bromine in biological materials was studied and certain modifications were introduced. A number of foods were examined by this method for bromine content and the results tabulated.—P. S. WINNEK and A. H. SMITH. *J. Biol. Chem.*, 119 (1937), 93–101; through *Physiol. Abstr.*, 22 (1937), 876. (F. J. S.)

Cholesterol—Determination of Free and Combined. The determination is performed on an alcohol-ether extract of plasma, 10 to 15 cc. of which are evaporated below 60° C. to dryness. The residue is extracted with two 1.5-cc. and two 1.0-cc. quantities of equal parts of acetone and dehydrated alcohol, and filtered through cotton wool. Two cubic centimeters of a 0.2% aqueous solution of digitonin are added, and the whole mixed and set aside for four hours or over night, whereby cholesterol digitonide is precipitated. The solution and precipitate are evaporated to dryness on a steam-bath and the ester cholesterol extracted with warm petroleum ether. The solution is filtered and the precipitate retained for the determination of free cholesterol. Three drops of 40% aqueous potassium hydroxide solution are added to the petroleum-ether extract, heated at 75° to 85° C. on a sand-bath and the determination completed by following Bloor's procedure for total cholesterol. One cc. of hot glacial acetic acid is slowly dropped on to the dry cholesterol digitonide precipitate, warmed to complete solution and transferred to a round-bottomed flask using two 0.5-cc. portions of hot acetic acid, and heated on a sand-bath to 150° to 160° C. while a gentle current of air is drawn through, until the acetic acid has evaporated almost to dryness without charring. Five cubic centimeters of petroleum ether are added and stirred vigorously while boiling, to promote precipitation of digitonin and solution of the free cholesterol. The solution is centrifuged, decanted and the precipitate washed twice with 2 to 3 cc. of warm petroleum ether, adding the washings to the original extract. The determination of free cholesterol is completed as for the ester and total cholesterol. By modifying the Bloor-Knudson procedure so that the free cholesterol is precipitated in an acetone-alcohol medium and introducing saponification, more consistent results are obtained.—R. M. SMITH and A. MARBLE. *J. Biol. Chem.*, 117 (1937), 673; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 265. (S. W. G.)

Cholesterol—Total, Micro-Determination of, in Blood. Modifications of the author's acetyl chloride method (*Biochem. Z.*, 273 (1934), 396) are described.—S. GÖRTZ. *Biochem. Z.*, 289 (1936), 313–319; through *Physiol. Abstr.*, 22 (1937), 902. (F. J. S.)

Citric Acid—Metabolism of. α-Ketoglutaric acid was isolated as the dinitrophenylhydrazone from a reaction mixture of citric acid and liver enzyme in the presence of air. In the absence of air *cis*-aconitic acid is transformed into citric acid by the same enzyme mixture. These two reactions lead to the conclusion that the metabolism of citric acid probably occurs in two stages: (1) Citric acid → *cis*-aconitic acid → *iso*citric acid; (2) *iso*citric acid → oxalsuccinic acid → α-ketoglutaric acid.—C. MARTIUS. *Hoppe-Seyl. Z.*, 247 (1937), 104–110; through *Physiol. Abstr.*, 22 (1937), 946. (F. J. S.)

Colorimetric Determinations by Means of the Lange-Roth Photometer. The use of the instrument is described and the results are shown for the determination of phosphate in blood, iron in blood, uric acid in blood, cholesterol in blood, dinitrophenol, the mononitrophenols and hydrogen-ion concentration by means of well-known colorimetric procedures.—E. B. HATZ. *Mikrochem.*, 21 (1936), 38–46; through *Chimie & Industrie*, 38 (1937), 240. (A. P.-C.)

Coloring Matters—Analysis of, in Foods. Methods for their detection are discussed. Micro-work by spreading the colored food on white asbestos paper and carrying out spot tests, and macro-work involving the actual separation of the dye and studying its dyeing properties, are described.—J. DESHUSSES. *Mitt. Lebensm. Hyg.*, 28 (1937), 115–116; through *J. Soc. Chem. Ind.*, 56 (1937), 1127. (E. G. V.)

Coloring Matters—Determination of, in Foods. The results of collaborative analyses of Ponceau 3R and SX in mixtures of the two are recorded. Certain errors were due to presence of hydrogen peroxide.—C. F. Jablonski. *J. Assoc. Official Agr. Chem.*, 20 (1937), 161–165; through *J. Soc. Chem. Ind.*, 56 (1937), 976. (E. G. V.)

Corn Proteins. The gluten is composed of approximately 50% protein, 35% starch, 5% oil, and a small amount of fiber and mineral matter. Because of this high protein content, the various industrial proteins are isolated from the gluten. At present these proteins include three general types—namely, the carbohydrate-free protein, the carbohydrate protein, free of the aqueous-alcohol-soluble portion, and the aqueous-alcohol-soluble protein called "zein;" each is available in various special forms. The carbohydrate-free protein is produced in the form of carbohydrate oil-free, carbohydrate-free bleached, and carbohydrate oil-free bleached; all differ slightly in their characteristics and uses. As a group they are utilized principally as a plastic base, filler and reactive component in cellulose derivatives and in natural and synthetic resins, and as a raw material for the preparation of amino acids, partically glutamic acid and leucine.—J. F. Walsh. *Ind. Eng. Chem.*, 29 (1937), 653. (E. G. V.)

Corpus Luteum and Testicular Hormones—Nomenclature of. A review.—C. A. Rothenheim. *Pharm. Monatsh.*, 18 (1937), 125–129. (H. M. B.)

Cystine. A review with 23 references.—M. A. Lesser. *Drug and Cosmetic Ind.*, 41 (1937), 355–356, 360. (H. M. B.)

Dehydroascorbic Acid—Vegetable Reduction of. The juice of legume seeds contains glutathione and additional substance or substances which reduce dehydroascorbic acid. These substances therefore act as a protection against the oxidation of ascorbic acid by oxygen of the air. The reduction of dehydroascorbic acid by these substances is catalytically accelerated by an enzyme. After the dehydroascorbic acid is reduced, an enzyme catalyzes the reduction of the oxidized glutathione and perhaps other substances oxidized by the dehydroascorbic acid. These substances seriously interfere with the estimation of ascorbic acid by titration with 2,6-dichlorophenolindophenol. Copper does not affect the reduction of dehydroascorbic acid by these reducing substances as it does the oxidation of ascorbic acid by oxygen. It has not been determined whether iodine added with the dehydroascorbic acid is responsible for the lack of effect of copper on the reduction. It is not known that the marked reducing value toward 2,6-dichlorophenolindophenol that develops in raw pea juice upon the addition of dehydroascorbic acid represents biologically active ascorbic acid (vitamin C). Until these above questions can be answered, definite limitations must be placed upon present chemical methods for evaluating the vitamin C content of certain plant materials.—E. F. Kohman and N. H. Sanborn. *Ind. Eng. Chem.*, 29 (1937), 1195. (E. G. V.)

Dentistry—Vitamins in. A review of researches, concerning the dental aspects of vitamins A, B complex, C and D during the years 1934–1936. Sixty-five references are given.—Rudolf Jeanneret. *Z. Vitaminforsch.*, 6 (1937), 250–264; through *Chem. Abstr.*, 31 (1937), 7485. (F. J. S.)

Enzymes of Milk. II. Determination of Catalase. Twenty cubic centimeters of milk are pipetted into the boiling tube, followed by 10 cc. of $0.2N$ hydrogen peroxide, and the tube is gently twisted to mix the contents. The tube is then plugged lightly with cotton wool and placed in a water-bath at 23°. After 4 hours the contents are washed into a flask, diluted to 150 cc. with water, and 2 Gm. of potassium iodide are added, followed by 30 cc. of $18N$ sulfuric acid. After 10 minutes, the liberated iodine is titrated with $0.1N$ thiosulfate, using starch as indicator. A control experiment is always made using milk which has been heated in a boiling water-bath for 30 minutes. The results are expressed as mg. of oxygen liberated per 100 cc. of milk. The titration difference between heated milk control and raw milk is of the order of 8 cc. and the variation between successive titrations 0.1 cc.—E. B. Anderson and R. J. MacWalter. *J. Soc. Chem. Ind.*, 56 (1937), 270T. (E. G. V.)

Flavoring Essences. Soft drink and artificial nut flavors and essence grading are described.—R. S. Redgrove. *Food Manuf.*, 12 (1937), 190–191; through *J. Soc. Chem. Ind.*, 56 (1937), 975. (E. G. V.)

Folliculine and Dihydrofolliculine—Study of, in the Sediment in Mare's Urine. Folliculine has been extracted on a commercial scale from mare's urine, the process depending on the difference in solubility of the phenols and folliculine in progressively diluted soda and on the ease of extraction of folliculine by ether from its soda solutions. An average yield of 10 Gm. of crystalline folliculine is readily obtained from 1000 liters of urine. If a reagent not acting on the ketonic group is used in the extraction of folliculine, a fraction of dihydrofolliculine is found in the alcoholic mother liquors. From 15 tons of urine, 20 Gm. of pure dehydrofolliculine were isolated.—DIGNA VAN STOLK and ROLAND LEROY DE LENCHERE. *Compt. rend.*, 205 (1937), 395. (G. W. H.)

Food Flavors—Fundamental Assumptions Pertaining to Judgment of. The preference of the public is the ultimate authority with regard to the eating quality of foods. The requirements in framing a satisfactory preference test are set out, emphasis being laid on discriminating between guesses and definite choices.—W. PLATT. *Food Research*, 2 (1937), 237–249; through *J. Soc. Chem. Ind.*, 56 (1937), 1128. (E. G. V.)

Formic, Acetic and Propionic Acids—Estimation of, in Bacteriological Nutritive Media. The acidified material is steam distilled; formic acid is determined in a portion of the distillate by reduction of mercuric to mercurous chloride. The other portion is treated with potassium dichromate-sulfuric acid solution and boiled 10 minutes under a reflux condenser to destroy formic acid; acetic and propionic acids are distilled off together in 6 fractions which are titrated with decinormal barium hydroxide. The titrated fractions are combined, evaporated to 100 cc., acidified, filtered and the "half distillation value" is determined. Comparison with a standard curve gives the relative proportions of the two acids.—A. TASMAN. *Chem. Weekblad*, 33 (1936), 574–576; through *Chimie & Industrie*, 38 (1937), 242. (A. P.-C.)

Glucose—Determination of, with Bichromate. The potassium ferrocyanide formed when glucose is heated with a known excess of potassium ferricyanide is determined by titration with $N/20$ potassium dichromate, with a 0.2% solution of diphenylamine in sulfuric acid as the indicator.—S. M. STREPKOV. *Biochem. Z.*, 290 (1937), 91–94; through *Physiol. Abstr.*, 22 (1937), 877. (F. J. S.)

Glyceria Fluitans—a Forgotten Wild Cereal. This cereal called by the Germans manna grass, himmelstau, mannahirse, himmelsbrot and mannagrütze, is shown to have a calorific and other values comparable with other vegetable foods.—W. PEYER. *Apoth. Ztg.*, 52 (1937), 1143–1144. (H. M. B.)

Glycerol—Capacity of Normal and Phosphorus-Poisoned White Rats to Utilize. The periodic acid method of Malaprade is suitable for determining glycerol in blood and urine. The normal rat is able to assimilate a maximum of 0.4 Gm. of glycerol per 100 Gm. body weight per day when the glycerol is mixed with the food. If given more, the excess is excreted in the urine. After administration of an oil solution of phosphorus, the capacity to utilize glycerol is slightly decreased.—H. DELAUNAY and P. ACCOYER. *Compt. rend. soc. biol.*, 123 (1936), 694–695; through *Chimie & Industrie*, 38 (1937), 241. (A. P.-C.)

Glycogen—Modification of the Bierry-Gruzewska Method for Determining, in Liver. The modified method is as follows: Add 25 cc. of 60% potassium hydroxide to 25 Gm. of liver in a beaker; heat the mixture on the water-bath for 2 hours, agitating occasionally during the first half-hour, and then place a rubber stopper on the receptacle. Allow the material to cool, add 40 cc. of distilled water, neutralize to litmus with concentrated hydrochloric acid and then add 5.5 cc. of hydrochloric acid to make a concentration of 5%. Heat the mixture in an autoclave for half an hour at 120° C., cool, neutralize to litmus with 30% potassium hydroxide, transfer to a 300-cc. volumetric flask and add 50 cc. of a 50% zinc sulfate solution. Neutralize the liquid with sodium hydroxide and then add 20 drops of sodium hydroxide to render the solution distinctly alkaline; make up the solution to 300 cc. with distilled water, mix, heat on the water-bath to 80° C. for 5 minutes, filter and cool. Then add a few drops of hydrochloric acid and determine glucose by Bertrand's method. The modification is claimed to be more rapid and economical than the original Bierry-Gruzewska procedure.—F. VACIRCA. *Boll. Soc. Ital. Biol. Sper.*, 11 (1936), 737; through *Chimie & Industrie*, 38 (1937), 241–242. (A. P.-C.)

Grape Honey—Chemical Composition and Nutritive Value of. "Grape Honey" (concentrated grape juice) from muscat grapes contains water 24, diethyl ether extract 0.70, ash 0.90, total sugar (as inverted sugar) 72, reducing sugar (as fructose) 66.80, total protein 0.787, soluble protein 0.787, total acidity (as malic acid) 1.50, alkalinity of ash (as Gm. of hydrochloric acid) 0.430, phosphorus pentoxide 0.608, potassium oxide 0.190, calcium oxide 0.160, ferric oxide 0.003, curpric oxide 0.0005%, and a trace of manganese.—E. CASERIO. *Indust. ital. conserve aliment.*, 11 (1936), 51; through *J. Soc. Chem. Ind.*, 56 (1937), 975. (E. G. V.)

Histamine—Determination of Traces of, in Blood by the Permutit Method. In the method previously described (*Compt. rend. soc. biol.*, 123 (1936), 219–223) it is advantageous to elute the histamine from the Permutit with a saturated solution of sodium chloride instead of ammonium hydroxide.—A. SCHWARTZ and A. RIEGERT. *Compt. rend. soc. biol.*, 123 (1936), 801–804; through *Chimie & Industrie*, 38 (1937), 241. (A. P.-C.)

Histidine—New Method for the Determination of, in Urine. Of 62 urines (male and female, well and diseased) histidine was present in 56 cases in amounts of 2 to 22 mg. per 100 cc. Four cases gave higher values and two only a trace. Pregnancy urine usually contains more than 22 mg. per 100 cc. There was no constant relation between disease and histidinuria.—G. DELLO IOJO. *Diagnost. Tecn. Labor.*, 7 (1936), 346–355; through *Chimie & Industrie*, 38 (1937), 241. (A. P.-C.)

Honey Diastase—Determination of. The Willstätter-Schudel method for determination of aldoses is used to determine the rate of breakdown of starch, p_H and sodium chloride being adjusted to specified values. It is unnecessary to separate the diastase from the honey. The diastase value is defined as the number of milligrams of maltose formed in 1 hour at p_H 5.2 and 40° in presence of 3 cc. of $0.1N$ sodium chloride per 20 cc. of reaction liquid by 1 Gm. of honey from 0.2 Gm. of starch.—G. GORBACH and K. BARLE. *Z. Unters. Lebensm.*, 73 (1937), 530–536; through *J. Soc. Chem. Ind.*, 56 (1937), 965. (E. G. V.)

Hormones in 1936. The conclusion of a review dealing with thyroid gland, parathyroid gland and sex hormones. Forty-one references.—K. KOCH. *Apoth. Ztg.*, 52 (1937), 986–989. (H. M. B.)

Hydrocyanic Acid—Detection of Inhaled. Examination of viscera in two cases of suspected hydrocyanic gas poisoning was inconclusive. Steam distillation of 250 cc. of blood from the lungs until 15 cc. of distillate was collected yielded positive tests by both the Prussian blue test and the sulfocyamide test. The quantity was estimated at 0.001 Gm. per liter of blood.—G. D. ELSDON and J. R. STUBBS. *Analyst*, 62 (1937), 540. (G. L. W.)

Indian Foodstuffs—Nutritive Value of. I. Chemical Composition of 200 Common Foods.—S. RANGANATHAN, A. R. SUNDARARAJAN and M. SWAMINATHAN. *Indian J. Med. Research*, 24 (1937), 689–706; through *J. Soc. Chem. Ind.*, 56 (1937), 1127. (E. G. V.)

Insulin—Glycogen-Fixing Effect of. Male rabbits were used. It was found that insulin completely prevented the hyperglycemia produced by intravenous injections of fat, saline, adrenaline or thyroxin. This effect is not necessarily due to fixation of glycogen in the liver by insulin, since, for example, the formation of glycogen from fat produced by adrenaline is diminished by giving insulin. This fact is clearly against the theory of glycogen fixation by insulin.—K. SAMAKI. *Tôhoku J. Exptl. Med.*, 31 (1937), 197–220; through *Physiol. Abstr.*, 22 (1937), 943. (F. J. S.)

Insulin—Two Crystalline Modifications of. The birefringent insulin crystals of the prismatic type crystallized from acetate buffers at p_H 5.2 give similar X-ray patterns to those of the rhombohedral form, except for a more marked diffuse ring which may be due to the prevalence of amorphous matter.—D. CROWFOOT. *Nature*, 140 (1937), 149–150; through *Chem. Abstr.*, 31 (1937), 6946. (F. J. S.)

Iodine—Micro-Estimation of. Existing methods for the determination of iodine in blood and tissues are examined critically and improvements are suggested.—H. WILMANNS. *Biochem. Z.*, 289 (1936), 41–51; through *Physiol. Abstr.*, 22 (1937), 876. (F. J. S.)

Lactoflavin—Some Physiological Properties of. Lactoflavin appears to be the member of the vitamin-B_2 complex which is most necessary for the growth of rats, since it is the only member of the group which when fed without the other members to rats deficient in the complex causes an increase in growth. The growth rate of rats receiving yeast Fuller's earth filtrate or an alcoholic extract of wheat germ supplemented by graded doses of lactoflavin showed a fair proportionality to the dose of lactoflavin, the optimal growth-rate being attained only when 40γ daily was supplied. The withdrawal of lactoflavin from the diet of growing rats caused an immediate cessation of growth. The respiration rates of heart and skeletal muscle and of liver of rats deprived of one or all members of the vitamin-B_2 complex were 20–50% lower than the values for the tissues from normal rats. The respiration of kidney was not appreciably affected. The inhibition of respiration by $0.002M$ cyanide was the same for the tissues of normal and deficient rats, and was not restored by the addition of lactoflavin. Lactoflavin slightly inhibited the respiration of tissues of both normal and deficient rats. Lactoflavin phosphate produced no inhibition in heart muscle but it did not enhance the lowered respiration rate of heart from deficient rats.—T. F. Macrae and C. E. Edgar. *Chemistry & Industry*, 56 (1937), 445. (E. G. V.)

Liver—Chemical Nature of Hematopoietic Substance of. The authors have prepared from 1 Kg. of liver extract powder, previously described as Product 11, 4.02 Gm. of a glucosamine-free peptide. Whereas Product 11 had contained 0.4 to 0.5% of amino nitrogen, the glucosamine-free peptide contained less than 0.2%, while the specific rotation rose from −95° to −106° to the figures −112° to −133°, and there was evidence of a slightly increased percentage of glycine. Hydrolysis of the peptide gave arginine, leucine, glycine, proline, hydroxyproline, aspartic and (probably) hydroxyglutamic acids. When subjected to dialysis and ultrafiltration through graded membranes, the molecular weight was found to lie between 2000 and 5000, with a molecular size of approximately 2.1 $m\mu$. The action of enzymes is discussed and the new peptide is compared with Castle's intrinsic factor, and with Laland and Klem's active product which is readily adsorbed on charcoal. Unlike these products, the new preparation contains no sulfur and gives no trace of a pentose reaction with Tollens' test. The new peptide was not hydrolyzed by depeptinized gastric juice nor did it form plastein with solutions of rennin. Clinical tests, of which there are full records, showed the product to be about twice as active as the author's previous product, daily doses of 5 mg. producing moderate to good responses in the blood picture. Peptides prepared similarly from kidney, brain and salivary gland, and given in oral doses of 10 Gm. or 150 mg., intramuscularly, were completely inactive.—H. D. Dakin, C. C. Ungley and R. West. *J. Biol. Chem.*, 115 (1936), 771; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 261. (S. W. G.)

Maltose—Micro-Estimation of. Interfering hexoses and pentoses are oxidized with iodine in alkaline solution to the corresponding acids and the maltose is oxidized to maltobionic acid. The maltobionic acid is hydrolyzed with hydrochloric acid and the glucose determined by the reduction of ferricyanide.—S. M. Strepkov. *Biochem. Z.*, 289 (1936), 38–40; through *Physiol. Abstr.*, 22 (1937), 878. (F. J. S.)

Marine Products—Nutritive Value of. VII. Vitamin-A and -D Potency of Oils from British Columbia Canned Salmon. Oils from three samples of canned sockeye and three samples of canned pink salmon were examined. One sample of each variety of oil contained 50 international units of vitamin-D per Gm. and two samples of each variety contained 67 units. The -A content of both varieties was negligible.—B. E. Bailey. *J. Biol. Board Can.*, 2 (1936), 431–437; through *J. Soc. Chem. Ind.*, 56 (1937), 976. (E. G. V.)

Nitrogen—Determination of, by Modified Kjeldahl Methods. Determination of nitrogen in casein has been attempted with various modifications of the Kjeldahl method. Addition of selenium to a 3:1 mixture of sulfuric and phosphoric acids containing copper proved a rapid and effective digesting agent, digestion being complete in 12 minutes.—W. R. Campbell and M. I. Hanna. *J. Biol. Chem.*, 119 (1937), 1-7; through *Physiol. Abstr.*, 22 (1937), 880. (F. J. S.)

Orange Peel and Its Pharmaceutical Preparations—Vitamin C Content of. Determined chemically, twelve Chinese medicinal orange peels showed the presence of from 0.179 to 0.024 mg. of ascorbic acid per Gm. Drying the peel in absence of direct sunlight caused a slow diminution of the ascorbic acid content. During the first five days the loss of moisture was more rapid than the loss of ascorbic acid, so there was a gain in the ascorbic acid content calculated on the weight of the dried peel. Tincture of orange prepared by maceration at room temperature for one or two days contained more ascorbic acid than that prepared at a slightly higher temperature and with a longer period of standing. The ascorbic acid content of the tincture gradually diminished during storage, but there was still a fair amount left after four days. The loss of ascorbic acid from an alcohol (70%) extract was considerably quicker than that from an alcohol (90%) extract. Metallic iron introduced during cutting the peel did not affect the ascorbic acid. The acid is most stable in alcohol (90%), less so in alcohol (70%) and least so in distilled water. By infusion, much more ascorbic acid was obtained than by preparing the tinctures; the stability of the acid in infusion and tinctures appears, however, to be the same. The chemical titration values of orange peel infusion showed good agreement with the values obtained by biological assay.—H. C. Hou. *Chinese Med. J.*, 5 (1936), 50; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 262. (S. W. G.)

Oxyproteic Acid in Urine. "Oxyproteic acid" is determined by concentrating the weakly alkaline urine to a syrup, extracting with alcohol, adding baryta, and precipitating the barium salt of "oxyproteic acid" with ether. The barium salt is dissolved in water and reprecipitated with alcohol ether. It is believed that an increase in the "oxyproteic acid" content of urine may be of value in the diagnosis of carcinomata.—B. LUSTIG and K. TUCHLER. *Biochem. Z.*, 289 (1936), 143–154; through *Physiol. Abstr.*, 22 (1937), 942. (F. J. S.)

Phenylpyruvic Acid—Preservation of Urines Containing. In certain forms of mental deficiency the urine contains phenylpyruvic acid. The latter is rapidly destroyed by oxidizing agents, especially nitrites, and a method of determination based on its reaction with a nitrite could probably be devised. The urine samples may be preserved for long periods by adding a little chloroform and acidifying to p_H 4 with dilute hydrochloric acid. Under such conditions the phenylpyruvic acid is not oxidized by the air.—M. RHEIN and R. STOEBER. *Compt. rend. soc. biol.*, 123 (1936), 807–808; through *Chimie & Industrie*, 38 (1937), 241. (A. P.-C.)

Phosphoric Acid and Calcium—Microchemical Determination of, in Food Chemistry. Comparative determinations with typical products show that the micro-determinations are sufficiently accurate for food analysis and have the advantages of speed and simplicity.—E. THOMAE. *Z. Unters. Lebensm.*, 74 (1937), 34–37; through *J. Soc. Chem. Ind.*, 56 (1937), 1127. (E. G. V.)

Pituitary Extracts—Action of, on Gastric Secretion. The authors previously discovered that injections of pituitary (posterior lobe) extract into animals caused gastric ulcers; they have now observed that these injections also inhibit gastric secretion, and have studied the effect of injections of pituitary extract upon the gastric secretion which occurs in response to different stimuli, by means of gastric fistulæ in cats and rabbits. Histamine, 1 mg., produces in the rabbit a profuse flow of juice lasting three hours, with a very high acidity, corresponding to 150 cc. of $N/10$ hydrochloric acid per 100 cc. of gastric juice. The intravenous injection of 20 units of pituitary extract before the histamine injection inhibits this secretion of gastric juice altogether. Insulin also stimulates a flow of gastric juice in cats when given in a dose of 2 units subcutaneously; it increases all components of the juice and, in contrast to histamine, leads to an increase in peptic activity. Pituitary extract abolishes the secretion of gastric juice caused by insulin. The inhibiting substance occurs in vasopressin but not in oxytocin.—E. C. DODDS and R. L. NOBLE. *Proc. Roy. Soc. Med.*, 30 (1937), 815; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 289. (S. W. G.)

Proteins—Relative Value of, of Certain Foodstuffs in Nutrition. The biological values and digestibilities of the proteins of five cereals, three pulses and five vegetables are given, and each group is arranged as regards suitability and available protein content.—SWAMINATHAN. *Indian J. Med. Research*, 24 (1937), 767–786; through *J. Soc. Chem. Ind.*, 56 (1937), 1127. (E. G. V.)

Reducing Sugars—Microdetermination of, in Body Fluids. A special Fehling solution is used: (1) 50 Gm. potassium bitartrate, 800 cc. of normal sulfuric acid, 25 Gm. of copper sulfate crystals and water to make 1000 cc.; (2) 8% potassium sulfate solution; (3) 28% potassium carbonate solution; mix equal parts of the three solutions just before use. Mix 1 cc. of blood or plasma with 5 to 6 cc. of water, add 1 cc. of two-thirds normal sulfuric acid and 1 cc. of sodium tungstate solution, make to 20 cc. and filter; mix in a centrifuge tube 5 to 10 cc. of the filtrate with 2 cc. of the copper solution, and in a control tube treat identically a solution of 1 mg. of glucose in 5 cc. of water; heat to 100° C. for 20 minutes, add 1 cc. of saturated potassium aluminum sulfate solution, and centrifuge; pour off the clear liquid and treat each residue with 5 cc. of molybdenum reagent (40 Gm. of ammonium molybdate, 20 Gm. of sodium hydroxide, 200 Gm. of phosphoric acid and water to make 1000 cc.); titrate to decolorization with dilute potassium permanganate solution.—M. LEBERRE. *Bull. sci. pharmacol.*, 43 (1936), 507–511; through *Chimie & Industrie*, 38 (1937), 239. (A. P.-C.)

Saliva—Ptyalin Content of, in Old Age. Twenty-seven aged men and women ranging between 69 and 100 years with an average age of 81 years, formed the experimental group, and twelve people with an average age of 25 as controls. The ptyalin content of saliva was tested by the method described by Hawk and Bergeim. The ptyalin content of basal salivary secretion of the older group contained 0.303 unit of ptyalin per cc. of saliva, while that of the younger group contained 10.15 units. When salivary secretion was stimulated, 0.28 and 8.2 units, respectively, were found. In old people the burden of starch digestion is thrown on the pancreas.—J. MEYER, J. S. GOLDEN, N. STEINER and H. NECHELES. *Am. J. Physiol.*, 119 (1937), 600–602; through *Physiol. Abstr.*, 22 (1937), 924. (F. J. S.)

Sulfites as Protein Precipitants. The "salting out" effect of various sulfites on plasma proteins has been investigated. Sodium sulfite was found the most satisfactory for the purpose although the differential salting out of certain protein fractions could be attained by a combination of other sulfites.—W. R. CAMPBELL and M. I. HANNA. *J. Biol. Chem.*, 119 (1937), 9–14; through *Physiol. Abstr.*, 22 (1937), 879. (F. J. S.)

Sulfur—Blood, Micro-Determination of. Sulfate is precipitated as benzidine sulfate and the benzidine determined colorimetrically with *p*-dimethylaminobenzaldehyde; 0.01 mg. of sulfur can be determined with an error of less than 4%.—S. LORANT. *Biochem. Z.*, 289 (1936), 425–431; through *Physiol. Abstr.*, 22 (1937), 905. (F. J. S.)

Thyrotropic Hormone—Purified, Preparation of a, by Chemical Precipitation. Fresh ox pituitary glands were dried with acetone, the dry powder extracted with acetic acid, and the extract, after removal of protein with salicylsulfonic acid, precipitated with tungstic acid. After removal of the tungstic acid with barium salts, the hormone was precipitated with alcoholic benzoic acid. Further purification resulted in a white powder, readily soluble in water, and active on the guinea pig in amounts as low as 0.1 mg. spread over two days; it was free of gonadotropic activity. Experiments indicated that the hormone, either in the fresh or dried glands or when purified, is almost entirely destroyed by heat.—C. G. LAMBIE and V. M. TRIKOJUS. *Biochem. J.*, 31 (1937), 843–847; through *Physiol. Abstr.*, 22 (1937), 950. (F. J. S.)

Tryptophan Determination. Improvements of the method of Furth and Lieben are described. The mean value of the tryptophan content of milk is found to be 128 mg./100 cc., whereas the Furth and Lieben procedure gives a value of 64 mg./100 cc.—S. RAPOPORT and W. EICHINGER. *Biochem. Z.*, 289 (1936), 288–289; through *Physiol. Abstr.*, 22 (1937), 878. (F. J. S.)

Tyrosine and Tryptophan—Use of Mercuric Salts and Nitrous Acid in the Colorimetric Determination of, Present in Solution. The Folin and Ciocalteu method (*Chem. Abstr.*, 21, 3210) for estimating tyrosine (I) was unsatisfactory when applied to plant-leaf protein hydrolyzates, as the unknown color solutions were cloudy. This difficulty was overcome by adding mercury salt to the acid solution of the sample which resulted in the separation of tryptophan (II) as precipitate. The remaining clear solution was then diluted with a solution of approximately the same composition and I was estimated with nitrous acid. Under appropriate conditions, II reacts readily with nitrous acid. The reaction is very sensitive and can be made the basis of a simple colorimetric method for the estimation of II.—J. W. H. LUGG. *Biochem. J.*, 31 (1937), 1422–1433; through *Chem. Abstr.*, 31 (1937), 8444. (F. J. S.)

Uric Acid—New Micro-Volumetric Method for the Determination of, in Biological Materials. Description of a method for the determination of uric acid in urine by means of chloramine. The urine is acidified with lactic acid and the uric acid is precipitated by means of silver lactate. It is then liberated by means of hydrochloric acid and converted into its sodium salt by means of sodium hydroxide. Complete separation of the silver is effected by means of potassium iodide. The decanted liquid is adjusted to a p_H of 7.40 and titrated with a hundredth-normal coloramine solution in presence of starch indicator. Adjustment to the indicated p_H value is essential in order to paralyze the action of thiocyanic acid which is always present. Separation of the precipitates is effected by centrifuging and decanting.—B. MELICHAR and L. VSETECKA. *Čas. Českoslov. Lékárnictva*, 16 (1936), 201–210; through *Chimie & Industrie*, 38 (1937), 240. (A. P.-C.)

Urine—Melanotic, Thormahlen's Reaction in. The urine of patients in the terminal stages of melanosarcoma contains a substance which gives a violet color with nitroprusside and alkali and which is changed to blue by acetic acid (Thormählen, *J. Tierch.*, 17 (1887), 445). The substance is rapidly destroyed on acidification of the urine, much less so on alkalization. The substance has not been isolated in the pure form but from the test much information about its behavior with precipitating agents, adsorbents, color tests and during purification has been accumulated and is described.—R. ZEYNEK and H. WAELSCH. *Hoppe-Seyler's Z. Physiol. Chem.* 244 (1936), 159–166; through *Chimie & Industrie*, 38 (1937), 241. (A. P.-C.)

Urine—Pregnancy, a Colored Reaction of. A suitable quantity of iodine is added to the sample of urine, boiled for a short time and then shaken with amyl alcohol. About 70% of the samples of urine of pregnant women gave a bright red-violet color in the alcoholic layer. Normal urine, however, may sometimes give a positive reaction.—P. E. SIMOLA. *Suomen Kemistil.* (*B*), 9 (1936), No. 9, 20; through *Chimie & Industrie*, 38 (1937), 242. (A. P.-C.)

Vitamin A—Aqueous Colloidal Solutions of. The liver of a sheep which has been grazing in a meadow is run through a meat chopper, then triturated in a porcelain mortar with powdered glass and its own volume of saturated alcoholic alkali. The resulting mass is mixed with 96% alcohol (3–4 liters per Kg. liver) and kept in an ice box for 12 hours. The alcoholic solution is mixed with an equal volume of petroleum ether and distilled water is added in small quantities until the alcohol is well diluted. The petroleum ether layer is then dried with sodium sulfate and evaporated to complete dryness *in vacuo*. The residue is dissolved in a minimum volume of alcohol in an atmosphere of carbon dioxide. The resulting solution is cooled to a temperature of $-15°$ to remove stearin. The solution is treated with a small volume of water and its alcohol is removed by a rapid current of steam in a period of 15–40 minutes using a capacious flask on account of foaming. The flask and its contents are cooled in an atmosphere of carbon dioxide; and the aqueous colloidal solution of carotene is placed in narrow-neck ampuls whose necks are filled with oil. The solution resembles good milk which is somewhat yellowish from a high carotene content, may contain as many as 6250 international vitamin A units per cc., is odorless and tasteless, may be administered intravenously or mixed with foods and is quite stable under oil, in vacuum or in tightly closed glass containers. The more dilute the solution, the more rapid the loss of vitamin A potency by oxidation.—F. A. RACHEVSKII. *Z. Vitaminforsch.*, 6 (1937), 203–206; through *Chem. Abstr.*, 31 (1937), 7484. Also *Bull. Biol. Med. exp.*, U. R. S. S., 1 (1936), 408–409. (F. J. S.)

Vitamin A Determination—Starting-Point of. The value of the suggestion made by Baumann and other workers that the test period in vitamin A assays should count from the day on which the rat's weight passed the highest point reached during the preparatory period, has been tested statistically. This has been done by comparing the accuracy of the last three weeks' of a five weeks' test with that of the first three weeks. Using 960 male and 1110 female rats, the author calculated the accuracy of the test from

$$\lambda = \frac{\sigma}{\text{slope of curve of response}}$$

Since σ, the standard deviation, is the same for successive weeks, and the slope of the curve of response becomes slightly less in successive weeks, the accuracy of the result of each week's dosing is slightly less than that of the preceding week. It is concluded therefore that the greatest accuracy is obtained by counting the test period from the first day of dosing with the vitamin.—K. H. COWARD. *Biochem. J.*, 30 (1936), 2009; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 262. (S. W. G.)

Vitamin A—Utilization of, by Rats. By estimating the standard deviation (σ) as a measure of the variation of a series of growth tests on rats, the extent of the utilization of vitamin A and of carotene dissolved in different solvents was determined. Comparisons were made in the Nutrition Laboratory of the Pharmaceutical Society of the vitamin A contents of (*a*) cod liver oil and of green vegetables (probably present wholly as carotene) and of (*b*) butter, estimated partially as carotene, compared with those of margarines containing concentrates of the vitamin dissolved in different vegetable oils. The variation in response of over 2000 rats during the period 1929 to 1936, as expressed by the standard deviation, was 12.13 for bucks and 9.50 for does, the corresponding figures for cod liver oil used as sub-standard being 12.03 and 9.41, respectively. For the two series under consideration the following figures were obtained: (*a*) for cod liver oil, 10.59 (bucks), 9.75 (does) compared with 10.54 and 8.63, respectively, for vegetables; and (*b*) 12.95 (bucks) and 9.72 (does) on butter compared with the values 11.45 and 10.03, respectively, for vitaminized margarines. Hence there is no significant difference in variation of response, nor therefore in the power of animals to utilize vitamin A or carotene supplied either as cod liver oil, plant tissues, butter or concentrates of the vitamin dissolved in different vegetable oils. The greater effectiveness, recorded by some workers, of carotene administered in coconut oil rather than in other vegetable oils, cannot be attributed to its more effective utilization in this solvent by the rat.—K. H. COWARD. *Biochem. J.*, 30 (1936), 1878; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 263. (S. W. G.)

Vitamin C Content of Some Indian Food Materials. The vitamin C contents of a number of foodstuffs which are eaten raw, and of cow, goat, buffalo and human milk, are given.—R. K. Chakraborty. *Indian J. Med. Research*, 23 (1935), 347–351; through *J. Soc. Chem. Ind.*, 56 (1937), 976. (E. G. V.)

Vitamin C Content of Some Indian Foodstuffs. The vitamin C contents of a large number of vegetable foodstuffs are given. The C content depends on the locality, season, rainfall, manuring and the stage of growth of the vegetable; C is concentrated on the outside of some vegetables and fruits, but in the center of others. It is destroyed by storage more rapidly in vegetables than in fruits. Acidity in spinach falls with C.—S. Ranganathan. *Indian J. Med. Research*, 23 (1935), 239–252; through *J. Soc. Chem. Ind.*, 56 (1937), 976. (E. G. V.)

Vitamin C—Determination of, in Urine. Of the methods reviewed and tried, Tillman's 2,6-dichlorophenolindophenol method is recommended for light-colored urines; for darker samples, the modification of Strohecker and Vaubel's method, in which nitrobenzene is used, appears to give better results.—H. Kaiser. *Süddeut. Apoth.-Ztg.*, 76 (1936), 905–907; through *Chimie & Industrie*, 38 (1937), 242. (A. P.-C.)

Vitamin C—Distribution of, in Animal and Plant Tissues. In most animal tissues 80% or more of the total vitamin C occurs in the reduced form, whereas in blood almost the whole occurs in the dehydro form. In plants the green leaves contain a high proportion of the dehydro form, in roots the external layers more than the inner ones. The skins of citrous fruits contain more vitamin C (in the reduced form) than the juice, while in cucumber and melon the dehydro form is chiefly found. Green tea contains vitamin, 70% of which occurs in the dehydro form; black tea contains little or no vitamin C.—A. Fujita and T. Ebihara. *Biochem. Z.*, 290 (1937), 201–208; through *Physiol. Abstr.*, 22 (1937), 931. (F. J. S.)

Vitamin D—Eight Forms of. The article is a short review of the more recent work on vitamin D. At present 8 forms of vitamin D or rather 8 modifications of vitamin D showing antirachitic properties are recognized. The probabilities are that this number will be increased as the structures are modified slightly and these compounds then irradiated.—C. A. Rothenheim. *Schweiz. Apoth.-Ztg.*, 75 (1937), 589. (M. F. W. D.)

Vitamin D—Line Tests for. Experiments are recorded which show that the single dose technic advocated by Coward and Key gave poorer responses than the method of giving divided daily doses of vitamin D for rats rendered more severely rachitic than those fed on the Steenbock-Black diet. Average figures in an experiment for the healing of the femora of 55 rats treated by the two methods, for a total dose of 0.15γ of calciferol, were, by single doses 0.91, by divided dosage 1.41. Males appeared to be slightly less rachitic than females under similar conditions of healing. It is concluded that for the authors' colony of rats, and severely rachitogenic diet, the method of Coward and Key produces less healing than the method of daily administration of vitamin D.—A. L. Bacharach, E. Allchorne and H. E. Glynn. *Biochem. J.*, 30 (1936), 2004; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 264. (S. W. G.)

Vitamin H—Concentration and Properties of. A 30-fold concentration of vitamin H, a component of the vitamin B complex, essential for growth and for the prevention of severe erythrodermic dermatosis in rats, was obtained from whey powder by a series of extraction procedures interposed by treatment with Fuller's earth. The concentrate contains neither flavins nor vitamin B_1. A 60- to 90-fold concentration of vitamin H was obtained from rice polishings by procedures involving chiefly extractions and adsorption on and elution from charcoal. This concentrate also contained neither flavins nor vitamin B_1. These concentrates carried the residuum necessary, in addition to vitamin B_1 and riboflavin, to complete the growth-promoting activity of the vitamin B complex.—L. E. Booher. *J. Biol. Chem.*, 119 (1937), 223–231; through *Physiol. Abstr.*, 22 (1937), 933. (F. J. S.)

Vitamin P Test. Vitamin P prolongs the life of guinea pigs on a scorbutic diet complete in all respects other than vitamin C.—A. Bensáth and N. B. Das. *Hoppe-Seyl. Z.*, 247 (1937), 258–261; through *Physiol. Abstr.*, 22 (1937), 933. (F. J. S.)

Vitamins A and D—Fish as a Source of. Fresh, smoked and canned brisling and herring, caught in different localities, in different years, and at different periods of the year, were tested for their vitamin A and D potency. Brisling oil contains 8 to 64 I. U. of vitamin A per Gm. and 70 to 140 I. U. of vitamin D. No loss of vitamin A and D occurs as a result of the smoking and canning process or of the storage of the canned product. Canned brisling contains 90 to 960 I. U.

of vitamin A and 1000 to 3000 I. U. of vitamin D per 1000 Gm. The vitamin A content of the body oil of herring is 2 to 38 I. U. and of the liver oil, 3600 to 11,000 I. U. per Gm. The vitamin D content of the body oil of fresh winter herring is 90 to 150 I. U. per Gm. The vitamin A content is not affected by the smoking process but is considerably decreased by the canning process; the vitamin A content of canned kippered herring ranged from a trace to 50–60 I. U. per 100 Gm. The vitamin D content, however, is unchanged by smoking and canning; canned kippered herring contains 840 to 2000 I. U. per 100 Gm.—GULBRANDE LUNDE, VALBORG ASCHEHOUG and HANS KRINGSTAD. *Ind. Eng. Chem.*, 29 (1937), 1107. (E. G. V.)

Vitamins—Knowledge of. A review dealing with the Vitamin B Complex.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 41 (1937), 340–341, 361. (H. M. B.)

Vitamins—Knowledge of. A review dealing with Vitamin C.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 41 (1937), 488–489, 503. (H. M. B.)

Vitamins—Significance of the Science of. A discussion of the importance and uses of vitamins.—W. HALDEN. *Pharm. Monatsh.*, 18 (1937), 148–150. (H. M. B.)

ANALYTICAL

Alcohols—Primary, Determination of. In the method proposed by Schimmel & Co. for the determination of primary alcohols in volatile oils, based on the phthalization of the alcohol in the presence of benzene, 2 Gm. of the oil is refluxed with 2 Gm. of phthalic anhydride and 2 Gm. of benzene for two hours. The resulting mixture, after cooling, is shaken for ten minutes with an excess of $N/2$ aqueous potassium hydroxide, when the excess of phthalic anhydride is converted to the neutral salt and the acid phthalate of the alcohol to the potassium salt. By titration of the excess of potassium hydroxide with $N/2$ sulfuric acid and carrying out a blank titration, the amount of phthalic anhydride reacting with the alcohol can be found and hence the percentage of alcohol present. In this method the time allowed for reaction between the excess of potassium hydroxide and the acid phthalate and phthalic anhydride is insufficient; warming the mixture or shaking for a longer period is liable to bring about hydrolysis of the acid phthalate, and moreover the end-point of the titration is not sharp. The authors propose a modification of this method. After the mixture has been refluxed for the two hours, 45 cc. of water and 5 cc. of pyridine are added and the heating continued for ten minutes, when the anhydride is completely neutralized. The contents of the flask are then titrated with $N/2$ aqueous potassium hydroxide; a blank titration is carried out and the difference in readings of the potassium hydroxide solution gives the equivalent of acid ester formed. This method can only be applied to primary alcohols, as secondary alcohols either do not react at all or not quantitatively under similar conditions. The presence of phenols does not interfere with the determination. This method has the advantage over phthalization in the presence of pyridine, in that it takes about two hours to complete against eighteen hours; compared with acetylation in the presence of pyridine it presents few advantages.—S. SABETAY and Y. R. NAVES. *Ann. chim. anal.*, 19 (1937), 35; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 239, 240. (S. W. G.)

Alkali—Iodimetric Determination of. The alkaline hydroxide or carbonate solution, 2 or 3 cc. of pure benzene and an excess of sublimed iodine were placed in a flask of 150 cc. or 250 cc. capacity fitted with a ground-in-water condenser. The solution was boiled gently until the reaction was complete. This required 20 minutes for sodium hydroxide, 2.5 hours for sodium carbonate, 3 hours with sodium bicarbonate and freshly precipitated barium carbonate and barium hydroxide. The water was removed from the condenser jacket and the solution boiled until the excess of iodine was removed. The solution of iodate was cooled, potassium iodide and diluted acid added and the liberated iodine titrated with $N/10$ sodium thiosulfate solution. The method provides a direct comparison of standard alkali and standard thiosulfate solutions. The author suggests the use of sodium carbonate as an iodimetric standard. An alternative procedure is one in which the excess of iodine was removed by reaction with phenol and alkali. Results comparable to the former method were obtained. The alkalinity of sodium aluminate and of sodium silicate was determined iodimetrically. The method was not suitable for sodium borate.—G. S. SMITH. *Analyst*, 62 (1937), 590. (G. L. W.)

Aluminum—Colorimetric Determination of, by Means of Alizarin S. The color intensity curve for the reaction between the aluminum ion and alizarin S was determined at varying p_H's. The most favorable hydrogen-ion concentration was found to be at p_H 3.6. The results show that the depth of color produced does not obey the Beer law but the concentration of alizarin must be taken into consideration on both sides of the equation. The intensity of the color obtained (*i*) is proportional, not to the aluminum concentration, but to the sum of the concentration of aluminum (*c*) and the excess (*a*) of alizarin expressed in terms of equivalent aluminum concentration from the standpoint of coloration; from which the following equation is deduced:

$$\frac{i_1}{i_2} = \frac{(c_1 + a)}{(c_2 + a)}$$

To avoid interference by ferric ions, these should be extracted as thiocyanate by means of amyl alcohol.—A. P. Moussakine. *J. Prikl. Khim.*, 9 (1936), 1340–1346; through *Chimie & Industrie*, 38 (1937), 236. (A. P.-C.)

Antimony, Arsenic and Iodides—Volumetric Determination of, in Presence of Bromides by L. W. Andrews' Method. Andrews' method is based on the reaction: $IO_3 + 2HSbO_2 + 2H + H_2O \rightarrow I + 2H_3SbO_4$. The reaction takes place in two stages: (1) the trivalent antimony is oxidized and the iodate is reduced to iodine, (2) the iodine is oxidized to iodine chloride. Free iodine is present, therefore, during the progress of the reaction until the end-point is reached, when shaking with carbon tetrachloride no longer shows the presence of dissolved iodine. The most favorable concentration of hydrochloric acid is 2.4 times normal and must be at least 1.8 times normal; for 100-cc. final volume, therefore, about 20 cc. of concentrated hydrochloric acid should be present. In no case should the solution be over 3.6 times normal in hydrochloric acid. If a little iodine chloride solution is added at the start, the reaction takes place more smoothly and it is desirable to have the solution at the end-point 3.6 times normal in hydrochloric acid, but not over 4.8 times normal. Potentiometric titration is unsatisfactory in hydrochloric acid solutions but can be carried out in sulfuric acid solution. Similar titration of trivalent arsenic can be accomplished when, in the final volume, the solution is from 1.8 to 4.8 times normal in hydrochloric acid. Andrews showed that iodide ions can be titrated with potassium iodate but stated that this titration failed when bromide ions were present; the reason for this is that iodine bromide is formed which is likely to dissociate into free iodine and free bromine. It is now found that this dissociation can be prevented by adding considerable potassium bromide, and the titration with iodate is successful.—A. Mutschin. *Z. anal. Chem.*, 106 (1936), 1–11; through *Chimie & Industrie*, 38 (1937), 233. (A. P.-C.)

"Antitryptic Titer"—Nephelometric Microdetermination of. The antitryptic titer corresponds to the inhibiting effect of a given quantity of blood serum on the fermentation of a known weight of casein by a definite amount of trypsin, and is expressed as the per cent of casein remaining undegraded after one hour, as compared with that in a test without serum. Three determinations are required: (1) degradation of casein by trypsin is determined by precipitating at intervals the undegraded casein by means of sulfosalicylic acid and evaluating the turbidity nephelometrically; (2) carrying out the same test in presence of an amount of blood serum sufficient to produce a measurable depression in the degradation; (3) a blank conducted on the casein alone to control the sterility conditions.—Ch. Wunderly. *Mikrochem.*, 21 (1936), 88–97; through *Chimie & Industrie*, 38 (1937), 240. (A. P.-C.)

Ascorbic Acid—Comparison of Methods for Quantitative Determination of. A comparison of the determinations with 2:6-dichlorphenolindophenol, methylene blue or the colorimetric method with monomolybdophosphotungstic acid shows that only the first-named gives accurate results if standard conditions are rigorously followed. Metaphosphoric acid is a better stabilizer than sulfosalicylic acid.—A. Fujita and T. Ebihara. *Biochem. Z.*, 290 (1937), 172–181; through *Physiol. Abstr.*, 22 (1937), 932. (F. J. S.)

Bismuth—Determination of, as Phosphate. The authors summarize their work as follows: Bismuth phosphate, precipitated from solutions containing sulfate, is liable to be contaminated with sulfate, which loses sulfur trioxide on ignition. A modified phosphate method for the assay of high-grade bismuth ores is described, in which the interference of sulfate is overcome by an intervening precipitation with sodium carbonate. The advantages of the phosphate method over the gravimetric determination as bismuth oxide are discussed.—W. R. Schoeller and D. A. Lambie. *Analyst*, 62 (1937), 533. (G. L. W.)

Bismuth—Separation of, from Lead and Copper. Of the various methods studied for the determination of bismuth in the presence of lead and copper, best results in the separation of bismuth were obtained with the potassium bromide-bromate method, with the pyrogallol method and with the cupferron method. The Benkert and Smith method (*Chem. Zentr.*, 1 (1897), 308) using hydrolytic precipitation of bismuth in formic acid medium gave somewhat inconsistent results.—E. A. OSTROUMOW. *Z. anal. Chem.*, 106 (1936), 36–45; through *Chimie & Industrie*, 38 (1937), 233. (A. P.-C.)

Boric Acid—Detection and Determination of, by Means of Turmeric in Strongly Acid Solution. When turmeric solution is added to concentrated hydrochloric acid, the mixture is red at first. As the solution is diluted with water, the red color gradually changes to yellow. Thus when twenty cubic centimeters of concentrated hydrochloric acid are mixed with one cubic centimeter of turmeric solution, distinct differences in color are apparent upon dilution with five, ten, fifteen, twenty and twenty-five cubic centimeters of water. Now if to the diluted solution some boric acid is added, the reverse color change from yellow to red takes place. The color change is more sensitive in strong hydrochloric acid solutions but for colorimetric estimation a more dilute hydrochloric acid is preferable. The test for boric acid can be made on a glass plate or in a small test-tube. In the former case mix one cubic centimeter of the solution to be tested with one cubic centimeter of concentrated hydrochloric acid. Take one drop of the solution on a glass plate and mix with one-tenth of a cubic centimeter of aqueous turmeric solution. As little as one γ borate can be detected. The change in color varies with the borate content so that by comparison tests a satisfactory colorimetric determination can be made. The effect of other ions on the test was studied. Fluoride tends to prevent the reaction but four hundredths of a milligram of borate can be detected in the presence of considerable florine ion. Oxidizing agents interfere by destroying the dyestuff. Any considerable quantity of titanium, zirconium, molybdenum or tungsten interferes since these also give color reactions with turmeric although there is no danger of mistaking their color effects with that obtained in the boric acid test as outlined above.—HARALD SCHÄFER. *Z. anal. Chem.*, 110 (1937), 11–18; through *Chem. Abstr.*, 31 (1937), 8437. (F. J. S.)

Boric Acid—Determination of, in Foodstuffs. The author summarizes his paper as follows: A method for the determination of boric acid in foodstuffs, using the distillation of methyl borate followed by a mannitol titration, is described. A continuous steam-distillation apparatus, used in the method, is illustrated.—R. S. ALCOCK. *Analyst*, 62 (1937), 522. (G. L. W.)

Boron—Optical Spectroscopic Determination of. The boron is converted into methyl borate, volatilized with methyl alcohol and burned in an atmosphere of oxygen before an absorption cell containing the permanganate solution. The boron content of the alcohol solution is estimated from the normality of the potassium permanganate solution added to the cell to obscure the bright lines of the boron spectrum. This procedure has since been modified to check the absorption of the spectrum and to allow duplicate readings to be made on the same solutions. After absorption of the boron spectrum a solution of ferrous ammonium sulfate, standardized against the permanganate, is added to the solution in the cell. In properly conducted determinations the spectrum will be discernible upon the addition of 0.2 cc. or less. Duplicate readings are made by adding a definite quantity, usually 5 cc., and again absorbing the bright lines by additions of permanganate solution. A correction is made for the water added with ferrous ammonium sulfate.—R. K. CALFEE and J. S. MCHARGUE. *Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 288. (E. G. V.)

Bromine—Colorimetric Determination of Small Quantities of, in Presence of Large Quantities of Chlorine. The method of Stenger-Kolthoff is preferred to that of Hahn. Reagents: (A) phenol red 33 mg., decinormal sodium hydroxide 3 cc., water to 100 cc.; (B) buffer solution (p_H = 5.0) made from 500 cc. of normal sodium hydroxide and about 650 cc. normal acetic acid; (C) to 25 cc. of solution (A) add sufficient solution (B) to make 500 cc.; (D) two-hundredth-normal chloramine solution; (E) decinormal sodium thiosulfate. Into a 30-cc. beaker put 5 cc. of solution containing 0.005 to 0.01 mg. of bromine (0.0075 to 0.0149 mg. of potassium iodide) and 2 cc. of solution (C); into a small test-tube measure 2 cc. of solution (D), pour this quickly into the beaker and stir; after 15 seconds stop the reaction by adding 3 to 5 drops of solution (E); wash into a 10-cc. graduate, make to volume and measure the color in a Pulfrich photometer (error not over 5%), or by comparison with a standard.—P. BALATRE. *J. pharm. chim.*, 24 (1936), 409–413; through *Chimie & Industrie*, 38 (1937), 242. (A. P.-C.)

Camphor—Spirit of. The authors have found the U. S. P. XI method inaccurate and time consuming and a modified assay based on the procedure of Randall has been worked out. Experimental work is reported with tabulated results, by the U. S. P. method and the suggested one. Following is the procedure suggested. Transfer exactly 5 cc. of the Spirit to a calibrated Babcock bottle, graduated to 8%, add acidified calcium chloride solution (specific gravity 1.36) until the bottle is filled to the shoulder, stopper the bottle with a cork previously wetted with calcium chloride solution and mix the contents vigorously. Add exactly 1 cc. of purified kerosene from a pipette calibrated to deliver that amount, stopper and agitate the mixture for about one minute. Add acidified calcium chloride solution to bring the liquid up to the highest mark in the neck of the bottle, stopper and centrifuge for five minutes at about 1500 revolutions per minute. Observe the number of divisions occupied by the oily layer, reading the lower curvature of the menisci, subtract five divisions for the kerosene added and multiply the remaining number by 3.75. The product is the number of grams of camphor in 100 cc. of the Spirit.—SAMUEL W. GOLDSTEIN and WILLIAM F. REINDOLLAR. *J. Am. Pharm. Assoc.*, 26 (1937), 887. (Z. M. C.)

Celastrus Paniculatus Willd.—Fixed Oil from the Seeds of, Chemical Examination of. The seeds and oil of *Celastrus Paniculatus*, a shrub of the natural order *Celastrineæ*, have been used in indigenous medicine as a remedy for beri-beri, rheumatism, gout, paralysis and leprosy. The oil is reputed to be a nerve stimulant and a brain tonic. No satisfactory evidence of the presence of an alkaloid was obtained when the seeds were tested with Prolius' solution. Steam distillation of 300 Gm. of seeds yielded only 0.015% of steam-volatile matter which was a dark brown solid with a strong odor resembling that of the oil cake. The oil obtained in 52.2% yield by extraction of the crushed seeds with petroleum ether boiling from 50° to 60° C. had a specific gravity at 25° C. of 0.9586, a refractive index at 30° C. of 1.4747, a saponification number of 239.2, an acid number of 44.4 and an iodine number of 102.9; it contained 5.7% of unsaponifiable matter. The following unsaturated acids were identified: oleic, linoleic and linolenic. The saturated acids consist mainly of palmitic and stearic, with a small quantity of lignoceric. The Reichert-Meissl number is very high (62.8) showing the presence of considerable amounts of volatile acids; acetic and benzoic acids were identified.—O. N. KUMARASWAMY and B. L. MANJUNATH. *J. Indian Chem. Soc.*, 13 (1936), 353–357; through *Chimie & Industrie*, 38 (1937), 315. (A. P.-C.)

Charcoal—Dutch East Indian Production of. The following figures represent the results obtained by the examination of representative samples of Dutch East Indian charcoals. The adsorption figures are given both for the original material and after activation with zinc chloride.

Original Material	Moisture Per Cent	Ash Per Cent	Volatile Per Cent	Specific Gravity. Apparent	True	Porosity Per Cent	Adsorption from *N*/10 Iodine Original	Activated	*N*/20 Iodine Original	Activated
Wild wood (Batavia)..........	4.7	2.2	22.7	0.37	1.41	74	1.13	3.36	0.96	3.01
Wild wood (Sumatra).........	5.5	3.6	24.7	0.56	1.44	61	0.99	3.43	0.49	3.41
Schleichera oleosa ("kesambi")..	5.1	13.9	17.8	0.91	1.51	40	1.17	2.68	0.98	2.33
Vitex pubescens ("laban")......	5.2	6.1	11.9	0.52	1.60	67	0.87	4.87	0.77	4.17
Tectona grandis ("djati")......	4.6	5.0	23.4	0.46	1.43	68	0.56	2.60	0.42	2.25
Tectona grandis ("djati")......	4.5	9.7	14.9	0.54	1.43	62	0.92	2.32	0.64	2.17
Tectona grandis ("djati")......	4.3	6.8	19.3	0.41	1.43	71	0.79	2.41	0.57	2.31
Tectona grandis ("djati")......	4.1	5.4	14.5	0.36	1.41	74	0.72	2.08	0.62	1.97
Bruguiera spec. (mangrove)....	5.9	2.0	32.8	0.96	1.33	28	0.39	4.34	0.29	3.67
Rhizopora conjugata (mangrove)	6.3	2.7	30.8	1.05	1.43	27	0.39	2.86	0.27	2.42
Rhizopora mucronata (mangrove)	5.9	1.9	31.0	0.86	1.38	38	0.37	3.90	0.21	3.21
Coconut shell................	8.4	2.5	9.7	0.92	1.53	40	2.14	4.41	1.21	4.07
Coconut shell................	6.4	1.6	13.3	1.04	1.40	26	1.25	2.35	0.59	2.71
Coconut shell................	5.2	1.9	27.0	1.35	1.41	4	0.83	0.91	0.42	1.06

—I. W. SPOON. *De Indische Mercuur.*, 59 (1936), 475; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 267. (S. W. G.)

Chlorides, Sulfates and Phosphates—Colorimetric Micro-Determination of, in Wines. For the determination of total phosphate, the wine is neutralized with a 1:1 mixture of sodium carbonate and potassium nitrate and evaporated to dryness. The ignited residue is dissolved in water, and phosphate in an aliquot portion precipitated by adding uranyl acetate. The precipitate is separated centrifugally and redissolved in sulfuric acid. Uranyl in the solution is determined colorimetrically with potassium ferrocyanide. Mineral phosphate is determined similarly by precipitating from the neutralized wine. For total sulfate, the wine is evaporated down with hydrochloric acid. The residue is neutralized with sodium hydroxide, iron and magnesium being eliminated as hydroxides. Calcium is best separated first as calcium oxalate. The solution is evaporated, the residue ashed and sulfate in an aqueous extract precipitated with benzidine (I) from a solution acidified with hydrochloric acid (indicator, 2:4-dinitrophenol). The I-sulfuric acid precipitate is filtered off and titrated with 0.02*N* sodium hydroxide. Mineral sulfate is determined similarly by treating the wine with animal charcoal (II), evaporating it to a small bulk, and neutralizing it with sodium hydroxide. Chloride is determined by titration with mercurous chloride in nitric acid solution, with sodium nitroprusside as indicator, after treating the wine with II.—C. SUMULEANU and G. GHIMICESCU. *Ann. sci. univ. Jassy*, 23 (1937), 1; through *J. Soc. Chem. Ind.*, 56 (1937), B., 830. (E. G. V.)

Chromatographic Analysis in Pharmacy. III. Determination of Cantharidin in Its Tincture. Fill the adsorption tube with a thick mixture of alumina and acetone and draw through it 20 Gm. of the tincture so that not more than 2 drops of filtrate pass through per second; wash with 10 cc. of 1:1 acetone-chloroform mixture and then with 20 cc. of chloroform; remove the tube and transfer the contents of the lower flask into a tared Soxhlet flask; distil off the solvent, extract the residue with 10 cc. of a 19:1 gasoline-alcohol mixture, let stand 12 hours, decant the solution through cotton wool and wash the crystalline residue four times with the same gasoline-alcohol mixture until the washings come through colorless; dissolve the crystals in chloroform, evaporate, dry 12 hours in a desiccator and weigh; the weight should be not less than 0.014 Gm. The Chromatogram is then examined by daylight and by the light of a quartz lamp.—H. VALENTIN and R. FRANCK. *Pharm. Ztg.*, 81 (1936), 943–946; through *Chimie & Industrie*, 38 (1937), 315. (A. P.-C.)

Cobalt and Copper—Microchemical Determination of. The previous microchemical tests for cobalt and copper (cf. *Chem. Abstr.*, 28, 429) can be used for the microdetermination of copper and cobalt by comparing the color intensities of the isomorphous precipitates of $CoHg(CNS)_4$ and $CuHg(CNS)_4$ with $ZnHg(CNS)_4$ with those of standard precipitates, likewise prepared by treating cobalt nitrate and copper nitrate, respectively, with zinc sulfate and the $(NH_4)_2\,[Hg(CNS)_4]$ reagent (8 Gm. mercuric chloride and 9 Gm. ammonium thiocyanate in 100 cc. water). Detailed procedures are described.—I. M. KORENMAN, A. M. LYSENKO and KH. V MORDUSHENKO. *Zavodskaya Lab.*, 6 (1937), 682–684; through *Chem. Abstr.*, 31 (1937), 8424. (F. J. S.)

***d*-Cocaine—Microchemical Identification of.** *d*-Cocaine forms hexagonal crystals with potassium permanganate in acid solution, which are characteristic and can be used to identify the product. Microphotographs are given.—R. CECCONI. *Ann. Chim. Applicata*, 26 (1936), 218–220; through *Chimie & Industrie*, 38 (1937), 315. (A. P.-C.)

Copper—Colorimetric Determination of, with Sodium Diethyldithiocarbamate in the Presence of Moderate Amounts of Iron. Method I for copper in the presence of 25 times as much iron. The iron is prevented from reacting with the sodium diethyldithiocarbamate by adding citric acid (20% w/v) and ammonia (10% w/v). A small amount of a 1% solution of acacia is added and on the addition of the dithiocarbamate reagent (0.2%) a clear golden-brown color stable for 8 hours is produced. The total yellow constituent of the color is measured directly in a Lovibond tintometer. The yellow constituent due to the ferric iron, citrate and ammonia is determined separately and subtracted. Method II is suitable for larger amounts of iron but zinc interferes. Iron is prevented from forming a color by using solutions of sodium pyrophosphate (4% w/v), acacia and the dithiocarbamate reagents as above. Results are read from a standardization curve obtained from known weights of copper.—T. P. HOAR. *Analyst*, 62 (1937), 657. (G. L. W.)

Copper—Micro-Colorimetric Estimation of. The tissue sample is ashed and the residue dissolved in sulfuric acid. The copper is deposited electrolytically on platinum, dissolved in nitric acid, and after removal of the excess acid mixed with acetate buffer containing lead acetate and with kryogenin (*m*-benzamino-semicarbazide) and heated for one hour in a thermostat at 39.5° C. The extinction coefficient of the solution is measured in a photometer; 10γ of copper can be estimated with an error of 5%.—K. HINSBERG and H. GOCKEL. *Biochem. Z.*, 289 (1936), 57–66; through *Physiol. Abstr.*, 22 (1937), 877. (F. J. S.)

Copper—Rapid Method for the Determination of. The method is based on the formation of copper acetylide and titration thereof with potassium cyanide solution according to the equation $Cu_2C_2 + 6CN + 2H_2O = 2Cu(CN)_3 + C_2H_2 + 2OH$. To a solution containing 25 to 50 mg. of copper and not more than 2.0 Gm. of ammonium salt, add 10 cc. of concentrated ammonia, 0.1 Gm. $N_2H_4.2HCl$ (or hydroxylamine hydrochloride) and 25 cc. of 0.1% gelatin solution; dilute to 100 cc. with hot water; after the solution has become decolorized, introduce acetylene for one minute, and titrate the resulting red solution with a solution containing 1 to 10 Gm. of potassium cyanide per one liter until the well-stirred solution becomes colorless. If iron or zinc is present, add a solution of 5 Gm. sodium pyrophosphate in hot water. The results are fairly good and the method is rapid.—L. Jolson. *Z. Anal. Chem.*, 106 (1936), 157–167; through *Chimie & Industrie*, 38 (1937), 234. (A. P.-C.)

Cyanide in Foodstuffs—Determination of Small Amounts of, after Fumigation. 0.05–0.5 mg. of hydrogen cyanide in 1 Kg. of grain is determined by steam distilling a suspension of the grain in aqueous tartaric or citric acid, and hydrogen cyanide is determined colorimetrically in the distillate, using a cuprous oxide photo-element.—M. M. Raines and A. I. Krupkin. *J. Appl. Chem. Russ.*, 10 (1937), 960–962; through *J. Soc. Chem. Ind.*, 56 (1937), 975. (E. G. V.)

Dimethylglyoxime—Use of, as Indicator in Volumetric Analysis. Dimethylglyoxime gives a red color with ferrous ions. The test is very sensitive but the red color fades upon exposure to air. By working under hydrogen the reaction $Fe(CN)_6^{---} + Fe^{++} = Fe(CN)_6^{----} + Fe^{+++}$ can be made to take place in slightly ammoniacal solution containing tartrate plus dimethylglyoxime and the end-point of the titration determined within 2% of the truth by the fading of the red color. The solution is yellowish green at the end.—K. Komarek. *Collection Czechoslov. Chem. Commun.*, 9 (1937), 247–253; through *Chem. Abstr.*, 31 (1937), 8421. (F. J. S.)

Drugs—Composition of the Ash of. I. Spanish Uva Ursi Leaves. Four and a-half kilos of leaves yielded 135 Gm. of ash which has a strong odor of ammonia and was faintly radioactive. The following cations were identified: copper, nickel, iron, manganese, titanium, aluminum, calcium, barium, magnesium, potassium, sodium, ammonium and traces of lead, mercury, antimony, tin, chromium and zinc. The following anions were detected: chlorine, sulfate, nitrite, phosphate, borate, silicate, carbonate, and traces of fluorine, arsenic, molybdenum and vanadium. The rate earths yttrium, cerium lanthanum and didymium were shown by ultraviolet spectrography to be entirely absent.—L. Rosenthaler and G. Beck. *Pharm. Acta Helv.*, 11 (1936), 186–193; through *Chimie & Industrie*, 38 (1937), 316. (A. P.-C.)

Drugs—Contribution to the Examination of. III. This contribution deals with (1) alum and aluminum sulfate, (2) amylene hydrate, (3) sodium citrate and (4) 0.5*N* alcoholic potassium hydroxide. In (1) the following tests are given for: (*a*) *Calcium Salts in Alum.*—2 cc. aqueous solution (1 + 19 or 1 + 30 for burnt alum is not changed by the addition of 3 drops dilute acetic acid and 3 cc. ammonium oxalate solution and (*b*) *Calcium Salts in Aluminum Sulfate.*—1 cc. aqueous solution (1 + 9) is not changed upon the addition of 3 drops diluted acetic acid and 4 cc. ammonium oxalate solution; in (2) 5 cc. of an aqueous solution of amylene hydrate (1 + 99) assumes after the addition of Schiff's Reagent in 5 minutes no definite deep violet-red color (aldehyde); in (3) dissolve 1 Gm. sodium citrate in 2 cc. water and add 1 cc. 10% calcium acetate solution and 1 cc. acetic acid (37%), no crystalline precipitate arises (tartaric acid) and in (4) it is recommended that pure potassium hydroxide and 95% alcohol be used and in preparing and storing only absolutely clean vessels and rubber stoppers be used and it may then be kept in the light or dark without change.—Konrad Schulze and Marga Hermann. *Apoth. Ztg.*, 52 (1937), 1186–1188.
(H. M. B.)

Drugs—Findings on the Testing of. B. reports on over 400 examinations of drugs carried on from March 1, 1936 to March 1, 1937, and finds considerable discrepancies in the products. These included hydrochloric and oleic acids, suet, methyl alcohol, ethyl iodide, calx chlorinata, synthetic camphor, compound fluidextract of thyme, glycerin, thyme, potassium carbonate, solution aluminum acetate, sodium carbonate, cocoa butter, castor oil, paraldehyde, solution of phosphorus, sinapis seeds and crude zinc oxide.—W. Bonde. *Apoth. Ztg.*, 52 (1937), 1204–1205.
(H. M. B.)

Epimedium Macranthum (Yin Yen Ho)—Chemical Investigation of the Leaves of. The leaves of Epimedium are prescribed for sterility. Alkaloids were shown to be absent. A total of 68.2 kilos of powdered material were extracted with alcohol and steam-distilled, yielding only

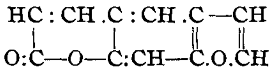
7.8 Gm. of essential oil. The non-volatile portion contains glucose, ceryl alcohol, hentriacontane, phytosterol, a flavone-glucoside $C_{27}H_{32}O_{12}$ (melting point 273° to 274° C.), and also palmitic, stearic, oleic and linolic acids.—Y. F. CHI and Y. S. KAO. *J. Chinese Chem. Soc.*, 4 (1936), 312–321; through *Chimie & Industrie*, 38 (1937), 316. (A. P.-C.)

Esters—Determination of. Report No. 13 of the Essential Oil Sub-Committee to the Analytical Methods Committee.—*Analyst*, 62 (1937), 541. (G. L. W.)

Esters of Wines—Extraction, Separation and Determination of. Epsil's method is adversely criticized for the following reasons. Different normal esters commonly present in wines (ethyl acetate, triethyl citrate, ethyl lactate, diethyl malate, diethyl succinate, diethyl tartrate) are very unequally soluble in light petroleum (I) and their coefficients of distribution between 1 and 10% alcohol-water are very different. Their complete removal cannot be effected rapidly (10 hours) and a single correction factor cannot be applied in case of abbreviated extraction. At the p_H recommended by Espil certain esters suffer marked hydrolysis previous to determination. Other substances such as aldehyde bisulfites and compounds of acid esters are partly removed during the extraction. Control experiments, affected by addition of known amounts of a normal ester to a wine, show extraction to be very incomplete.—A. DANGOUMAU and G. DEBORDES. *Bull. soc. chim.*, 4 [V], (1937), 911; through *J. Soc. Chem. Ind.*, 56 (1937), B., 830. (E. G. V.)

Ethyl Alcohol—an Improved Method for Determining, in the Presence of Acetone. Acetone, in a total amount present of not more than 1 cc., was removed quantitatively as a complex mercury compound by heating the mixture with acid mercuric sulfate solution and sodium formate solution at approximately 80° C. Excess of mercuric sulfate is removed with potassium oxalate solution. The alcohol was distilled and determined by taking the specific gravity of the distillate. Alcohol was lost in the process but in amounts ranging from 0.4 to 1.3% of the amount taken.—C. R. HOSKINS. *Analyst*, 62 (1937), 530. (G. L. W.)

Ficus Carica Leaves—Constituents of. Extraction of 28 kilos of *Ficus carica* leaves by warm water gave 16.8 Gm. of a new compound, ficusin, $C_{11}H_6O_3$, melting point 161° to 162° C., bitter, colorless crystals. Yields are much higher in July and August than in October. It reacts with water and gives a yellow solution in alkali, from which it separates again upon acidification. Methoxy, hydroxyl and carbonyl groups are absent. Methylation with dimethyl sulfate gave methylficusinic acid, $C_{11}H_7O_3(OCH_3)$, melting point 161.5° to 162° C. Tetrahydroficusin, $C_{11}H_{10}O_3$, melting point 154° C., was formed by reduction. Oxidation in alkaline solution with hydrogen peroxide gave furan-2,3-dicarboxylic acid, $C_6H_4O_5$. Concentrated nitric acid in glacial acetic acid gave nitroficusin, $C_{11}H_5O_3(NO_2)$, yellow crystals which melt with decomposition at 254° C. Fusion with potassium hydroxide gave 4,6-dihydroxybenzene-1,3-dicarboxylic acid. The proposed structure is



$$\begin{array}{l}\mathrm{HC:CH.C:CH.C{-}CH}\\ \quad\;|\qquad\quad\;|\qquad\;\;\|\quad\;\|\\ \mathrm{O{:}C{-}O{-}C{:}CH{-}C.O.CH}\end{array}$$

Its solubility and properties resemble those of angelicin, an isomer of similar structure. Acetone extraction of the ficus leaves yielded a small amount of $C_{12}H_8O_4$, melting point 188° to 189° C., identified as bergaptene. It resembles ficusin in solubility, presence of a lactone ring and absence of hydroxyl, but has a methoxy group. Methylation gave $C_{14}H_{12}O_6$, melting point 138° C.—K. OKAHARA. *Bull. Chem. Soc. Japan*, 11 (1936), 389–394; through *Chimie & Industrie*, 38 (1937), 315. (A. P.-C.)

Flaxseeds—Refractometric Determination of the Oil Content in. Results accurate to 0.01–0.27% were consistently obtained by crushing 200 Gm. of flaxseed in a hand mill and triturating 1.2–1.5 Gm. of the meal in a porcelain mortar with 1 Gm. of washed sand for 3 minutes and then adding 7–8 Gm. $C_{10}H_7Br$ for another 3 minutes. To obtain a representative *n* value, it is necessary to complete the filtration before the determination and compare the results with the *n* value of the $C_{10}H_7Br$.—N. RUBINSKII and M. BARMICHEVA. *Masloboïno Zhirovoe Delo*, 13 (1937), No. 3, 32; through *Chem. Abstr.*, 31 (1937), 8968. (F. J. S.)