PHARMACEUTICAL ABSTRACTS

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CONTENTS

NEW REMEDIES

SPECIALTIES (*Continued*)

Inalgon Drops and Pastilles (A. Kutiak, Vienna, 3rd dist.). The drops contain in each cc. 0.25 Gm. amidopyrine, 0.05 Gm. sodium phenobarbital and 0.05 Gm. caffeine sodiobenzoate; the pastilles contain in each 0.05 Gm. amidopyrine, 0.10 Gm. phenobarbital and 0.10 Gm. caffeine. The solution comes in 15-cc. bottles; the pastilles in packages of 6.—*Pharm. Presse*, 41 (1936), 468. (M. F. W. D.)

Inosepta (Deutsche Gesellschaft für Pharmazie und Kosmetik) is an immunizing ointment. The antivirus that it contains is obtained from cultures of streptococci, staphylococci and pyocyaneus. Further development of cocci is arrested by its action and the healthy cells surrounding the infection are locally immunized.—*Pharm. Weekblad*, 73 (1936), 1422. (E. H. W.)

Kaba (Battle Creek Food Co.), a bowel regulator, is a refined and solidified sap of a wild Indian tree, brewers' yeast for vitamin B and savita yeast extract for flavor. The dose is 1–2 teaspoonsful 2 or 3 times a day, preferably after meals. It is supplied in 11-oz. and 3-lb tins.—*Australas. J. Pharm.*, 17 (1936), 1080. (E. V. S.)

Karwendol-Vasoliment (Vasenol-Werke, Dr. A. Kopp, A. G., Leipzig) is a vaseline-oil emulsified with 10% ammonium sulfokarwendolate. It is for external use in rheumatism, arthritis and polyarthritis.—*Pharm. Weekblad*, 73 (1936), 1422. (E. H. W.)

Levurinose (J. Blaes & Co., Lindau) is a dried powder prepared from purified and debittered yeast, packaged in tubes containing 100 Gm. It contains the therapeutically active constituents of yeast, such as vitamins, enzymes and mineral substances. It acts by stimulating metabolism and mobilizing the defense mechanisms protecting against infection and other disease. The dose is one teaspoonful three times a day. Levurinose is also available in tablets, as suppositories for vaginal use and as levurinose-soap for various skin affections, furunculosis, etc. *Levurinetten* are little tablets of which 5 to 10 are taken three times a day, as a dietetic, etc. They are sold in aluminum tubes containing 180 tablets.—*Pharm. Weekblad*, 73 (1936), 1422. (E. H. W.)

Lipo-Lutin (Parke, Davis & Co.) is an oil solution of an extract of corpora lutea containing the hormone progestin and standardized to contain one rabbit unit per cc. It induces a secondary type of growth of endometrium previously stimulated to hyperplasia by the estrogenic hormones; this growth normally precedes each menstrual period and is characteristic of early days of pregnancy. It favors gestation and inhibits uterine contraction. Lipo-Lutin is marketed in 1-cc. ampuls (boxes of 6).—*Am. Drug.*, 94, No. 6 (1936), 52. (E. V. S.)

Lobesumman Drops (Dr. F. Heise G.m.b.H., Berlin-Karlshorst), for asthma, contain lobeline and strophanthin 0.002, caffeine sodium benzoate and acetanilid 2.0, phenyldimethylpyrazolone 4.0 and tincture thyme 15.—*Pharm. Zentralh.*, 77 (1936), 759. (E. V. S.)

Luizym Dragees (Luitpold-Werke, München) are supplied in packages of 20, 50 and 300 tablets containing cellulase, hemicellulase, amylase and protease.—*Pharm. Presse*, 41 (1936), 516. (M. F. W. D.)

Magentinol (Dr. W. Schwarzhaupt, Keulen) consists of Folia Juglandis, frangula, nux vomica, Terra Silicea, Carbo Ligni, basic bismuth nitrate, magnesium oxide and magnesium peroxide. It is used in stomach affections, etc.—*Pharm. Weekblad*, 73 (1936), 1423. (E. H. W.)

Neogel antifluoricum Pills (Adler Apothecary, A. Kremel, Vienna), marketed in packages of 10 pills, consists of acetylphenylarsenic acid, colloidal copper, strontium formate and carbohydrate.—*Pharm. Post*, 69 (1936), 525. (H. M. B.)

Neo-Taurocol (Paul Plessner Co., Detroit) are 5.8-gr. coated tablets containing sodium glycocholate, sodium taurocholate, cascara sagrada and aromatics. They increase peristalsis and flow of bile; stimulate the bile-producing cells of the liver. The dose is three tablets on retiring or one tablet three times daily before meals; reduce the dose as bile increases. Neo-Taurocol is supplied in bottles of 100, 500 and in bulk.—*Drug. Circ.*, 81, No. 1 (1937), 42. (E. V. S.)

Neuradolan (Apotheker Kuttner & Starke, chem.-pharm. Praparate G.m.b.H., Berlin) for the pains of neuralgia, grippe, etc., are tablets containing acetylsalicylic acid, quinine salicylate, acetophenetidin and caffeine.—*Pharm. Zentralh.*, 77 (1936), 759. (E. V. S.)

Nodophtin Ampuls (Chemosan-Union, A. G., Vienna) contain dextrose-glycerin. The packages contain 3 ampuls of 2.20 cc.—*Pharm. Presse*, 41 (1936), 468. (M. F. W. D.)

Omnisal (Marien-Apotheke und chem. Labor. Hygieia, Turkheim) is a powder containing iron, calcium, manganese, phosphorus, egg lecithin and vitamins. It is used for grippe, gout, rickets, arteriosclerosis, etc.—*Pharm. Zentralh.*, 77 (1936), 759. (E. V. S.)

Oravax (Wm. S. Merrell Co., Cincinnati, Ohio) is a cold vaccine in enteric coated tablets, the equivalent of 25 cc. of catarrhal vaccine in each. It is convenient as a substitute for needle injections. Oravax is marketed in bottles of 20.—*Am. Drug.*, 95, No. 1 (1937), 70. (E. V. S.)

Petromag (Evans, Sons, Lescher and Webb Ltd., Liverpool) is a cream of magnesia with liquid paraffin. It is used as a mild antacid for flatulence, sick headache and gastric hyperacidity, also for cases of hemorrhoids and gastric duodenal ulcer. The children's dose is $^1/_2$ teaspoonful, adults two or more. Petromag is supplied in bottles of 4, 8, 16 and 80 oz.—*Australas. J. Pharm.*, 51 (1936), 1205. (E. V. S.)

Phos-Cal (McKesson and Robbins, Inc.) is a highly concentrated preparation of calcium and phosphorus derived from milk. Two teaspoonsful of the powder or three tablets represents the equivalent of calcium-phosphorus content of 1 quart of milk. It is indicated in the treatment of rickets, fractures, pregnancy and lactation. Phos-Cal is marketed as a fine powder in 8-oz. bottles and as lozenges (18 to the package).—*Am. Drug.*, 94, No. 6 (1936), 50. (E. V. S.)

Phosphorcin (Eimer & Amend), a tonic effectively used in the convalescent period following neurasthenia and influenza, contains in each two teaspoonful dose 2 gr. of acidulated bone phosphorus, $1^1/_2$ gr. of calcium glycerophosphate, $2^1/_2$ gr. of anhydrous sodium glycerophosphate, $^1/_2$ gr. of lactated pepsin, $^1/_{20}$ gr. of extract nux vomica and 1 dram of glycerin.—*Am. Drug.*, 94, No. 6 (1936), 50. (E. V. S.)

Pitaphorin-Strong (Schering Ltd.) is a standardized pituitary extract recommended for the promotion of labor pains, acceleration of delivery and shortening of the post-partum period. It is given intravenously, intramuscularly or subcutaneously, and marketed in boxes of six 1-cc. ampuls containing 4 or 10 Voegtlin units.—*Australas. J. Pharm.*, 17 (1936), 1080. (E. V. S.)

Pleon Dragees (Henning, G.m.b.H., Berlin) are supplied in packages of 15 and 30 containing 0.30 Gm. dimethylaminophenazone-quinine-caffeine-calcium salicylate.—*Pharm. Presse*, 41 (1936), 516. (M. F. W. D.)

Plestrin (Harrower Lab., New York) is a solution of an estrin obtained from the placenta, the physiological activity of which is identical with the trophic ovarian hormone. It is used in the treatment of sterility, intero-ovarian hypoplasma and gonad mal-development by intramuscular injection or orally in capsules. Plestrin is marketed in 1-cc. ampuls (boxes of 5) or in capsules (packages of 40).—*Am. Drug.*, 95, No. 1 (1937), 70. (E. V. S.)

Probal (Chem. Fabrik Dr. Wider & Co., Leonberg i. Wttbg.) is a combination of colloidal aluminum silicate and aluminum perhydrate. The preparation is used for sunburn, alimentary pains, etc., and is marketed as tablets or powder.—*Pharm. Zentralh.*, 77 (1936), 760. (E. V. S.)

Proktol Ampuls (Schwarz, Vienna, 2nd dist.) is sold in packages of 3 containing 0.25 Gm. of carbophenol (carbolic acid) and 5.0 Gm. sweet almond oil.—*Pharm. Presse*, 41 (1936), 516. (M. F. W. D.)

Roborans Rolf (St. Rudolfs-Apotheke, Vienna, 14th dist.) contains iron glycerophosphate, sodium glycerophosphate, manganese glycerophosphate, copper glycocollate, sodium monomethyl arsenate, extract of cola, extract of condurango, etc. The bottles contain 105 Gm.—*Pharm. Presse*, 41 (1936), 468. (M. F. W. D.)

Rolicin (Walter Janvier, Inc.) is a pure castor oil super-refined *in vacuo*.—*Am. Drug.*, 94, No. 6 (1936), 76. (E. V. S.)

Ryzamin-B (Burroughs Wellcome & Co., Inc.) is a heavy palatable syrup presenting the concentrated and purified vitamin B fraction of rice polishings with a potency of not less than 50 International units of the vitamin per gram. It is used for beri-beri, sprue and similar vitamin B deficiencies and also as a dietary reinforcement in the stimulation of appetite and promotion of food utilization in children and adults. It is marketed in $^1/_2$-oz. collapsible tubes and in 8-oz. jars.—*Am. Drug.*, 94, No. 6 (1936), 52. (E. V. S.)

Sagradol (Angier Chemical Co. Ltd., London), a laxative emulsion for constipation, contains 50% mineral oil with cascara and aromatics. The dose is one dessertspoonful which contains 10 minims of fluidextract cascara. Sagradol is marketed in 7- and 15-fl. oz. bottles.—*Australas. J. Pharm.*, 17 (1936), 1083. (E. V. S.)

Sciatago (Coates and Cooper Ltd., London, E. C. 1), a combination of phenylquinoline-

carboxylic acid, hexamine and glycocoll, is used for the causative treatment of rheumatismal diseases. The dose is 2 dragées twice daily after a light meal, or one hour after a heavy meal. Sciatago is supplied in boxes of 40.—*Australas. J. Pharm.*, 51 (1936), 1205. (E. V. S.)

Sebrex (Allen and Hanburys Ltd., London) are tablets of meat and vegetable extracts with 17 grains sodium bromide. It diminishes reflexes and lowers sensitivity of brain to disturbing influences. The dose for sleeplessness is 2 tablets $^1/_2$ hour before bedtime; for nervous disorders and anxiety neuroses 2 tablets daily and 3 tablets daily for epilepsy. Sebrex is marketed in containers of 10, 50 and 500.—*Australas. J. Pharm.*, 17 (1936), 1083. (E. V. S.)

Simaran Solution and Tablets (Degen and Kuth, Duren-Rheinland) contain the active constituents of a species of quassia (*Simaruba amara*). The solution comes in packages of 7.5 cc. and the tablets in 12's.—*Pharm. Presse*, 41 (1936), 468. (M. F. W. D.)

Soricin (Wm. S. Merrell Co.) tablets are enteric coated containing in each 5 grains of sodium ricinoleate. It is indicated for use in intestinal toxemia, intestinal allergy, bacterial hypersensitivity of the intestinal tract, allegic diarrhea and urticaria. The dose is 60–80 grains daily for 10 days, then 15–20 grains daily. Soricin is marketed in bottles of 100.—*Am. Drug.*, 94, No. 6 (1936), 78. (E. V. S.)

Stomachetten Xyma (J. Blaes & Co., Munich) contain vitamin-containing yeast extract and yeast powder. They serve to increase the appetite and promote the secretion of gastric juice. Dose, 2–3 tablets before meals.—*Pharm. Weekblad*, 73 (1936), 1423. (E. H. W.)

Strychnal Ampuls (Labor. Longuet, Paris) are supplied in 1-cc. ampuls containing 0.01 Gm. strychnal (ethylbetaine sulfate of strychninic acid) in distilled water. **Arsi-Strychnal Ampuls** contain 0.01 Gm. strychnal and 0.25 Gm. sodium cacodylate in 3 cc. physiological saline solution. The packages contain 12 ampuls. **Strychnal Granules** contain in each 0.01 Gm. strychnal and are sold in packages of 50.—*Pharm. Presse*, 41 (1936), 516. (M. F. W. D.)

Sulfobit (Ammonium sulfobituminosum) (Hartmann's Fabrik chem. pharm. Erzeugnisse, Dusseldorf) is a sulfide preparation obtained from bituminous material. It contains 10% organically combined sulfur.—*Pharm. Weekblad*, 73 (1936), 1424. (E. H. W.)

Syngasept Salve (Syngala G.m.b.H., Vienna, 16th dist.) is put up in packages of 20 Gm. containing 1% of syngasept (a gold-silver-manganese compound) in an ointment base. **Syngasept Dusting Powder** contains 1% of syngasept in talc and is supplied in 50-Gm. packages.—*Pharm. Presse*, 41 (1936), 515, 516. (M. F. W. D.)

Syntopon Tablets (F. J. Kwizda, Korneburg) are put up in packages of 20 tablets containing in each 0.01 Gm. of the total alkaloids of opium.—*Pharm. Presse*, 41 (1936), 516. (M. F. W. D.)

Syrup Senodin (E. R. Squibb & Sons) contains in a 5-cc. teaspoonful codeine $^1/_{12}$ gr., fluidextract ipecac 0.4 min., fluidextract squill 0.4 min., fluidextract senega 1.2 min. and menthol 0.75 mg. It is used as a sedative in acute bronchitis of children, in spasmodic croup, to alleviate the distressing cough of measles, in lobar pneumonia cases which are accompanied by a frequent, slightly productive cough. Senodin is supplied in pints and gallons.—*Am. Drug.*, 94, No. 6 (1936), 82. (E. V. S.)

Tamate (Wm. S. Merrell Co.) is iron and copper in organic combination with glutamic acid so that the iron is completely utilized. Each fluidounce represents an equivalent of 5.5 gr. of ferric chloride. It is used as a general tonic and in hypochromic anemia. Tamate is nonconstipating and will not discolor the teeth. The tonic dose is one teaspoonful thrice daily before meals and double in anemia. It is supplied in bottles of 4 and 16 oz. **Tamate Tablets with Vitamin B** contain in each the equivalent of 3.3 minims of tincture ferric chloride and 13.5 International units B_1 and 5 Sherman-Borquin units B_2. They are supplied in bottles of 60.—*Am. Drug.*, 94, No. 6 (1936), 84. (E. V. S.)

Taumasthman Tablets (Aristopharm. A. G., Basle) contain in each 0.10 Gm. amidopyrine, 0.10 Gm. eophyllin, 0.05 Gm. caffeine, 0.0025 Gm. agaricinic acid, 0.01 Gm. ephedrine hydrochloride and 0.01 Gm. extract of belladonna. They are supplied in tubes of 10 tablets.—*Pharm. Presse*, 41 (1936), 516. (M. F. W. D.)

Taurglypan Tablets (G. H. Sherman, Inc.) contain in each papain 2 gr., purified bile salts 1 gr., extract cascara sagrada $^1/_2$ gr., phenolphthalein $^1/_2$ gr., extract nux vomica $^1/_{16}$ gr. and oleoresin capsicum $^1/_{40}$ gr. It is used for hepatic torpor, catarrhal cholangitis and chronic con-

stipation. Taurglypan is supplied in bottles of 100, 500 and 1,000.—*Am. Drug.*, 94, No. 6 (1936), 84. (E. V. S.)

Thioglycerol Solution 1:50 (Abbott Lab.) is a 2% weight to volume solution of thioglycerol in glycerin. It is used in sluggishly healing wounds and skin grafting and to thicken the thin epithelium of recent and tender scars. It is marketed in 5-cc. (boxes of 6) and 50-cc. bottles.—*Am. Drug.*, 94, No. 6 (1936), 88. (E. V. S.)

Tonicum Helfenberg contains iron, manganese, copper, arsenic and nux vomica alkaloids and is alcohol free. The metallic salts are adjusted on a hydrochloric acid basis as in Blutan.—*Pharm. Weekblad*, 73 (1936), 1424. (E. H. W.)

Triex (Chem. Fabrik Dr. Wilhelm Sternberg G.m.b.H., Hamburg) consists of pinene 51.30%, camphene 1.90, camphoric acid 0.36, dipentene 2.52, limonene 2.87, nopinene 18.80, phellandrene 1.35, sylvestrene 0.90, compound oil 20. These materials are said to be oxidized in the body and are found in the urine as acids. It is said to be of value in acute and chronic gonorrhœas, in gonorrhœal complications, cystitis, prostatitis, epididymitis and catarrh of the tubules and bladder. The dose is 1-2 capsules three times a day after meals with much liquids.—*Pharm. Monatsh.*, 17 (1936), 208. (H. M. B.)

Tylose (Kalle & Co. A.-G., Wiesbaden-Biebrich), a synthetic water-soluble cellulose ether, is a neutral, odorless and tasteless emulsifier for either alkali or acid media. For the preparation of paraffin and oil, also cod liver oil, emulsions, tooth paste, etc., Tylose is as satisfactory as tragacanth, Irish moss, Iceland moss, etc. Various types of Tylose are marketed depending on the viscosity desired; Tylose SL 5 is for a low viscosity, Tylose SL 400 for a high viscosity and Tylose S 400 or TW for cod liver oil emulsions.—*Pharm. Zentralh.*, 77 (1936), 760. (E. V. S.)

Verodigen Compositun (C. F. Boehringer & Sons, Mannheim) is the name given to suppositories which contain 0.3 Gm. verodigen-milk sugar (1:125) and 0.75 Gm. theophylline triethanolamine.—*Pharm. Weekblad*, 73 (1936), 1424. (E. H. W.)

Vicalpho (Carroll Dunham Smith Pharmacal Co., Orange, N. J.) tablets contain in each dicalcium phosphate 4½ gr., calcium gluconate 3 gr., and vitamin D 125 Steenbock units. Its use is indicated whenever there is a need for increased intake of calcium and phosphorus as in pregnancy and lactation, in rickets, in tetany and for the prevention of dental caries. It is marketed in bottles of 100 and is also available in powder form (3-oz. jars).—*Am. Drug.*, 94, No. 6 (1936), 52. (E. V. S.)

Viosterone (Endo Products, Inc., New York) is an oleaginous solution of the natural male hormone intended for intramuscular injection and is standardized in terms of capon units in accordance with the method of Gallagher and Koch. Its use is indicated in impotence, sexual nervous debility, premature senility and enlargement of the prostate. The dose is 1 cc. every 2 days for ten doses. It is marketed in 1-cc. ampuls, 6, 12 and 25 to the box.—*Am. Drug.*, 94, No. 6 (1936), 52. (E. V. S.)

Viscysatum Bürger is a dialysate from *Viscum album*. It contains the active constituents which lower the blood pressure without the toxic constituents. One part of Viscysatum is equivalent to one part of the fresh plant. It contains 12% alcohol. The preparation affords an excellent means of combating high blood pressure. Dose, three times a day 20–30 drops.—*Pharm. Weekblad*, 73 (1936), 1424. (E. H. W.)

Vitacol (Mulford Colloid Lab., Phila., Pa.) is a palatable ferruginous tonic containing colloidal organic iron, manganese and copper, combined with lecithin, vitamins A, B, C and D from their natural sources and also halibut liver oil concentrate. **Vitacol Compound** also contains colloidal arsenic. It does not stain the teeth or cause gastric disturbances and is of value as a general tonic for patients suffering from anemias, general debility and in convalescence following surgical operations. They are marketed in 8-oz. bottles.—*Am. Drug.*, 95, No. 1 (1937), 70. (E. V. S.)

Vitapan Capsule and Drops (A/S Apotekernes, Laboratorium, Oslo). Each capsule contains 2500 I. U. of vitamin A and 1,250 I. U. vitamin D, each cc. of the liquid contains 2,100 I. U. vitamin A and 4,500 I. U. vitamin D. The capsules are sold in packages of 40 and 100, the drops in packages of 20 and 50 cc.—*Pharm. Presse*, 41 (1936), 468. (M. F. W. D.)

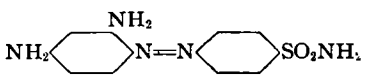
Xaniophen (Pitman-Moore Co., Indianapolis) tablets contain in each theobromine 2½ gr., ethylenediamine diiodide 2 gr. and phenobarbital ¼ gr. This combination which acts as a

diuretic, a sedative and an alterative is indicated for use in high blood pressure, in cardiacal pain and in certain types of dyspnea. Xaniophen is marketed in bottles of 100.—*Am. Drug.*, 95, No. 1 (1937), 70. (E. V. S.)

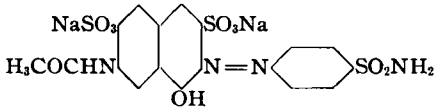
BACTERIOLOGY

Agglutination—Modified Technic for, in Brucella Infection. A modified technic for agglutination testing with an extremely heavy suspension of previously dried bacteria was used for the antigen preparation, on resuspending the dried bacteria at the ratio of 0.0006 Gm. to 0.03 cc. of physiological salt solution containing 0.5% phenol. The bacteria were stored in the dry condition until needed for testing. This procedure will be referred to as the "modified technic." This technic appears to offer a superior method of agglutinin testing.—C. R. DONHAM and C. P. FITCH. *J. Infect. Diseases*, 59 (1936), 287–295. (A. H. B.)

***p*-Aminobenzenesulfonamide and Prontosil in Hemolytic Streptococcal Infections.** The authors show the structural relationship of *p*-aminobenzenesulfonamide to prontosil (I) and soluble prontosil (II)



I



II

They found that *p*-aminobenzenesulfonamide has a bacteriostatic and bactericidal action against small numbers of hemolytic streptococci in culture medium and in blood. Prontosil is inactive, but on reduction an active substance is produced. Following administration of the sulfonamide, or of prontosil to man and animals their blood is bactericidal to hemolytic streptococci.—L. COLEBROOK, G. A. H. BUTTLE and A. Q. O'MEARA. *Lancet*, 231 (1936), 1323. (W. H. H.)

Antiserum Reaction—Intradermal, Nature of the Bacterial-Specific. Ideal test antiserums are strictly bacterial species-specific. For the detection of type or strain infections within a large species monovalent type-specific or strain-specific antiserums are essential. In tularemia the bacterial-specific intradermal antiserum reaction is due to an antigen-antibody reaction involving only the species-specific polysaccharide. Serums for test purposes should be strictly species-specific. They are best made by using only recently isolated, virulent strains.—L. FOSHAY. *J. Infect. Diseases*, 59 (1936), 330–339. (A. H. B.)

Antitoxin—Gas Gangrene. The international unit for measuring the potency of gas gangrene antitoxin (*histolyticus*) adopted at a meeting of the Permanent Standards Commission of the Health Organization of the League of Nations in September 1935, at Geneva, has been adopted as the American unit. A standard antitoxin for use in the United States has been prepared and its potency measured in terms of the international standard. One unit of the international standard antitoxin contained in 0.3575 mg. of the dried serum is equivalent to 0.2556 mg. of the United States dried serum. Glycerinated solutions of the standard are prepared in such a manner that 1 cc. contains 50 units. A dried toxin was prepared and the "test-dose" determined against one unit of United States standard antitoxin. The "test-dose" was 0.9 mg. of toxin (approximately forty-five minimal lethal doses). Tests are carried out by the intravenous inoculation of mice or the intracutaneous inoculation of guinea pigs. In control tests with the standard antitoxin, one unit of antitoxin is tested against the test-dose of toxin in mice. The same mixtures may be used in the intracutaneous tests on guinea pigs, employing a dose of 0.4 unit of antitoxin against 0.4 of the "test-dose" of toxin.—I. A. BENGSTON and S. E. STEWART. *Public Health Reports*, 37 (1936), 1263; through *Pharm. J.*, 137 (1936), 417. (W. B. B.)

Benzylphenols—Germicidal Action of. The compounds studied included *o*- and *p*-benzylphenol, *p*-benzyl-*o*-cresal, *o*-benzyl-*p*-chlorophenol and *p*-benzyl-*o*-chlorophenol. The germicidal activity of these compounds was decreased by the presence of sulfonated oils with which they were formulated. The change in activity is different for different compounds and for different organisms.—T. S. CARLSWELL and J. A. DOUBLY. *Ind. Eng. Chem.*, 28 (1936), 1276. (E. G. V.)

Coal-Tar Disinfectants—Bactericidal Value of. The phenol coefficient which is used extensively as a yardstick of the germicidal potency, not only of pure phenol derivatives but also

of technical coal-tar disinfectants, is not of itself satisfactory for this purpose. In the former case it becomes inoperative with compounds of higher molecular weight, in the latter it tends to give an exaggerated picture of the germicidal potency of certain so-called emulsifiable or tar-oil disinfectants, owing to the presence of naphthalene hydrocarbons, although being more definitive in the case of the cresylic disinfectants. The determination of a supplementary streptococcus phenol coefficient, in addition to the established *B. typhosus* phenol coefficient, would prevent incorrect ideas concerning the general germicidal potency of certain disinfectants, arising from a consideration of their *B. typhosus* phenol coefficients alone.—E. KLARMANN and V. A. SHTERNOV. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 369. (E. G. V.)

Complement-Fixation Reaction in Influenza. A complement-fixation test is described for the titration of influenzal antibodies in the sera of men and experimental animals. With the majority of sera the results given by complement-fixation and mouse protection tests show close correlation. A few sera, however, fail to show such correlation. Antibodies against human and swine strain viruses are not differentiated by the *in vitro* test. The possible significance of the results is discussed.—W. SMITH. *Lancet*, 231 (1936), 1256. (W. H. H.)

Hemolytic Streptococci—Comparative Study of Isolated, from Throats of Residents. The 28 β-hemolytic streptococci from New Orleans and the 54 from New York proved to have practically the same cultural and immunological characteristics. Twenty-two of the 28 New Orleans strains and 38 of the 54 New York strains produced a soluble skin toxin active in the skin of rabbits. No difference was found between the hemolytic streptococci isolated from the throats of individuals resident in New Orleans and New York.—P. TEIGER and B. C. SEEGAL. *J. Bact.*, 32 (1936), 631–637. (A. H. B.)

Hemolytic Streptococci—Incidence and Significance of, in Cultures from a Selected Group of Milk Handlers. Individuals without tonsils or remnants of tonsillar tissue may be persistent carriers of beta hemolytic streptococci in the absence of significant clinical findings, and the organisms of this type carried are potentially pathogenic for man, should sufficient numbers find access to the milk. Twenty of 85 milk handlers in the representative group selected harbored beta hemolytic streptococci in throat or nose secretions or both, at least once during the 3 months of the study as determined by weekly cultures.—F. FOOTE, P. HENRY WELCH, E. WEST and E. BORMAN. *J. Pub. Health* (August 1936), 799. (A. H. B.)

Hemolytic Streptococci—Lytic Action of Certain Strains of, on Fresh Sterile Kidney and Other Tissues. Ninety-four strains of hemolytic streptococci were grown in broth to which pieces of fresh, sterile monkey kidney had been added. Forty of these 94 strains lysed the kidney tissue, and the streptococci of this limited series which produced this nephrolysin were β-streptococci of Lancefield's Group A. The same strains of hemolytic streptococci which produced a nephrolysin lysed monkey skeletal and heart muscle, spleen and liver, and the kidney tissue of the rat, rabbit, guinea pig and dog. Fifty-nine strains of hemolytic streptococci were tested simultaneously for their production of anephrolysin, a soluble hemolysin, a fibrinolysin and a "histase" enzyme (Frobisher). Twenty-nine of these strains produced all four of these lytic effects and 20 of the strains failed to produce any of them.—B. C. SEEGAL and D. SEEGAL. *J. Bact.*, 32 (1936), 621–629. (A. H. B.)

Microörganisms—Agents for Preventing the Growth of. Quaternary pyridine compounds containing at least one Y-radical with at least 8 carbon atoms are used. The radical in question is connected to the nitrogen atom or to carbon atoms in the pyridine nucleus.—CHEMISCHE FABRIK VON HEYDEN A. G. Belg. pat. 415,461, June 30, 1936. (A. P.-C.)

Oils and Ointment Bases—Effect of, Especially Cod Liver Oil, on Bacterial Development. Oils used in medicine and ointment bases could not serve as substrate for bacteria, but with the exception of turpentine oil had little or no inhibitory action. Cod liver oil does not prevent the development of bacteria, the formation of proteolytic enzyme, or the dissolution of tissues in meat.—J. GORTZEN. *Zentr., Bakt. Par.*, I, 134 (1935), 169; through *J. Soc. Chem. Ind.*, 55 (1936), B., 298. (E. G. V.)

Pfeiffer's Bacillus. The author's investigation shows that Pfeiffer's bacillus is capable of producing, under conditions of experimental infection, an infective process of intoxication with a number of manifestations that resemble certain symptoms of influenza. It provides evidence, however, that the illness produced by introducing virulent cultures of Pfeiffer's bacillus into a

healthy person is not genuine epidemic influenza.—A. A. AMORODENSTEFF, A. I. DROBYSHEVSKAYA, S. M. OSTROVSKAYA and O. I. SHISHKINA. *Lancet*, 231 (1936), 1381. (W. H. H.)

Phenol Coefficient of an Antiseptic—Modifications of W. and E. Jensen's Method for Determination of.—V. GRYSEZ and P. MARTIN. *Compt. rend. soc. biol.*, 121 (1936), 35; through *J. Soc. Chem. Ind.*, 55 (1936), B., 251. (E. G. V.)

Phenol, Liquor Cresolis, Formaldehyde, Sodium Hypochlorite and Sodium Hydroxide—Comparison of the Efficiency of, against Eberthella Typhi at Various Temperatures. Formaldehyde exhibits the greatest temperature coefficient, being effective in dilutions from 14–17½ times as great at 40° C. as at 2° C. Phenol and liquor cresolis are germicidal in dilutions of three to four times as great at 40° C. as at 2° C. As has been reported previously lye shows but little temperature coefficient between 2° and 20° C., although it is somewhat more active at 40° C. Hypochlorite solutions are but moderately influenced by temperature changes, therefore, standard phenol coefficients obtained in the absence of additional organic matter and at 20° C. may not yield accurate information of the respective values of disinfectants.—E. C. MCCULLOCH and S. COSTIGAN. *J. Infect. Diseases*, 59 (1936), 281–284. (A. H. B.)

Pigment Production—Effect of Meat Extract and Other Substances upon. Ox heart meat extract in the form of nutrient agar partially or completely inhibits pigment production by *B. prodigiosus* but enhances pigment production by *Staphylococcus aureus*.—N. E. GOLDSWORTHY and J. L. STILL. *J. Path. and Bact.* (British), 43 (1936), 555–564. (A. H. B.)

Prontosil—Action on Experimental Streptococcal Sepsis Following Wound Infection. By introduction of a 1 to 10 solution of Prontosil S into the stomach of mice with experimental subcutaneous abscesses caused by the injection of hemolytic streptococci, the development of a general streptococcal infection was successfully hindered.—E. BERGER. *Klin. Wochschr.*, 16 (1937), 53–55. (C. R. A.)

Serum—Bactericidal Action of, against Meningococcus, Gonococcus and Micrococcus Catarrhalis. The bactericidal action of serum toward the Gram-negative bacilli is the resultant of the action of complement and a non-specific heat-stable factor which is apparently not necessary for the hemolytic action of complement, as can be demonstrated by its removal from serum by adsorption with dead bacteria. This, while not affecting the complement activity of the serum, destroys the bactericidal power, which in turn can be restored by addition of heated serum. Adsorbing organisms do not remove specific antibodies from serum. Adsorption of normal serum by dead bacteria in not too large amounts results in a general weakening of the bactericidal power. All organisms are, however, killed by such an adsorbed serum, though more slowly than by normal serum. An organism tested against a series of adsorbed sera, is killed most slowly by the serum which has been adsorbed by the same organism. Serum adsorbed by meningococcus I does not allow this organism to grow nearly so well as *B. typhosus* or *B. dysenteriæ* (Flexner); and the meningococcus I grows very much better in that serum than in a serum adsorbed by any other organism.—J. GORDON and L. HOYLE. *J. Path. and Bact.* (British), 43 (1936), 537–553. (A. H. B.)

Silkworm Pupæ Extract—Substitute for Meat Extract in the Preparation of Bacteriologic Serum. The killed silkworm pupæ are refuse in raw silk production in Japan, the home of the author. The high content of protein matter of the pupæ, the convenience with which it can be obtained and its extreme cheapness suggested the investigation. Even though the chemical composition of the pupæ had been previously determined, some difference in composition was found with various species as well as with silkworm crops of different seasons of the year. These variations in no way influenced their usefulness for the culture media. The spring crops were highest in food value, autumn crops next and summer crops last. The dead pupæ are air and sun-dried and ground into fine powder, 100 Gm. suspended in 1 L. of tap water, boiled for one hour and filtered. From the filtrate the usual liquid or solid medium can be prepared. The most suitable concentration of the three important constituents of culture media (extract, peptone, sodium chloride) were obtained by experiment and found to be pupæ extract 10%, sodium chloride 0.5%, peptone 0.5%. The bacteria used were *Bacillus typhosus*, *B. paratyphosus* A & B, *B. coli communis*, *B. dysenteriæ* Shiga, Y and Flexner, *Staph. aureus*, *S. citreus* and *S. albus*. The procedure of testing was as follows: a standard loopful of growth on ordinary agar slant was suspended in 10 cc. of sterilized salt solution. One loopful of this suspension was planted on an agar slant of pupæ extract and one on a meat extract agar slant. Incubation at 37° C. for 24 and

48 hours followed and the abundance of growth was compared. The harmlessness of the pupæ extract was shown by injecting into rabbits, mice and guinea pigs. No difference in virulence of *B. typhosus* or *B. dysenteriæ* was found between cultures grown on pupæ extract media and those grown on meat extract media. When tested on a rabbit the antigenic property of *B. typhosus* was shown to be unaffected when grown on pupæ extract agar as compared to meat extract agar. Testing was done to show that the pupæ extract could adequately substitute meat extract in the following special media: Endo's medium, Drigalski-Conradi, Russell's double sugar medium, Gassner's, Barsiekow's, Loeffler's and Petroff's. The pupæ extract was stored for a year in an ice chest without deterioration. For storage purposes the inspissated extract is evaporated with the aid of heat and vacuum to the consistence of a thick paste. The container and stopper must be sterilized. In Japan the pupæ extract media is about one-fifth as costly as the meat extract media. The work extended over a period of five years.—MINORU NUKADA. *Philippine J. Sci.*, 60 (1936), 11. (P. A. F.)

Sterilization. A discourse on the general topics of sterilization.—ANON. *Pharm. J.*, 137 (1936), 547. (W. B. B.)

Streptobacillus Moniliformis—Biology, Pathogenesis and Classification of. Stained film preparations of *Haverhillia multiformis* supplied by Parker and Hudson have been examined and found to be morphologically indistinguishable from *Streptobacillus moniliformis*. Pleomorphism resulting from its cultivation on media deficient in serum is described. It has been cultivated on the chorioallantoic membrane of the developing chick embryo. *Streptobacillus moniliformis* having a growth requirement of a high proportion of blood serum in culture media forms one of the outstanding features of this bacterium.—C. E. VAN ROOYEN. *J. Path. and Bact.* (British), 43 (1936), 455–471. (A. H. B.)

Tuberculin—Preparation of. The authors describe a new nutrient medium for the preparation of tuberculin. It is claimed that better growth of bacilli is secured in the new medium and that the tuberculin obtained gives clearer reactions than the control tuberculin in tuberculous animals and gives no skin reaction in healthy animals. Variability in the composition of the ingredients of the usual media causes variations in the amount of growth of bacilli and in specificity and activity of the tuberculin produced. Potato media, which are satisfactory for cultures and avoid the above difficulties, do not easily yield extracts. They therefore partially hydrolyze the potatoes and so obtain a suitable liquid medium. The potatoes are grated, mixed with water and an appropriate amount of sulfuric acid, and partially hydrolyzed by heating in an autoclave. The mixture is strained, filtered and the filtrate diluted with water, heated to 80° C., its p_H adjusted to 7.1 by adding potassium carbonate which also precipitates the proteins. Ammonium oxalate and glycerol are added, followed by phosphate buffer of p_H 7.1 to 7.2. The final p_H should be 7.1 to 7.2. After standing and filtering, the medium is sterilized by heating on a steam-bath for thirty minutes on two successive days. Compared with glycerol peptone broth this new medium contains less protein but more nitrogen as amino-acids and ammonium salt, is better buffered and contains glucose and other breakdown products of starch. Comparison with glycerol peptone broth was also made by preparing cultures under strictly comparable conditions and observing the changes in p_H and the yield of bacilli. The p_H of the new medium fell in one month to 6.7 to 6.3, in two months did not fall below 6.3, the limit of p_H for the growth of the tubercle bacillus. In the old medium the p_H increased to 7.5 to 7.8, at which normal growth is impossible. The yield of bacilli and of tuberculin was from 20 to 100% greater in the new medium than in the old. The tuberculin obtained from the new medium was less toxic to guinea pigs and when tested in tuberculous cattle by intradermal injection and conjunctival instillation gave better reactions than commercial old tuberculin. When concentrated to one-tenth its volume, it gave no reaction with either healthy or tuberculous animals.—D. A. ZUWERKALOW and A. K. SARKISSOFF. *Ann. de l'Inst. Pasteur* (July 1936), 111; through *Brit. Med. J.*, 3959 (1936), 1066_D. (W. H. H.)

Ultra-Violet Radiations—Growth of Microörganisms Exposed to. Six hours of ultra-violet irradiation of 10-cc. portions of agar medium (Blank's formula, Difco Nutrient Agar, or Difco Malt Agar), at about 50 ergs per mm. per second with light of which 90% was of wave-length 2537 Å., rendered the agar less suitable for the development of subsequently inoculated *Bacillus subtilis* spores, and also, but to a less degree, for the development of certain vegetative forms of bacteria.—E. L. PRATT. *J. Bact.*, 32 (1936), 613–619. (A. H. B.)

Vaccinia Virus—Titration of, on the Chorio-Allantoic Membrane of the Chick Embryo and Its Application to Immunological Studies of Neurovaccinia. Suspensions of vaccinia virus inoculated in suitable dilutions produce discrete lesions on the chorio-allantoic membrane of the developing chick embryo. The titer of vaccinial suspensions obtained by the enumeration of such lesions corresponds to that found by intradermal inoculation in the rabbit.—E. V. KEOGH. *J. Path. and Bact.* (British), 43 (1936), 441–453. (A. H. B.)

Vitamin B_2—The Accelerating Factor in the Fermentation of Sugar by Propionic Acid Organisms. The authors point out that it has been known for some time that the nitrogen source exerts a considerable influence on sugar fermentation by propionic acid bacteria. The work of Van Niel is referred to in which he found, that with different strains of propionic acid bacteria, yeast extracts and yeast autolysates are better media than Poulene, Witte, Bacto and proteose peptones. The authors appear to have undertaken this work on the suggestion made by Van Niel that the vitamin content of yeast extract might play an important part for he showed that the differences in fermentation cannot be ascribed to differences in metabolism, buffer capacity or nitrogen content. Details of the experimental work are presented including nine tables: (1) effect of concentration of yeast extract; (2) effect of salt concentration; (3) relation between titration value and time of fermentation; (4) effect of hydrolysis of yeast extract of different p_H on the titration value; (5) fermentation values with yeast extract, lead acetate precipitate and lead acetate filtrate; (6) relation between titration value and original glucose concentration; (7) relation between titration value and N content of various vitamin B_2 purified fractions; (8) effect of varying concentrations of purified extract with some concentration of the original yeast extract; (9) incubation of artificial medium and purified extract solution; (10) relation between titration values and % N in Van Niel's (*a*) peptone media, (*b*) yeast autolysate and the authors' yeast extract. They believe that they have shown that the potent substance responsible for increased fermentation of sugar by propionic acid bacteria is in the vitamin B_2 fraction, but they have not been able to prove that vitamin B_2 itself is the potent substance. It is possible that their fermentation factor is a flavin for Stern showed that certain flavins function as oxidation-reduction enzymes.—V. G. LAVA, R. ROSS and K. C. BLANCHARD. *Philippine J. Sci.*, 59 (1936), 493. (P. A. F.)

BOTANY

Drug Plant, Raising. The value of an inland source of drug plants is discussed. Two Swedish drug farms are considered, that of J. Hendriksson at Dals-Rostock, maintained in collaboration with the Swedish Pharmaceutical Institute, and that of the Pharmacia Co. at Uringe in Grödinge. The value of experimental drug cultures is illustrated by the recent introduction into pharmacy of *Digitalis lanata* after the sole use of *D. purpurea* since the 18th century. Modification by selection and mutation may also be of value. A mutant form of lupine found in Germany lacks the bitter principle found in the ordinary form. A mutant of *Atropa belladonna* called *flava* has higher alkaloid content than the normal type. The name derives from a lack of certain anthocyanin pigments so that the flowers and berries are yellow. Crossing may be useful, thus a cross between *Hyoscyamus niger* and *H. muticus* gives both the high alkaloid content of the muticus species and the greater hardiness of the niger species. Examples from the genera, Rheum and Mentha are also cited. Harvest time may be important as regards content of active principles. Even time of day may affect this. Thus *Datura stramonium* has highest alkaloid content in the morning, while *Digitalis purpurea* has highest glucoside content at dusk. The greatest period of risk is in drying of the drugs when very exact conditions must rigidly be followed. Accessory substances in the drugs may cause hydrolysis or oxidation to different degrees according to the drying process. In few cases such a process is necessary to free the active principle. Thus vanillin is set free in the vanilla bean by fermentation. On the other hand digitalis should be dried as rapidly as possible and at relatively high temperature to minimize glucoside decomposition. High temperature of drying must be avoided with solanaceous leaves to avoid conversion of *l*-hyoscyamine to the dextro form.—G. EDMAN. *Farm. Revy*, 35 (1936), 716. (C. S. L.)

Ephedra—Cultivation of, in South Dakota. Details connected with planting and growing are given. Some consideration has been given to soil and moisture. The first harvest, 1930, was used for determination of time of year when cuttings should be made and determination of

alkaloidal content. Each year's study was based on conclusions from the previous year.—B. V. CHRISTENSEN and LOVELL D. HINER. *J. Am. Pharm. Assoc.*, 25 (1936), 969. (Z. M. C.)

Plants—Protection of Slips and Transplanted, against Cryptogamic Diseases. Oxyquinoline, its derivatives, or homologs, are used to protect the plants.—LA QUINOLÉINE ET SES DÉRIVÉS. Belg. pat. 413,733, March 31, 1936. (A. P.-C.)

Swedish Drug Farm. At Stora Uringe, Grödinge, Sweden, the Pharmacia company maintains a drug farm. Here *Hyoscyamus niger*, various Pyrethrum species, *Althea officinalis*, *Inula helenium*, *Rheum palmatum*, *Aconitum napellus*, *Atropa belladona*, Valeriana, *Digitalis purpurea* and *D. lanata*, also opium poppy are successfully grown. The largest area is devoted to *Datura stramonium*. In an illustration the drying of stramonium leaves on wire racks is shown. The work is supervised by Professor G. Edman. The value of an inland supply of drugs was demonstrated during the war of 1914.—ANON. *Farm. Revy*, 35 (1936), 741. (C. S. L.)

Tissues—Rapid Method of Differentiating Living, Dead and Damaged, of Green Plants. The tissues are placed in weak hydrochloric acid (*0.1–0.3N*) for 15–20 minutes. Dead tissue turns brown, damaged tissue is mottled, while the normal is unchanged.—F. F. MAZKOV. *Compt. rend. acad. sci., U. R. S. S.*, 1 (1936), 265; through *Physiol. Abstr.*, 21 (1936), 702. (E. V. S.)

Vitamin C and Carotene—Content of Field and Garden Fruits with Various Fertilizers. Fertilization with nitrogen and phosphorus caused a rise of vitamin C in potatoes in contrast to a loss noted on treatment with potassium and calcium fertilizers. Complete fertilization produced potatoes with the same content as the untreated controls. Manure and mixtures of manure and mineral fertilizer (balanced fertilizer) gave crops with increased vitamin C content. Potash fertilization of the carrot caused a rise of both vitamin C and carotene and the use of potassium sulfate gave better results than potassium chloride. Fertilization affected carotene formation to a greater extent than vitamin C formation.—M. OTT. *Angew. Chem.*, 50 (1937), 75–77. (C. R. A.)

CHEMISTRY

GENERAL AND PHYSICAL

Chemical Symbols and Formulas—Origin of Modern. The article gives proof to justify the statement that "the present chemical notation is due to an extension by Berzelius (1813) of a system used by Thomson (1802)."—J. R. PARTINGTON. *J. Soc. Chem. Ind.*, 55 (1936), 759. (E. G. V.)

Marsh Apparatus. Under the title of "Monumenta Pharmaceutica" VII, the author reviews the history of the well-known Marsh test for arsenic. The original article by Marsh in the *Edinburgh New Philosophical Journal* (Oct. 1836) is reprinted. It is the one-hundredth anniversary of this publication that the author celebrates in publishing the review. The many modifications and comments of famous chemists are fully discussed.—P. VAN DER WIELEN. *Pharm. Weekblad*, 73 (1936), 1379. (E. H. W.)

INORGANIC

Phosphoric Acid—Preparation of Chemically Pure. 200 cc. of saturated aqueous hydrogen sulfide are added per liter of acid (Sp. Gr. 1.63) and the precipitated arsenic and lead sulfides removed, together with suspended impurities, by filtration after 24 hours. The filtrate is concentrated to Sp. Gr. 1.73, cooled to 12–14°, and seeded with $(H_3PO_4)_2.H_2O$. The crystals are washed on the centrifuge with pure phosphoric acid, Sp. Gr. 1.67, the washings are concentrated to Sp. Gr. 1.73, crystallized as above, and the mother-liquors used as technical phosphoric acid.—E. E. ZUSSER. *J. Chem. Ind. Russ.*, 13 (1936), 536; through *J. Soc. Chem. Ind.*, 55 (1936), B., 930. (E. G. V.)

Sodium Perborate—Direct Process for Making. Boric acid, boric anhydride or a metal borate, in the solid state, is treated with an alkali metal peroxide and a solution of hydrogen peroxide in the requisite proportions at a temperature below 80° C. The total amount of combined and uncombined water present in the reaction mixture being limited to not more than 8% in ex-

cess of that required to form the completely hydrated final product.—JOSEPH S. REICHERT, assignor to E. I. DU PONT DE NEMOURS & Co. U. S. pat. 2,065,744, Dec. 29, 1936. (A. P.-C.)

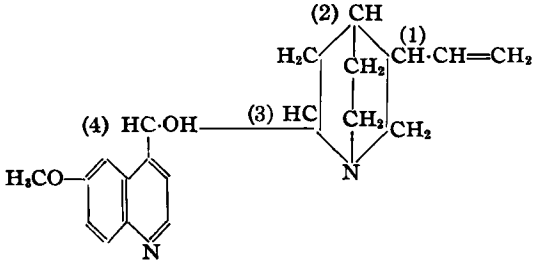
Young-ki-shih. This Chinese mineral medicine is essentially a magnesium iron silicate containing small amounts of calcium, aluminum, chromium and manganese.—K. S. CHANG and Y. T. CHA. *Nat. Centr. Univ. Sci. Repts.*, No. 2 (1935), 11; through *J. Soc. Chem. Ind.*, 55 (1936), B., 667. (E. G. V.)

ORGANIC

Alkaloids

Anhalonium Lewinii—Alkaloids of. The cactus *Anhalonium Lewinii* Hennings (*Echinocactus Lewinii* Schuman or *Lophophora Lewinii* Rusby) is used by the Indians of Central America principally for smoking purposes. The reactions and uses of the drugs, Mescal buttons, Peyote (pellote), Hicori (Jiculi), Senai, Wokowi or Ho are described. The former method of separation of the alkaloid from the drug was impractical and unsatisfactory. The authors describe a better method for the extraction of alkaloids of Mescal buttons. Because the drug used by the authors was old, the alkaloidal yield was smaller than that obtained by other investigators. The details of the extraction method with alcohol at room temperature and the separation of the phenol- and non-phenolic alkaloids is referred to the original article. From the non-phenolic base mixture, a new alkaloid was discovered and named anhalinine ($C_{12}H_{17}O_3N$; m. p. 61–63°). From the phenolic-base mixture a new alkaloid anhalidine, $C_{12}H_{17}O_3N$, (N-methylanhalamine) was obtained. A complete separation of anhalonium bases can be only obtained when the fresh plant is employed. The following alkaloids were obtained from the cactus plant: mescaline, anhaline, carnegine, anhalinine, anhalamine, anhalidine, anhalonine, anhalonidine, pellotine, lophphorine. Hydrohydrastinine obtained from *Corydalis cava* and salsoline obtained from *Salsola Richteri* were suspected to be principles found in *Anhalonium Lewinii;* this, however, was not the case.—E. SPATH and F. BECKE. *Chem. Zentralb.*, 107 (1936), 783. (G. B.)

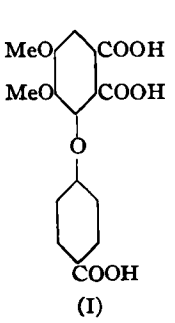
Chinoidines—Contribution to the Chemistry of. After the extraction of the common alkaloids from cinchona bark, there remains a clear brownish syrupy liquid called chinoidine (I) which, until the present time has yielded no crystals. The authors isolated from a benzene fraction very little quinine (4–5%). The attempt to obtain further crystals was fruitless. The inability of crystals to separate is traced to the difference in stereochemical structure of the quinines. Quininic acid (30%) was obtained from (I) when potassium permanganate and chromic acid in hot sulfuric acid was added. Other investigators have proved the presence of chinoline in (I). With permanganate in the cold, 57% of formic acid as the barium salt was isolated, since (I) is considered to be an isomer of quinine. The vinyl groups in (I) were easily hydrated with palladium and hydrogen. One-third of the non-vinyl base was separated from (I) and disregarded. The vinyl base gave 68% of formic acid when oxidized. The purified bisulfate of (I) was heated and converted to the respective toxin; benzoylated into an isonitroso compound and *p*-toluolsulfochloride added, when quininic acid (70%) and N-benzoylmeroquinine nitrile were obtained. The latter can be converted to the well-known meroquinine ethyl ester. From the benzoylated salt, β-collionine picrate was obtained. The acid salt meroquinine ester from (I) is identical with those obtained from quinine; *e. g.*, the bases in (I) have at C_1 and C_2 according to the following structural formula:



the same configuration as the rest of the quinine alkaloids. The toxin from (I) is similar to the well-known quinine toxin, whose principal yield is derived from the bisulfate of (I). Quinine toxin can also be obtained from quinine, quinidine, epiquinine and epiquinidine because they have the same configuration at C_1 and C_2. Quinine and quinidine are stereoisomeric at C_3 and C_4 atoms. The epi-bases are stereoisomeric with quinine and quinidine at the C_4 atom. They show no anti-malarial reaction when used in doses of 4 mg. in contrast to quinine which shows anti-malarial reaction when taken in doses of 1 mg. The same behavior is observed with (I). However, from the washed crystals from (I) an acid salt was obtained which yielded dibenzoyl-*d*-acetic acid epiquinine and dibenzoyl-*d*-acetic acid epiquinidine. The same compounds can be obtained from crude chinoidine. The authors ascertained that the epi-bases are found as such to the extent of 1% in the cinchona bark. Whether these bases were formed during the life cycle of the tree or otherwise is not known.—W. DISCHERL and H. THRON. *Chem. Zentralb.*, 107 (1936), 778. (G. B.)

Cinchona Alkaloids—Hydroxyethyl Esters of. An alkali metal salt of dimethylated cinchona alkaloid is made to react with ethylchlorhydrin.—MELLON INSTITUTE OF INDUSTRIAL RESEARCH. Belg. pat. 412,729, Jan. 31, 1936. (A. P.-C.)

Curare Alkaloids. Permanganate oxidation of *o*-methylbebeerilene, obtained from bebeerine, resulted in a mixture of acids from which three have been isolated. (I) $C_{17}H_{14}O_9.2H_2O$ (m. p. 207°, anhydride m. p. 245°). (II) $C_{17}H_{14}O_9.2H_2O$, an isomer (m. p. 262–264°). (III or IV) $C_{34}H_{30}O_{16}$ (m. p. 283–4°). Thus the structures (V) and (VI) are indicated for *o*-methylbebeerine methochloride and *o*-methyl bebeerilene.



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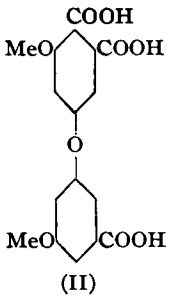

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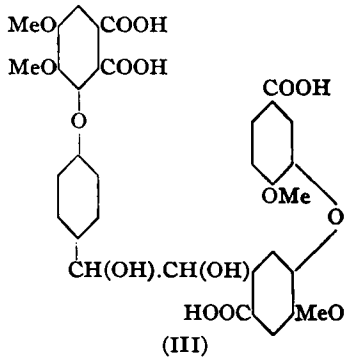

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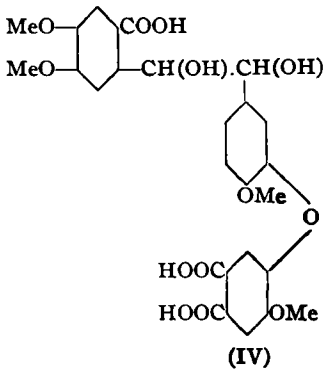

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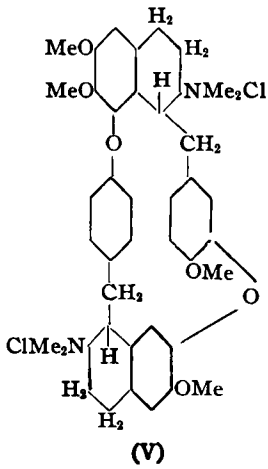

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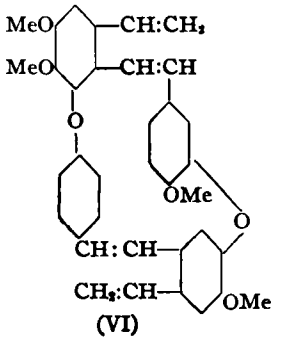


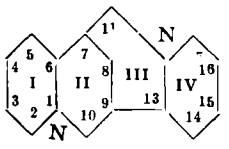
(VI)

—HAROLD KING. *J. Chem. Soc.* (1936), 1276–1279. (G. W. F.)

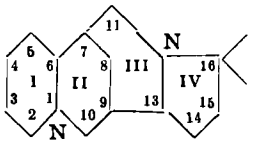
Curarine from Calabash Curare. Finely divided calabash curare was extracted with methyl alcohol and the extract was taken up in water, precipitated with mercuric chloride and treated with hydrogen sulfide. The purified extract was precipitated as the Reineckate which was dissolved in acetone and freed from inactive material by chromatographic adsorption. Efforts to purify the material through its salts were fruitless. A solution of the hydrochloride was treated with sodium anthraquinone-β-sulfonate and gave a crystalline biologically active salt which was converted into an analytically pure picrate. The base, $C_{25}H_{27}N_3O_2$, has been named, from its genesis from *Strychnos toxifera*, toxiferin. From the mother liquors protocatechuic acid was isolated and not succinic acid as stated by Boehm.—H. WIELAND, W. KONZ and R. SONDERHOFF. *Ann.*, 527 (1937), 160. (C. R. A.)

Desoxymorphine-C and Dehydrodesoxymorphine-D—Process for Manufacture of. Morphine is treated with concentrated hydrochloric acid at 50° to 70° C. The dichloro derivative is dissolved in a concentrated, neutral or acid solution of alkali and reduced in presence of noble metal catalysts.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 413,234, Feb. 29, 1936. (A. P.-C.)

α-Didehydrosparteine—Oxidative Decomposition of. Oxidative decomposition of α-didehydrosparteine yields β-alanine, thus indicating the presence of a double bond in ring I of sparteine. The reaction of didehydrosparteine with benzoyl chloride, according to Lipp and Widemann proves that a second double bond is found in the α,β-position to a nitrogen atom attached to tertiary carbon. The position of attachment may be carbon atoms C_9 and C_{12} or C_{13} and C_{14}. Permanganate oxidation of α-didehydrosparteine yields succinic acid which can originate only from ring IV of the sparteine molecule. In view of these oxidation products, formula I of Ing is considered more tenable than formula II.



I



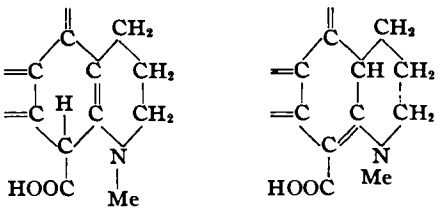
II

—K. WINTERFELD and H. E. RONSBERG. *Arch. Pharm.*, 274 (1936), 48. (L. L. M.)

Domesticine Methyl Ether (*d*-Epidicentrine)—Its Constitution and Synthesis. To decide whether domesticine methyl ether is identical with the dextrorotatory form of epidicentrine or with isodicentrine, racemic epidicentrine was prepared by the diazotization of 6′-amino-N-methyl-1-piperonyl-6,7-dimethoxytetrahydroisoquinoline, $C_{20}H_{24}N_2O_4$, m. p. 132° and the racemate was cleaved by the use of *d*- and *l*-tartaric acid. The resulting *d*-epidicentrine, m. p. 139°, $[\alpha]_D$ 102.2° proved identical with domesticine methyl ether.—Z. KITASATO and H. SHISHIDO. *Ann.*, 527 (1937), 176. (C. R. A.)

Ergot Alkaloid—Process for the Preparation of a New, and Its Salt. The alkaloid is isolated by making use of its solubility in water and its low solubility in chlorinated hydrocarbons.—FABRIQUE DE PRODUITS CHIMIQUES CI-DEVANT SANDOZ. Belg. pat. 414,874, May 30, 1936. (A. P.-C.)

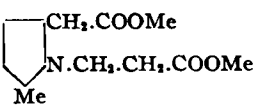
Ergot—Alkaloids of. Physiological activity of ergot alkaloids is accompanied by levorotation and usually by ability to crystallize in association solvents: $[\alpha]_{5461}$ (in chloroform)—ergotoxine −226°, ergotamine −181°, ergometrine [in pyridine −16° (c = 1)], ψ-ergotinine +513°, ergotinine +466°, ergotaminine +450°, ergometrinine +520° [in pyridine +596 (c = 0.5)]. All yield ergine, $C_{16}H_{17}ON_3$ (+598 in chloroform, +635 in pyridine) on alkaline hydrolysis. Using the same method for converting ergotinine into ergotoxine, ergine was converted to isoergine. The latter ($[\alpha]_{5461}$ = +25° in pyridine). The difference between the optical rotations was thus practically identical to that of ergometrine and ergometrinine. Isoergine can readily be converted to ergine; the two differ little in physiological activity. Alkaline hydrolysis of both ergine and isoergine yields an equilibrium mixture of lysergic and isolysergic acids. Isolysergic acid, (obtained from lysergic acid by the action of boiling water) was partially isomerized by alkalis to lysergic acid. It is more dextrorotatory ($[\alpha]_{5461}$ = +365) than lysergic acid ($[\alpha]_{5461}$ = +49, both in pyridine). Treatment of either with barium hydroxide at high temperature yields an optically inactive lysergic acid. Isolysergic acid is more slowly esterified with diazomethane than lysergic acid. It is suggested that the isomerism is due to shifting of a double bond:



—Sydney Smith and G. M. Timnus. *J. Chem. Soc.* (1936), 1440–1444. (G. W. F.)

Ergot Alkaloids—Microscopic Investigation of. I. Ergotamine and Ergotaminine. Addition compounds of ergotamine with acetone, water, ethyl alcohol, methyl alcohol, pyridine, benzene, dichlorethylene and ether were prepared and studied for crystal-optic properties. They were obtained by the action of solvent on solvent-free ergotamine by which the addition compound is produced as a precipitate. For the production of the addition compound with water a special medium was required to function as solvent for both components. Crystals of this compound may be obtained, however, by heating some other ergotamine compound directly with water. All of the molecular compounds with the exception of the one with ether (for which no determination was possible) crystallize in a sphenoidal class. The compounds with water, acetone, pyridine, ethyl and methyl alcohols crystallize in the monoclinic, sphenoidal class; those with benzene and dichloroethylene in the rhombic bisphenoidal class. None of the compounds have true melting points, but melt with decomposition. Heating causes a loss of the volatile components; acetone, water, pyridine, dichlorethylene and benzene compounds, giving melting points of 170° to 185° C. The melting points of the ethyl and methyl alcohol compounds lie between 208° and 210° C. These two compounds are more stable and upon heating show no change in their optical behavior. Ergotaminine crystallizes without solvation from pyridine, acetone, chloroform, alcohol and dichlorethylene in similar three-angled leaflets.—A. Kofler. *Arch. Pharm.*, 274 (1936), 398. (L. L. M.)

Lupine Alkaloids. Ring closure of the ester (I) by means of potassium results in 2-keto-octahydropyridocoline (b. p. 70–75°/1 mm., picrate m. p. 211°). Reduction with zinc resulted in norlupinane (b. p. 38–40°/1 mm., picrate m. p. 194°). Clemmenson reduction of the 1-keto-compound resulted in the base (picrate m. p. 213°). Wolff reduction gave norlupinane and a higher boiling material. This supports the cistrans formulation of octohydropyridocoline and norlupinane previously advanced.



—G. R. Clemp, T. P. Metcalf and R. Raper. *J. Chem. Soc.* (1936), 1429–1431. (G. W. F.)

Lupine Alkaloids—Note on. The imide obtained from anagyrine (m. p. 58–60°) depressed the melting point of $\alpha\alpha$-dimethyl-α'-*n*-amyl succinimide from 64–65° to 53–57°. The latter was prepared from the acid synthesized by condensing ethyl α-cyano-$\alpha'\alpha'$-dimethylsuccinate with *n*-amyl bromide and the resulting amylsuccinate (b. p. 187–191°/22 mm., 137°/0.9 mm.) hydrolyzed and decarboxylated. This proved identical to that obtained from the condensation product of ethyl α-bromoisobutyrate and ethyl *n*-amylmalonate. The anagyrine imide raised its melting point to 59–64° when mixed with cis-α-methyl-α'-*n*-amylglutarimide (m. p. 71–72°). The imide of anagyrine being non-homogeneous, it is concluded that it is, in all probability, α-methyl-α'-*n*-amylglutarimide and the constitutions assigned to lupine alkaloids by Ing and by Clemo and Raper are correct. The imide was synthesized by condensing ethyl α-bromoisobutyrate with ethyl *n*-amylmalonate and imidizing the resultant acid (m. p. 76°). It was also synthesized by a series of condensations from ethyl α-formylpropionate.—H. N. RYDON. *J. Chem. Soc.* (1936), 1444–1448. (G. W. F.)

Morphine and Codeine—Process for Obtaining. An aqueous extract of *Papaver somnifera* is evaporated slightly and extracted at p_H 9 with an organic solvent from which the alkaloids are easily recovered.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 414,632, April 30, 1936. (A. P.-C.)

Morphine Derivatives—Colorimetric Determination of. *Dilaudid* (*Dihydromorphinone hydrochloride*), *Dicodid* (*dihydrocodeinone hydrochloride*) *and Eucodal* (*Dihydrooxycodeinone hydrochloride*). If about 0.1 mg. of the alkaloids mentioned is evaporated with 0.5 cc. of a solution of dimethylaminobenzaldehyde in 20 cc. 95% alcohol and 4 drops of sulfuric acid and the red residue dissolved in 70% alcohol, a yellow solution is obtained. The color is strictly in proportion with the quantity of alkaloid employed. A standard solution of 0.01 mg. dilaudid in 100 cc. alcohol solution is used for comparison.—JUAN A. SÁNCHEZ. *Semana med.* (*Buenos Aires*), 43, II (1936), 713. (A. E. M.)

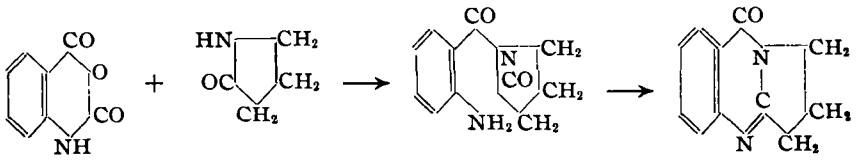
Morphine and Dihydromorphine—Ethers of. Details are given of the preparation of the therapeutic products: morphine alcohol ethyl ether (heterocodethyline or heteroethylmorphine); dihydromorphine alcohol ethyl ether (dihydroheterocodethyline, heteroethyldihydromorphine); and dihydromorphine alcohol methyl ether (dihydroheterocodeine).—LYNDON F. SMALL, assignor to the GOVERNMENT OF THE UNITED STATES. U. S. pat. 2,058,521, Oct. 27, 1936. (A. P.-C.)

Morpholine Ring—Some New Local Anesthetics Containing the. III. Esters of 2-Alkoxycinchoninic Acids. A series of esters of 2-alkoxycinchoninic acids has been prepared. The methods of preparation are given. They show local anesthetic action when tested on the tongue, but no pharmacological measurements are given.—JOHN H. GARDNER and WARREN M. HAMMEL. *J. Am. Chem. Soc.*, 58 (1936), 1360. (E. B. S.)

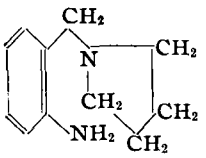
Papaver Floribundum—Alkaloids of. Twenty-eight kilograms of the herb of *Papaver floribundum* was extracted with ethylene chloride, and 0.36% of crude alkaloid was obtained. The mixture was divided into two parts in a solution of caustic soda; of phenolic and non-phenolic characters. Further separation was made of the difference in solubility of the free alkaloids in suitable salt solution. Two alkaloids were obtained of the phenolic type: *armepavine*, $C_{19}H_{21}O_3N$, and *floripavine*, $C_{19}H_{21}O_4N = C_{16}H_{13}O(N.CH_3)(OCH_3)_2OH$, which crystallized in needles from alcohol, m. p. 200–201°, $[\alpha]_D = +90.5°$ (in chloroform). They are also soluble in alcohol, slowly soluble in ether and benzene and insoluble in water. Armepavine hydrochloride, $C_{19}H_{21}O_4N.HCl$, occurs in needles; m. p. 235–236°; soluble in water; picrate in yellowish crystals, m. p. 223–224°; iodomethylate, $C_{19}H_{21}O_4N.CH_3I$, in needles, m. p. 220–221°. Three alkaloids were obtained of the non-phenolic type: *floribundine*, $C_{18}H_{19}O_2N = C_{16}H_{13}O.(N.CH_3).OCH_3$, separates in prisms from acetone, m. p. 195–196°; $[\alpha]_D = -204.28°$ ($CHCl_3$); soluble in chloroform, slowly soluble in alcohol; in acetone (1:35); insoluble in water and alkalis; gives a characteristic violet color with nitric acid; tartrate, separates in needles, m. p. 181–183°; slowly soluble in alcohol; iodomethylate, $C_{18}H_{19}O_2N.CH_3I$, crystals melt at 178–180°. *Floripavidine*, $C_{21}H_{29}O_5N = C_{17}H_{19}(N.CH_3)(OCH_3)(CH_2O_2)_2$, separates in prisms from alcohol; m. p. 241–242°; $[\alpha] = -156.25°$; soluble in chloroform, alcohol and methanol; slowly soluble in benzene and ether; insoluble in water; gives a violet color with nitric acid which turns yellow when it is either diluted with water or left standing exposed to the air; hydrochloride, m. p. 209–210°; hydroiodide separates in crystalline needles slowly soluble in water and alcohol; iodomethylate, $C_{21}H_{29}O_5N.CH_3I$, in needles; m. p. 228–230°. The last of the derivatives which melted at 205–206° and obtained in very small quantities, differs from protopine in many re-

spects.—R. KONOWALOWA, S. YUNUSSOFF and A. ORECHOFF. *Chem. Zentralb.*, 107 (1936), 783. (G. B.)

Peganines—Homologs of. A new synthetic method is described in obtaining pegen-9-one-8 according to the following scheme:



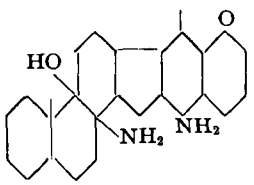
This compound is identical with that obtained by different investigators using other processes than the one used by the authors. A new compound was obtained when this is reduced electrolytically:



The homologs of the pegane derivatives were to be considered further. In accord with other investigators, the authors found that only 0.2 Gm. of vasicine is soluble in 100 cc. of acetone at 25°. It is therefore erroneous to assume that peganine is soluble in acetone as the contrary statement is true. The vasicine melts 15–20° lower than the alkaloid peganine. The authors conclude that the synthesis and constitution of peganines (vasicines) described by other investigators were not correct.—E. SPATH and N. PLATZER. *Chem. Zentralb.*, 107 (1936), 782. (G. B.)

Psilocaulon Absimile, N. E. Br., as a Stock Poison. II. Isolation of the Toxic Alkaloidal Constituent and Its Identification as Piperidine Hydrochloride. Dry plant matter contains the equivalent of 4.5% of piperidine hydrochloride, causing acute cattle poisoning. Chronic poisoning is caused by oxalic acid, of which the plant contains 8.6%.—C. RIMINGTON. *S. Afr. J. Sci.*, 31 (1934), 184; through *J. Soc. Chem. Ind.*, 55 (1936), B., 219. (E. G. V.)

Solanum Pseudocapsicum—Alkaloids from. The leaves were extracted with 80% alcohol, the solvent evaporated, mixed with acetic acid, filtered and shaken out with ether to yield 1.2–1.3% of crude amorphous alkaloid. The acetic acid solution of this alkaloid formed a voluminous precipitate with potassium chromate; this was dissolved in hot alcohol to yield, upon cooling and adding aqueous potassium chromate solution, crystalline solanocapsine chromate (1%). The mother liquor, heated with 5*N* hydrochloric acid, yielded solanocapsidine hydrochloride. Solanocapsine: m. p. 222°, $[\alpha]_D$ +25.5°, $C_{25}H_{42}O_2N_2$ or $C_{26}H_{44}O_2N_2$; solanocapsidine: non-crystalline, m. p. 305°, $C_{26}H_{42}O_4N_2$ or $C_{26}H_{44}O_4N_2$. The possible structure of solanocapsine may be:



—G. BARGER and H. L. FRAENKEL-CONRAT. *J. Chem. Soc.* (1936), 1537–1542. (G. W. F.)

Essential Oils and Related Products

Camphor—Preparation of, from Turpentine. Oven turpentine (pinene fraction 40%) gives only 50% yields of camphor when treated by the pinene hydrochloride or the tetrachlorophthalic

acid procedure; isomerization by Tischtschenko's method, using the prepared clay as catalyst, gives a product containing 33–35% of camphene (I), indicating that fractions other than the pinene one take part in formation of (I). (I) is converted into *iso*borneol, and this into camphor, by the action of basic copper carbonate at 170–204°. A scheme for the industrial preparation of camphor, based on this process, is outlined.—B. N. RUTOVSKI, V. N. KARITSCHEVA, T. P. AMDREEVA, O. M. KLEPIKOVA and L. N. MOGILEVKINA. *J. Chem. Ind. Russ.*, 12 (1935), 1177; through *J. Soc. Chem. Ind.*, 55 (1936), B., 310. (E. G. V.)

Citronella Oil—Analysis of. In determinations of total geraniol, errors may be considerable if flasks are heated over an open flame during acetylation. A specifically constructed Kjeldahl stove is described by use of which the error is limited to 1%. To determine citronellol the sample (2 Gm.), dissolved in 10 cc. of ethyl alcohol, is neutralized with potassium hydroxide (bromothymol blue) and heated with 20 cc. of 0.5*N* potassium hydroxide in ethyl alcohol and 20 cc. of 5% hydroxylamine hydrochloride in ethyl alcohol. After 1 hour (15 minutes in tropics) excess of potassium hydroxide is titrated with hydrochloric acid.—D. R. KOOLHAAS. *Indische Mercuur*, No. 58 (1935), 429; through *J. Soc. Chem. Ind.*, 55 (1936), B., 667. (E. G. V.)

Crithmum Maritimum L.—Essential Oil from. Ninety per cent of the oil from Crimean plants consists of hydrocarbons, among which limonene, *p*-cymene and sabinene were identified. In addition, an unidentified tertiary alcohol, $C_{10}H_{17}OH$, boiling point 205°, is described. Crithmene was not found.—G. A. PEVTZOV. *J. Gen. Chem. Russ.*, 5 (1935), 1185; through *J. Soc. Chem. Ind.*, 55 (1936), B., 171. (E. G. V.)

Essential Oils, Fatty Oils and Synthetic Perfumes—Some Colored Reactions of. From a discussion of the more important colored reactions of oils and synthetic perfumes, it is concluded that, with very few exceptions, they are not specific of a single compound but are common to a whole class of compounds which exist in a large number of essential oils. They can nevertheless be of value if interpreted properly and not considered as decisive in themselves.—SEBASTIEN SABETAY. *Ann. Fals.*, 29 (1936), 402–409. (A. P.-C.)

Lachnophyllum Gossypinum Bge.—Essential Oil of, Nature of the Crystalline Substance Extracted from. Essential oil of *Lachnophyllum gossypinum* Bge. contains β-pinene, camphor and a crystalline compound $CH_3—CH_2—CH_2—C\equiv C—C\equiv C—CH=CH—COOCH_3$. Alkali first produces a saponification with fixation of water at the triple bonds, followed by the usual decomposition of the β-diketone and formation of methyl-*n*-butylketone and oleic acid on the one hand and of valerianic and acetylacrylic acids on the other; the latter acid is in turn decomposed by the alkali. Oxidation of this substance with nitric acid produces oleic acid and a considerable quantity of oxalic acid; hydriodic acid produces partial saponification with formation of methyl iodide. Even small doses of the compound exert a strong action on the sympathetic nervous system.—W. W. WILLIAMS, V. S. SMIRNOV and V. P. GOLMOV. *J. Obchtch. Khim.*, 5 (1935), 1195–1204; through *Chimie & Industrie*, 36 (1936), 557. (A. P.-C.)

Mentha Crispa—Oil of, Composition of. Cineol, linalool (56.65%), carvone (12.13%) and limonene were identified.—T. S. KUSNER and F. L. GRINBERG. *J. Appl. Chem. Russ.*, 8 (1935), 1221; through *J. Soc. Chem. Ind.*, 55 (1936), B., 219. (E. G. V.)

Nepeta Botryoides, Artemisia Sacrorum, var. Minor Ledb., Kryloviana and Hyssopus Ambiguus—Essential Oils of. The oil of *Nepeta botryoides*, Ait. contains 55% of thymol, in addition to unidentified hydrocarbons and alcohols; that of *Artemisia sacrorum* contains phenols 16%, aldehydes 14%, cineol 19.26%, camphor 5.96% and hydrocarbons and alcohols; that of *Artemisia kryloviana*, Steinb. (*A. Sieversiana*, Willd., var. *Pygmaea*, Kryl) contains *l*-α-pinene 9%, cineol 12.1%, camphor 16.3%, azulene 6.5% and alcohols (chiefly tertiary) 28.3%; and that of *Hyssopus ambiguus* (Traut.) Iljin contains cineol 8.21%, β-pinene 22% and *l*-pinocamphone 12.6% and 37% of a readily polymerizable substance, $C_9H_{13}O$.—G. V. PIGULEVSKI, Z. G. TSCHISTOVA, M. A. FAWASKAJA, J. A. DRANITZINA. *J. Gen. Chem. Russ.*, 5 (1935), 1798, 1801, 1804, 1811; through *J. Soc. Chem. Ind.*, 55 (1936), B., 571. (E. G. V.)

Oil of Caraway. A discussion of the history, commerce, cultivation, distillation, physical properties and chemical constituents of oil of caraway. The methods for determination and isolation of carvone are given. The oil may be adulterated by addition of limonene or ketones.—ERNEST GUENTHER. *Am. Perfumer*, 33 (1936), No. 4, 66–70. (G. W. F.)

Oils—Relation between Fatty and Essential. In the examination of 12 plants (including laurel, nutmeg and rue), no instance was found of the simultaneous occurrence of a given methyl-

ketone (*e. g.*, methyl undecyl ketone) in the essential oil and of the fatty acid corresponding to it (*e. g.*, myristic acid) in the fatty oil from the same plant; support for the hypothesis that the essential oils have been derived by the degradation of the fatty oils through the methylketone stage is, therefore, lacking.—K. TÄUFEL and O. BAUER. *Fette u. Seifen*, 43 (1936), 131; through *J. Soc. Chem. Ind.*, 55 (1936), B., 1004. (E. G. V.)

Phenylacetaldehyde—Polymerization of. Phenylacetaldehyde (99%, $d_{15°}$ = 1.0310, $n_D^{20°}$ = 1.5250), exposed to diffused autumn daylight for 30 days showed different extent of polymerization in a white bottle (74.7% phenylacetaldehyde, $d_{15°}$ = 1.0494, $n_D^{20°}$ = 1.5340) or a brown bottle (93.5%, $d_{15°}$ = 1.0316, $n_D^{20°}$ = 1.5245). Exposed to diffused summer daylight, the rate was greater in a brown bottle. In a brown bottle after 30 days—74%, $d_{15°}$ = 1.0769, $n_D^{20°}$ = 1.5475 (originally 99%, $d_{15°}$ = 1.0330, $n_D^{20°}$ = 1.526); after 60 days—53.8%, $d_{15°}$ = 1.0940, $n_D^{20°}$ = 1.5585; in white bottle, after 30 days—88.8%, $d_{15°}$ = 1.0408, $n_D^{20°}$ = 1.5316; after 60 days—82.4%, $d_{15°}$ = 1.0485, $n_D^{20°}$ = 1.5323. Polymerization is also illustrated by curves obtained by use of a capillariscope. The latter is a devise primarily for testing essential oils for age and purity. It consists of a capillary tube (stalagmometer) from which the oil is allowed to drop on capillary paper from a height of 1.5–2 cm. When the liquid is completely absorbed by the paper, it is placed on an illumination box and examined every five minutes with a cyclometer to measure the size of the circles. This is continued for 60 minutes or until the diameter is 7 cm. Isoamyl alcohol is used as a standard.—ARNO MUELLER. *Am. Perfumer*, 33 (1936), No. 5, 50–52.

(G. W. F.)

Picene—New Synthesis of. The condensation of *o*-xylylene dicyanide with *o*-nitrobenzaldehyde gave a dinitrile which was saponified with concentrated sulfuric acid to the amide from which di-(*o*-nitrobenzal)-*o*-phenylene diacetic acid was prepared by treatment with sodium nitrite in cold concentrated sulfuric acid according to the method of Bouveault. Reduction with sodium sulfide gave the corresponding amino compound which by Pschorr's phenanthrene synthesis was converted into 12,13-picene dicarboxylic acid. Vigorous heating with soda lime gave crystalline picene, $C_{22}H_{14}$, m. p. 356°.—H. WALDMANN and G. PITSCHAK. *Ann.*, 527 (1937), 183.

(C. R. A.)

"Tea Tree" Oil. The oil obtained from the leaves of the "tea tree," *Melaleuca alternifolia*, is non-toxic, non-irritating and non-poisonous, and its relatively high germicidal efficiency, when compared with carbolic acid, has led to its commercial exploitation. Its success depends upon its ability to dissolve pus, thus making available sterile tissue which readily heals. The value of the oil does not depend upon one particular constituent, but upon a unique natural blend consisting of α- and γ-terpinene, cymene, cineol (8%), *d*-α-pinene, Δ-terpineol-4, sesquiterpenes, etc. Although certain essential oils have been favored on account of their content of cineol, for example, eucalyptus oil, it has been found necessary to limit the amount of cineol in tea tree oil to under 10%. The normal commercial distillate of *Melalcuca alternifolia* contains less than 5% of cineol.—ANON. *Pharm. J.*, 137 (1936), 438. (W. B. B.)

Glycosides, Ferments and Carbohydrates

Folinerin. The effectiveness of this crystalline chemically individual glucoside prepared from the leaves of *Nerii Oleandri* has been tested in severe heart insufficiency in 42 cases. It has full digitalis action in its effect on the pulse, diuresis and body weight and gave the desired therapeutic effect in three cases with irregular rhythm. It is more quickly and easily resorbed than digitalis and its cumulative effect is somewhat shorter. Clinically, folinerin stands between the digitalis glucosides and strophanthin. Pharmacologically it is a fundamentally excellent medicament for cardiac therapy which requires a wider, fuller and more accurate clinical testing.—WERNER SCHULER and HEINZ OTT. *Münch. med. Wochschr.*, 84 (1937), 49–52. (C. R. A.)

β-Glucosides of Tertiary Alcohols—Fermentative Hydrolysis of Some. The following glucosides were prepared:

	Amylene Hydrate	Methyl-diethyl-carbinol	Triethylcarbinol
M. p.	127°–128°	110°–111°	96.5°–97.5°
$[\alpha]_D^{20}$	− 17.90°	− 16.95°	−13.44°

Only the first has been previously reported. The first two glucosides are anhydrous while the third crystallizes with one molecule of water. The experiments on hydrolysis were carried out

as previously described (*Biochem. J.*, 28 (1934), 1733), using emulsin. There is a considerable difference in the constants of hydrolysis of the three glucosides. The greatest decline is in the case of the triethylcarbinol-*β*-*d*-glucoside which is explained on the basis of the great affinity of the carbinol for the ferment. On comparing the constants of the rates of hydrolysis of the glucosides of the following alcohols: methyl, ethyl, isopropyl and tertiary-butyl and the following carbinols: trimethyl, dimethyl-ethyl, methyl-diethyl and triethyl, it is seen that the constant is small if the carbon atom carrying the glucosidic linkage is also bound to three identical atoms or groups of atoms.—STIG VEIBEL and HANNE LILLELUND. *Compt. rend.*, 203 (1936), 692.

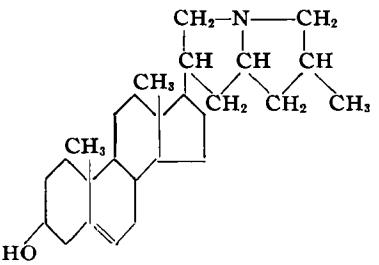
(G. W. H.)

Honey Diastase—Determination of Activity of. The diastase value is defined as the number of mg. of glucose produced by the action, under specified conditions, of the diastase in 1 Gm. of honey on an excess of starch. The values of several samples of honey were approximately parallel to Gothe's diastase numbers but occasional divergences were observed.—K. TÄUFEL, M. DE MINGO and H. THALER. *Z. Unters. Lebensm.*, No. 71 (1936), 190; through *J. Soc. Chem. Ind.*, 55 (1936), B., 614. (E. G. V.)

Salicin—Estimation and Identification of the Glucoside. 25–50 cc. of solution containing 1–5 mg. of silicin are slowly evaporated down to 10 cc. with 25 cc. of concentrated hydrochloric acid at 80°. The resultant saliretin, $C_{14}H_{14}O_8$, is filtered off, washed and determined either gravimetrically or colorimetrically against standards. After dissolving in 5–10% aqueous sodium hydroxide salicin may be detected by the red color it gives with alkaline *p*-diazobenzenesulfonic acid anhydride.—M. B. JACOBS and N. T. FARINACCI. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 279. (E. G. V.)

Sinigrin—Preparation of, Note on the. The Gadamar method for the preparation of sinigrin is unreliable, but the alternative procedure of Herissey and Boivin, by which sugars are first removed by yeast fermentation, gives excellent results.—SAM MORELL and KARL P. LINK. *J. Biol. Chem.*, 114 (1936), 123; through *Chem. Abstr.*, 30 (1936), 4623. (E. V. S.)

Solanidine—Occurrence of, in Sprouting Potatoes. Besides the alkaloidal glucoside, solanine, the aglucone solanidine (m. p. 213°, $[\alpha]_D^{21°}$ in alcohol (1 = 2, c = 0.3668) −0.209°, $[\alpha]_D^{21°}$ −28.5°) was present and extracted with ether. The amount varied with varieties of potatoes from none to 0.04%; it was present only in the buds and shoots, not in the tuber. The formula is suggested for solanidine:



—G. R. CLEMO, W. McG. MORGAN and R. RAPER. *J. Chem. Soc.* (1936), 1299–1300.

(G. W. F.)

Sucrose—Detection of, in Vegetable Material. Sucrose (I) is converted by exhaustive acetylation into its octaacetate, which is insoluble in water and is identified by determination of the acetate value and by reconversion into (I).—K. TÄUFEL, H. THALER and G. KOPP. *Z. Unters. Lebensm.*, 71 (1936), 390; through *J. Soc. Chem. Ind.*, 55 (1936), B., 900. (E. G. V.)

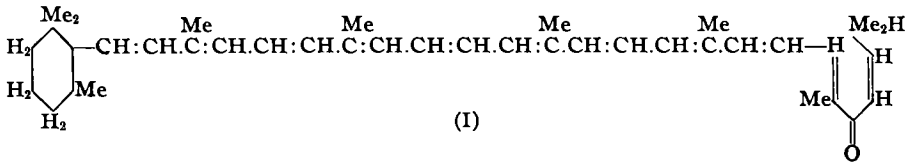
Sugar Alcohols. V. Chemical Constitution and Sweet Taste. A comparison of relative sweetness of ethylene glycol, glycerol, *i*-erythritol, pentaerythritol, *l*-arabitol, *d*-mannitol, *d,l*-sorbitol, *i*-dulcitol and inositol to sucrose was made. No relationship between the number of carbon atoms or hydroxyl groups in the molecule or the molecular weight or spatial configuration and sweet taste was observed in the compounds compared.—C. JELLEFF CARR, FRANCES F. BECK and JOHN C. KRANTZ, JR. *J. Am. Chem. Soc.*, 58 (1936), 1394. (E. B. S.)

Yucca Aloifolia—Sugar Content of Fruit of. The fruit is found to contain 32.82% of sucrose and 8.67% of glucose with a trace of fructose. The last-named arises as a result of slight

hydrolysis in the aqueous-alcoholic solution after extraction, caused by acid liberated from the fruit.—A. GIAMMONA and B. TANTERI. *Ann. chim. applicata*, 26 (1936), 96; through *J. Soc. Chem. Ind.*, 55 (1936), B., 564. (E. G. V.)

Other Plant Principles

Algæ—Chemistry of. Myxoxanthin, which the authors conclude is characteristic of the Myxophyceae, was prepared by extracting the carotenoid pigments from *Oscillatoria rubrescens* by treatment with alcohol and ether. The unsaponifiable portion partitioned between light petroleum and 90% methyl alcohol. The epiphasic carotenoids gave three pigmented zones; β-carotene was isolated from the lowest zone and myxoxanthin (m. p. 168–169°) from the middle. The structure (I) is suggested for myxoxanthin ($C_{40}H_{54}O$). The hydrophasic pigments gave lutein (m. p. 191°) and a new pigment myxoxanthophyll, $C_{40}H_{56}O_7$ (±2H), m. p. 169–170°, optical maxima 5180, 4845, 4500 A, in chloroform; $[\alpha]Cd$ −255° in alcohol.



(I)

—I. M. HEILBRON and B. LYTHGOL. *J. Chem. Soc.* (1936), 1376–1380. (G. W. F.)

Carotene and Sterols—Isolation of, from the Unsaponifiable Matter of Cock's-foot. From the unsaponifiable fraction of a light petroleum extract of cock's-foot were isolated the pure β-isomeride of carotene, a mixed xanthophyll which was not further investigated and a sterol fraction, largely sitosterol, from which ergosterol was isolated as the pinacol to the extent of 0.4% of the total sterols. The identification of these substances is discussed.—A. POLLARD. *Biochem. J.*, 30 (1936), 382; through *Physiol. Abstr.*, 21 (1936), 703. (E. V. S.)

Colombo Root—Bitter Principles of. Columbin, $C_{23}H_{24}O_7$, was finally obtained in a pure crystalline form. Chasmanthin was obtained when colombin was reacted with alkalis. No methylated products were yielded when columbin was reacted with methyl toluosulfonate, but a new product namely carboxyiso-V-columbin, $C_{20}H_{22}O_6$, was obtained. It occurs in needles and crystallizes from alcohol, m. p. 194–195°.—K. FEIST, E. KUNST and R. BRACHVOGEL. *Chem. Zentralb.*, 107 (1936), 787. (G. B.)

Sarsaparilla Root—Sapongenins of. The measurement of surface tension and potential of tigogenin, gitogenin, sarsapogenin, digitogenin and smilagenin were conducted to indicate the position of the "OH" group in the molecule. The first three form stable, condensed, liquid films of small compressibility, having limiting areas at zero pressure of 38, 39.5 and 42 sq. A., respectively. The other two form films which cannot be accurately measured. The acetate of smilagenin forms films of gaseous type, the pressure rising to 10 dynes/cm. at 120 sq. A. per molecule. The accepted formulas for tigogenin and gitogenin are confirmed. In the case of sarsapogenin, the OH groups can be on C_2, C_3 or C_4. It is not identical with smilagenin, the melting points, optical rotation and deoxy-compounds being different.—F. A. ASKEW, S. N. FARMER and G. A. R. KON. *J. Chem. Soc.* (1936), 1399–1403. (G. W. F.)

Scopoletin—Detection of, in the Roots of Gelsemium and Belladonna. In microsublimates obtained from the cortex of gelsemium root, two crystal forms occur which melt at different temperatures. The crystal-optic examination of vacuum sublimates, prepared from the scopoletin isolated from this drug, yielded two modifications, a stable and a labile form melting respectively at 204–205° C., and 193–195° C. The same crystals occur in the alcoholic extract of belladonna root.—R. FISCHER and H. EHRLICH. *Arch. Pharm.*, 274 (1936), 268. (L. L. M.)

Sterols. VI. Synthetic Preparation of Œstrone (Theelin). This communication outlines briefly the synthesis of œsterone from ergosterol. Neo-ergosterol, dehydro-neo-ergosterol and tetra-hydro-neo-ergosterol are intermediate products.—RUSSELL E. MARKER, *et al. J. Am. Chem. Soc.*, 58 (1936), 1503. (E. B. S.)

Tea and Coffee—With Special Reference to Their Alkaloids and Tannins. The following papers are especially interesting because of the variety of subjects discussed in connection with

the above title. The papers are all quite elaborate, some of them quite technical and therefore one interested in the subject should look up the original publications for details. **Tannins—Constitution of, Including Those of Tea and Coffee.**—PETER MAITLAND. *Analyst*, 61 (1936), 288–293. **Tea Tannin—Experimental Work on.**—M. NIERENSTEIN. *Analyst*, 61 (1936), 294. **Tannins—Survey of the Methods of Analyzing.**—C. AINSWORTH MITCHELL. *Analyst*, 61 (1936), 295–300. **Caffeine—Pharmacology of, and of Tea and Coffee.**—G. ROCHE LYNCH. *Analyst*, 61 (1936), 300–302. **Tea—Tannin Content of.**—P. J. NORMAN and E. B. HUGHES. *Analyst*, 61 (1936), 303–309. **Tea—"Tanninless."**—H. H. BAGNALL. *Analyst*, 61 (1936), 310–314.

(A. H. C.)

Theotannin—Chemistry of Tea. I. Theotannin in Relation to Green Leaf. I. Theotannin (I) is prepared by extracting newly plucked green leaf of tea with boiling water, washing the concentrated solution with benzene, saturating with salt, extracting (I) by ethyl acetate and precipitating with chloroform. The properties of (I) are described. In the Loewenthal-Procter method of determination of (I) the indigocarmine used has a different potassium permanganate value before and after precipitation of (I); a modified method, applying a correction for this and using a large quantity of kaolin and a slower and more dilute infusion, is described and a conversion factor given. The formaldehyde method of determination is criticized: boiling the reaction mixture precipitates not only (I), but also non-tannins of phenolic nature; there is also co-precipitation of non-phenolic substances containing nitrogen. A new method is described: the infusion is treated with 40% formaldehyde and hydrochloric acid at room temperature for not less than 3–4 hours and the precipitate washed with cold ethyl alcohol, dried and weighed. The conversion factor using pure (I) is 0.997; (I) may thus give a soluble as well as an insoluble product with formaldehyde. The factor using infusions is 0.98. Results agree with those by the iodometric method and are not affected by changes in constitution of (I). The iodometric method involves errors if time is not standardized and if the amount of tea is not regulated to give constant (I). Salt-gelatin does not completely precipitate (I); amount of precipitate varies with the amount in solution. A modified procedure is detailed. The iodometric "totals" and "precipitation" equivalents are in the constant ratio 1.418:1. The former, in cc. of 0.05*N* sodium thiosulfate, is converted into mg. of (I) by the factor 0.955; for tip, first and second leaves and stalk separate factors must be applied. The iodometric "totals" method without precipitation is recommended as being rapid and simple. (I) in green leaf varies periodically with season of year and with rainfall. The % (*a*) of (I) in the leaf is related to the % (*b*) of dry weight: $a = 0.378 (b - 8)$. The iodometric "totals" equivalent may thus be used to determine dry weight, and hence moisture content. Caffeine combines with (I) to give caffeine theotannate (II), soluble in methyl alcohol and in hot, but not in cold water. One molecule of caffeine combines with two molecules of (I); the ratio by weight varies with molecular weight of (I) from different sources. (II) is extracted from green tea by methyl alcohol and obtained in high purity it yields up to 10%; it is suggested that the aroma of tea is due to this compound. (II) in warm water + sodium bicarbonate darkens and on acidification gives a colored precipitate of caffeine oxytheotannate, which is present in black tea and is responsible for the "creaming down" phenomenon. (I) contributes 90% of the total reducing properties of soluble constituents of green leaf: its function as a substitute for carbohydrate in metabolic processed in the tea plant and the relation of (I) in the aerial portions to starch in the root and to the wood cells are discussed. Structures proposed for (I) by Deuss, Yamamoto and Tsujimura are reviewed. (I) is considered to be a variable mixture of tannins, for which no standard formula can be proposed and in which the aliphatic side-chain attached to the quercitin skeleton is especially subject to change during the growth of the plant. (I) treated with 10 or 20% sulfuric acid yields no gallic acid; the red precipitate obtained is a theophlobaphene, a condensation product of (I). 75% sulfuric acid and (I) yield another theophlobaphene, also obtained from a concentrated green-tea infusion, in much greater quantity than could be derived from the free (I) in the latter; the excess is ascribed to decomposition of (II). As theophlobaphenes are tasteless and odorless, insoluble in cold and almost insoluble in hot water, their significance in the manufacture of black tea has been over-emphasized.—W. S. SHAW and K. B. W. JONES. *United Planters' Assoc. S. India Bull.*, No. 4a, (1935), 1; through *J. Soc. Chem. Ind.*, 55 (1936), B., 520. **II.** Methods of determining (I) in black tea are reviewed. The iodometric "totals" method is rapid, but rough; owing to variations in the degree of oxidation of (I), the "precipitation" method should be employed for accurate results. Exist-

ing figures for (I) content of black tea are unreliable. There is no substantial loss of (I) during manufacture. The ratio of iodometric "totals" to "precipitation value" is an index of the reducing power of the "filtrate" portion of the infusion. During withering this rises and falls slightly; during oxidation (rolling) there is a rapid drop, arrested by firing. Iodometric analysis can be used to indicate the extent to which oxidation has proceeded (avoiding over-oxidation) and the efficacy of the firing. Chemical processes in the manufacture of black tea are reviewed. The hypothesis that withering involves cleavage of a sugar from (I) is untenable; suggested that the most important change is the formation of (II). Partial de-esterification of pectin may also occur. (I) serves as the colloid basis of the peroxidase which causes subsequent oxidation and probably contains manganese. The relations between degree of withering, concentration of (I) and % dry weight are discussed and tabulated. Wither should be standardized and calculated from (I) or from % dry weight. A balance for rapidly testing the degree of wither is illustrated. In dry weather, control of wither by humidification of factories is desirable.—W. S. SHAW and K. B. W. JONES. *Ibid.*, No. 4b, 1; through *J. Soc. Chem. Ind.*, 55 (1936), B., 521. (E. G. V.)

Fixed Oils, Fats and Waxes

Calophyllum Oil—Preparation and Therapeutic Use of Refined. The crude oil expressed from the kernels of *Calophyllum inophyllum* and having an acidity of about 19% (as oleic acid) due to the presence of resin acids, can be refined by treatment with sodium hydroxide to an acidity of 0.5%. Tests at Sungei Buloh confirm results reported previously from Fiji, that intramuscular injection of the refined oil or its ethyl esters produces striking alleviation of nerve-pain in lepers; the oil is not habit-forming.—C. D. V. GEORGI and G. A. RYRIE. *Malay. Agric. J.*, 24 (1936), 3; through *J. Soc. Chem. Ind.*, 55 (1936), B., 379. (E. G. V.)

Celastrus Paniculatus Willd—Seeds of, Chemical Examination of Fixed Oil from. The seeds and oil of *Celastrus paniculatus*, a shrub of the natural order Celastrineæ, have been used in indigneous 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 for the presence of an alkaloid was obtained when the seeds were tested with Prollius fluid. Steam distillation of the seeds (300 Gm.) 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 aqueous extract of the seeds contained traces of tannins and of reducing sugars, but no starch; the amount of reducing sugars did not increase on acid hydrolysis. Extraction of the crushed seeds with petroleum ether (b. p. 50–60°) gave 52.2% of a thick brownish yellow oil with an unpleasant taste; the purified oil had the following constants: d_{25}^{25} 0.9586, n^{30} 1.4747, saponification value 239.2, acid value 44.4, iodine value (Hanus) 102.9, Reichert-Meissl value 62.8, acetyl value 130.1, unsaponifiable value 5.7%, Hehner value 75.2%. Saponification of the oil, followed by extraction of the sodium salts with ether to remove unsaponifiable matter, and subsequent liberation of the free acids by acidification gave the mixed fat acids with the following constants· mean molecular weigh 275.3, iodine value (Hanus) 112.6, solid or saturated acids (Twitchell's method) 30.54% (mean molecular weight 264, iodine value 1.8), liquid or unsaturated acids 68.48% (mean molecular weight 335.7, iodine value 154.9). The liquid acid mixture upon esterification with methanol gave esters which distilled 170–180° at 1 mm. pressure. Addition of bromine to the mixed liquid acids yielded hexabromostearic acid, and oxidation with permanganate gave a mixture of di-, tetra- and hexahydroxystearic acids; thus the presence of oleic, linoleic and linolenic acids were established. The solid saturated acids were converted to the methyl esters and fractionated at 1 mm.; saponification of the various fractions indicated the presence of palmitic, stearic (identified through *p*-phenylphenacyl ester, m. p. 97.5°) and lignoceric acid (phenylphenacyl ester, m. p. 100°). Since the Reichert-Meissl value was high, examination for volatile oils by saponification of the oil with alcoholic potassium hydroxide, followed by steam distillation, showed the presence of acetic acid and a small amount of benzoic acid. The unsaponifiable matter consisted of a small amount of a phytosterol, m. p. 136° (acetate, m. p. 119°), and largely a white granular nonnitrogenous material, m. p. 61–61.5°, which was neutral in character and did not give any tests for the presence of either hydroxy or keto groups.—O. N. KUMARASWAMY and B. L. MANJUNATH. *J. Indian Chem. Soc.*, 13 (1936), 353; through *Chem. Abstr.*, 30 (1936), 7781. (E. V. S.)

Fats—Action of Commonly Occurring Organisms on. Many organisms decompose fats yielding aldehydes and acids. Their relation to rancidity is discussed.—A. SEDUICH. *Bull. State*

Inst. Agric. Microbiol. U. S. S. R., 5 (1933), 299; through *J. Soc. Chem. Ind.*, 54 (1935), B., 858. (E. G. V.)

Fats—Antioxidants and Autoxidation. IV. Lecithin as an Antioxidant. Commercial lecithins act as mild antioxidants for refined cottonseed oil, but have little effect with lard and none with mixtures of lard and cod liver oil. The antioxidative activity is associated with the kephalins (I) present (? "oxidized" kephalin), pure lecithin being inert. The activity of (I) may be due to the monobasic phosphoric acid radical. No quantitative relation between the amount of (I) used and the prolongation of the induction period could be found.—H. S. OLCOTT and H. A. MATTILL. *Oil and Soap*, 13 (1936), 98; through *J. Soc. Chem. Ind.*, 55 (1936), B., 556. (E. G. V.)

Fatty Acid Bromides—Reduction of. Instead of brominating the fatty acids with acid methanol the attempt was made to use zinc dust and 5*N* sulfuric acid with methanol. Zinc and sulfuric acid were also used with 20% and 10% in excess. α-Tetrabromstearic acid, using soy bean acid, dissolved in benzene; 68 cc. of bromine was added and cooled; the yield was 102 Gm., m. p. 115°. Bromination was done as follows: 40 Gm. tetrabromstearic acid, 20 Gm. zinc dust and 60 Gm. of absolute methanol were mixed, cooled, then heated to boiling, 8 cc. of acid and 60 cc. methanol added, and boiled for one hour. The methyl ester is taken up in petrolcum ether. The yield was 19 Gm. of linoleic acid methyl ester; iodine number 172.1; saponification number 1.1–1.5. In the absence of sulfuric acid the yield of linoleic acid was only 4.5 Gm. Ten Gm. of hexabromstearic acid from linseed oil was boiled with 6.4 Gm. of zinc dust and 30 cc. methanol then replaced with 25 cc. concentrated acid and 25 cc. methanol and boiled for 30 minutes, 3.5 Gm. of linoleic acid methyl ester were obtained; iodine number 258.5–259.2. From 200 Gm. of olive oil in the same manner, 114 Gm. of polybromide and 1.6 Gm. of ester were obtained; iodine number 365. In using 10 Gm. of polybromide, zinc and glacial acetic acid, 2.1 Gm. of unsaturated fatty acids wereo btained; iodine number 357.7–360.1. Ten Gm. of dibromstearic acid when bromated with zinc-methanol-hydrochloric acid rendered 6.5 Gm. of oleic acid methyl ester; iodine number 80.1–80.9.—W. KIMURA. *Chem. Zentralb.*, 107 (1936), 537. (G. B.)

Fatty Oils—Oxidation of Unsaturated, by Atmospheric Oxygen. II. The oxygen absorption (weight-increase) for (*a*) seal and cod liver oils and (*b*) oleic acid and wheat-germ oil corresponds to 2 and 3 oxygen atoms per double linking, respectively; exposure to diffuse daylight accelerates the oxidation without appreciably altering the quantitative relation. In the case of cod liver oil the correction (determined experimentally) for the loss of volatiles during oxidation was found to be negligible.—J. M. AAS. *Fettchem. Umschau*, 43 (1936), 52; through *J. Soc. Chem. Ind.*, 55 (1936), B., 558. (E. G. V.)

Hydroxy-Fatty Acids—Hydroxyl Number of, Determination of. The hydroxy-fatty acid is acetylated with a pyridine-acetic anhydride mixture and the acetic anhydride and acetic acid remaining are distilled off into potassium hydroxide and estimated by back titration with hydrochloric acid. By comparison with the titration obtained after a blank acetylation, the amount of acetic anhydride which has reacted with the fatty acid can be determined. The error of the method is 1–3% and 0.5 Gm. of fatty acid is used.—K. HINSBERG. *Biochem. Z.*, 285 (1936), 125; through *Physiol. Abstr.*, 21 (1936), 600. (E. V. S.)

Mercury Alcoholates—Aromatic, of Hydroxy Fatty Compounds. Antiseptic compounds of relatively low toxicity such as phenylmercury oleic alcoholate (which melts incompletely at 102° C. and completely at 131° C.) and phenylmercury alcoholate of sodium ricinoleate, m. p. 62° to 63° C., are prepared by reaction of phenylmercury hydroxide with oleic alcohol, sodium ricinoleate, cetyl and myricyl alcohols, etc.—CARL N. ANDERSEN, assignor to LEVER BROS. Co. U. S. pat. 2,056,945, Oct. 13, 1936. (A. P.-C.)

Oiticica Oil—Color of. The pressing of fresh seed under ideal (laboratory) conditions yields a very pale oil of low acid value.—H. A. GARDNER. *Nat. Paint Var. Assoc.*, Circ. 481, (1935), 158; through *J. Soc. Chem. Ind.*, 55 (1936), B., 558. (E. G. V.)

Perfumes—Synthetic, from Castor Oil. Octinenoic esters are prepared from methyl ricinoleate. Undecenoic acid obtained from castor oil is converted into nonoic acid and the alcohol, $C_9H_{19}OH$.—S. NAMETKIN, V. ISAGULIANTZ and V. ELISEEVA. *Maslob. Shir. Delo* (1935), 31; through *J. Soc. Chem. Ind.*, 55 (1936), B., 395. (E. G. V.)

Rue (Ruta Graveolens)—Seed Fat of. II. Oleic, linoleic and linolenic acids have been identified in the oil from the seeds; the solid (saturated) acids, constituting 1.95% of the total

acids (Twitchell separation), had mean molecular weight 283.9. Neither decoic nor lauric acid (possible precursors of the methylketones in essential oil of rue) can be present in appreciable quantities.—K. TÄUFEL, H. THALER and O. BAUER. *Fettchem. Umschau*, 43 (1936), 55; through *J. Soc. Chem. Ind.*, 55 (1936), B., 556. (E. G. V.)

Tung Oil—Frosting of. Frosting and wrinkling of films containing tung oil is not prevented by 4% of "Mittel," believed to contain rosin or a phenolic resin.—G. G. SWARD. *Nat. Paint Var. Assoc.*, Circ. 481 (1935), 168; through *J. Soc. Chem. Ind.*, 55 (1936), B., 558. (E. G. V.)

Tung Oil—Optical Dispersion of, as an Index of Purity. Conflicting data are recorded.—G. G. SWARD. *Nat. Paint Var. Assoc.*, Circ. 481 (1935), 154; through *J. Soc. Chem. Ind.*, 55 (1936), B., 558. (E. G. V.)

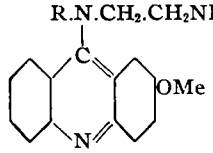
Vegetable Oils—Determination of Clouding Substances in. None of the customary methods—the Russian and American standard methods and the centrifugal method—gives trustworthy results. In the method described, 12.5 cc. each of oil and acetone are shaken with 3 cc. of acidified saturated aqueous calcium chloride in a centrifuge cup so constructed that the oil-water interface lies within a graduated constriction. After centrifuging for fifteen minutes at 1500–1600 revolutions per minute, the volume of the precipitate is read off the scale.—E. MIRER. *Z. Unters. Lebensm.*, 71 (1936), 345; through *J. Soc. Chem. Ind.*, 55 (1936), B., 799. (E. G. V.)

Unclassified

Acetone and Formaldehyde—Contribution to the Study of the Mechanism of the Condensation between. It was previously thought that the condensation between acetone and formaldehyde in water was due to the hydration of the aldehyde. Working under anhydrous conditions and substituting a solution of formaldehyde in anhydrous alcohol for the aqueous solution, the condensation was likewise obtained. From 116 Gm. of acetone and 100 Gm. of a 30% solution of formaldehyde in anhydrous alcohol, 25.6 Gm. of pure butanol-1-one-3 and 9.4 Gm. of methylene-2-butanol-1-one-3, were obtained.—LOUIS-ANDRÉ GERMANN. *Compt. rend.*, 203 (1936), 586. (G. W. H.)

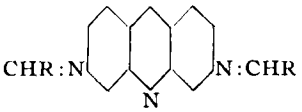
Acridine Compounds—Synthesis of, Related to Atebrin. 5-Phenoxy-3-methoxy-acridine (m. p. 146–147°) prepared by heating 5-chloro-3-methoxyacridine with phenol containing potassium hydroxide, refluxed with β-diethylaminoethylalkylamine to yield possible antimalarials. Yield with butyl alcohol was very poor; shorter alkyl groups gave better yields. The structures (I; R = Pr or Me) differ from the secondary base (R = H) in that they are soluble in dilute alcohol yielding non-fluorescent solutions which decompose at room temperature.

(I)

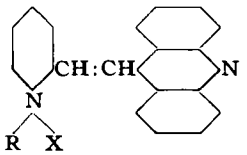


Several compounds were synthesized containing different nuclear constituents. 1,3,5-Trichloro- (m. p. 175°) and 5-chloro-1-bromo-3-methyl acridine (m. p. 159–161°) obtained by the action of phosphorus oxychloride on 2,4-dichloro- and 2-bromo-4-methyl-diphenylamine-2′-carboxylic acids, treated with sodium phenoxide in phenol yielded corresponding 5-phenoxy-derivatives. These were then condensed with β-diethylaminoethylamine or α-diethylamino-*n*-propylamine to yield 1,3-dichloro- (decomp. 200°) and 1-bromo-3-methyl-5-(β-diethylaminoethylamino) acridine (dihydrobromide decomp. 230°) or the corresponding α-diethylamino-*n*-propylamino compounds. 2,4,4′-Trichlorodiphenyl-2′-carboxylic acid chloride condensed in benzene with α-diethylamino-*n*-propylamine to yield the amide which cyclized to form 1,3,7-trichloro-5-(α-diethylamino-*n*-propylamino) acridine (m. p. 155°). In the same manner 7-chloro-1-bromo-5-(α-diethylamino-*n*-propylamino)-3-methylacridine (m. p. 130–131°) and 1,4-dichloro-5-(α-diethylamino-*n*-propylamino) acridine (dihydrobromide decomp. 225–230°) were produced from 4′-chloro-2-bromo-4-methyldiphenyl-2′-carboxylic acid chloride and 2,5-dichlorodiphenylamine-2′-carboxylic acid chloride, respectively.—R. GOODALL and W. O. KERMACK. *J. Chem. Soc.* (1936), 1546–1550. (G. W. F.)

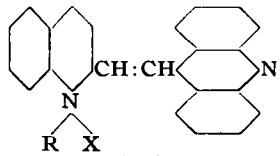
Acridine Derivatives—Preparation and Therapeutic Properties of. Anils of the general type (I) were prepared by heating 2:8-diaminoacridine in a solution of the requisite aldehyde, using piperdine as a catalyst. They were not sufficiently soluble and their salts were too easily hydrolyzed for biological tests. Styryl compounds of the type (II) were prepared by condensing acridine-5-aldehyde with α-picolinealkiodide or of the type (III) with quinaldinealkiodide, using piperidine as a catalyst: *s*-(2-pyridyl methiodide)-5-acridylethene (II, RX = MeI) and its hydrochloride, *s*-(2-pyridyl ethiodide)-5-acridylethene (II, RX = EtI), *s*-2-pyridyl-5-acridylethene dimethiodide (as II, RX = MeI), *s*-2-quinolyl-5-acridylethene dimethosulfate (as III, RX = Me_2SO_4) and *s*-(2-quinolyl ethiodide)-(5-acridyl methiodide) ethene (as III, RX = EtI) were examined for antiseptic properties. All were moderately antiseptic toward staphylococcus, the last being more active; in serum the activity was lessened. The activity toward *B. coli* was weaker, but intensified somewhat in serum medium as compared with water. They were devoid of trypanocidal action. All were only moderately toxic to mice (1 cc. of 1:200–1 cc. of 1:600 per Gm. body weight) including *s*-(2-pyridyl ethiodide)-(5-acridyl methiodide)ethene (as II, RX = EtI), *s*-(2-quinolyl methiodide)-5-acridylethene (III, RX = MeI) and its hydrochloride, and *s*-2-quinolyl-5-acridylethene dimethochloride (as III, RX = MeCl).



(I)



(II)



(III)

—W. L. GLEN, M. M. J. SUTHERLAND and F. J. WILSON. *J. Chem. Soc.* (1936), 1484–1487. (G. W. F.)

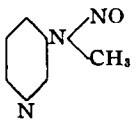
Alcohols—Process for the Manufacture of, from Olefines. For producing an alcohol such as ethyl alcohol, an olefine such as ethylene is combined with water vapor at a temperature of 100° C. or higher in the presence of a catalyst consisting of a compound of a platinum group metal or of gold, silver, copper, iron, nickel or tantalum, such as copper phosphate.—ADRIANUS J. VAN PESKI and SIEGFRIED L. LANGEDIJK, assignors to SHELL DEVELOPMENT CO. U. S. pat. 2,055,269, Sept. 22, 1936. (A. P.-C.)

Alcohols—Stereoisomeric, Preparation of. The alcohols in question can be obtained by reducing in neutral or alkaline solution compounds of the type of dehydroandrosterone or derivatives thereof substituted at the hydroxyl group.—SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 415,995, July 31, 1936. (A. P.-C.)

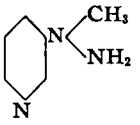
Amidines—Preparation of New, Having a Therapeutic Action. Nitriles, amides or thioamides of fatty acid phenoxy compounds containing substituents in the phenyl nucleus are converted into the corresponding amidines.—SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 416,014, Aug. 31, 1936. Nitrile, amide or thioamide derivatives of arylhydroxy fatty acid compounds which are not substituted in the arylhydroxy nucleus are converted into the corresponding amidines in which the substituents are linked to the amidine nitrogen atom.—SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 416,130, Aug. 31, 1936. (A. P.-C.)

3-Aminopyridine—Derivatives of. 3-Aminopyridine was prepared according to the method given by Mayer-Bode. This method, however, is also used to obtain directly N-methylated derivatives from 3-brompyridine. In the case of 3-monomethylaminopyridine this method is the most favorable: 3-Dimethylaminopyridine is prepared by methylating directly 3-aminopyridine. The chemical behavior of 3-methylaminopyridine is almost wholly analogous with the behavior of 2-methylaminopyridine. With acetic acid anhydride, 3-methylaminopyridine gives a crystalline acetyl derivative which yields a nitrate when in contact with a dilute solution of alcohol. Using nitric acid, it forms a new compound nitrosamine (I)

(I)



which, when reduced, yields 3-pyridylmethylhydrazine (II).

(II) 

Brominating (II) forms a dibrom-derivative, probably 2,6-dibrom-3-methylaminopyridine. In nitrating 3-methylaminopyridine in concentrated sulfuric acid a new compound 3-methylnitroaminopyridine resulted, which on reducing yielded (II). 3-Methylnitroaminopyridine yields two aminonitropyridine compounds, when sulfuric acid is added. The first compound is orange in color and melts at 110°, the second light yellow and melts at 188°. The first has the structure of a 2-nitro-3-methylaminopyridine and when reduced with stannous chloride 2-amino-3-methylaminopyridine is formed; m. p. 124°. A similar compound is obtained with 3-methylaminopyridine is reacted with sodamide. In the presence of copper sulfate and methylamine with the aid of heat the compound 3-brom-6-aminopyridine yields a new product, 6-amino-3-methylaminopyridine, m. p. 70°. The structure of the yellow nitromethylaminopyridine compound was not definitely established; however, the nitro group is possibly attached to the 6th (para) position. The 3-dimethylaminopyridine compound does not react with diazo derivatives, cannot be nitrated and does not react with arsenous chloride. Nitrating with acetic acid anhydride converts it to a trinitro-derivative, while brominating forms a mono- and a dibrom-derivative. 3-Acetyl- and 3-formylaminopyridine yield characteristic nitrates in dilute alcohol. The nitrate of the 3-acetyl derivatives are changed over to 3-oxipyridine with sulfuric acid at 50°. With bromine the two acyl derivatives form compounds containing two bromine atoms.—E. PLAZEK, A. MARCINKOW and CH. STAMMER. *Roczniki Chem.*, 15 (1935), 365. *Lwow Tech. Hochschule;* through *Chem. Zentralb.*, 107 (1936), 1219.

(G. B.)

p-Aminobenzoic Acid—β-Amoxyethyl Esters of. The preparation and properties of six new β-amoxyethyl esters of *p*-aminobenzoic are given. The physiological properties are not given.—H. V. ASHBURN, A. R. COLLETT and C. L. LAZZELL. *J. Am. Chem. Soc.*, 58 (1936), 1549. (E. B. S.)

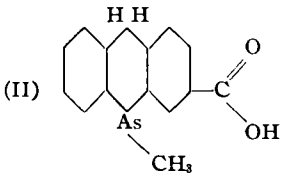
Antimalarials—Chemistry of. A brief review.—T. N. GHOSH. *Current Sci.*, 4 (1936), 576; through *J. Soc. Chem. Ind.*, 55 (1936), B., 395. (E. G. V.)

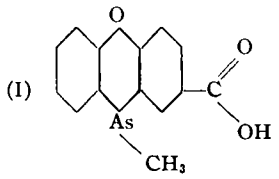
Arsenic Compounds—Organic. The author presents an extensive discussion of the organic arsenic compounds. Part A covers a classification in which several structural formulas are given. The (1) aliphatic compounds include Arrhénal (sodium methylarsenate), methylarsenate of mercury, ferric methylarsenate, disodium methylarsenate, sodium cacodylate (mono-sodium dimethylarsenate) and the cacodylates of mercury, calcium, magnesium, guaiacol, etc.; the (2) cyclic compounds are divided into two groups: (*a*) those with a pentavalent arsenic including Atoxyl (sodium-*p*-aminophenylarsenate), Arsacetine (acetylatoxyl), Hectine, Tryparsamide, Stovarsol, Neostovarsol, Acetlarsan, Arsaminol, Trèparsol, Arsybismol and (*b*) those with a trivalent arsenic including arsenophenylglycine, Salvarsan, Neosalvarsan, Sulfarsenol, Salvarsan-Sodium, Silver salvarsan, Neosilver salvarsan, Galyl, Ludyl, Arsalyt, Albert 102 and Solusalvarsan; (3) the heterocyclic compounds include pyridine derivatives as Selektan and quinoline derivatives, sulfoxylsalvarsan, etc. Part B covers a chemotherapeutic discussion in which the relation between the constitution of the various compounds and their effect on the trypanosomes is covered. Part C is a special part in which the preparation as well as the analysis of each of the items mentioned in A is discussed. Tests for identity, purity and quality are given as well as a résumé of the monographs appearing in various pharmacopœias. The series concludes with a section on biological methods of investigation.—W. C. KEIZER. *Pharm. Weekblad*, 73 (1936), 1200–1209, 1245–1266, 1294–1309. (E. H. W.)

Arsenic—Preparation of Pentavalent. Successful use of Dynarsan (*m*-acetamido-*p*-hydroxybenzenearsenic acid) is described.—Z. SZENTKIRALYI. *Orvosi Hetilap*, No. 79 (1935), 661; through *J. Soc. Chem. Ind.*, 55 (1936), B., 667. (E. G. V.)

Arsenics—Stereochemistry of. The tertiary arsenic splits up much easier in the optical antipodes, than the N-compounds. On further investigation it was found that this matter was not as complicated as it appeared to be at first. Three isomers of (methylphenylarsenic)-

benzoic acid, $(CH_3.C_6H_5)As.C_6H_4COOH$, were obtained. In comparing the *m*-compounds (II) with the recently split up compound 10-methylphenoxarsenic-2-carbonic acid (I) it was





observed that the optical activity of (I) depends exclusively on the presence of the asymmetric As-atoms. All attempts failed to split up the optical antipodes in (II). This indicates that the optical activity of (I) and also of chlorbenzophenarsine depend on the asymmetric molecules themselves; and also because of the presence of the 3-asymmetric As-atoms. The difficulties in splitting up of the 3-asymmetric As-atom compounds are of the same origin as that of the N-groups.—G. KAMAI. *Chem. Zentralb.*, 107 (1936), 758. (G. B.)

Barbituric Acids—N-Alkyl and N-Aryl Substituted. A series of N-alkyl and N-aryl barbiturates containing secondary and tertiary groups has been prepared. A table of melting points and pharmacological activities is given. Certain members offer some promise as short acting intravenous hypnotics and anesthetics.—D. L. TABERN and E. H. VOLWILER. *J. Am. Chem. Soc.*, 58 (1936), 1354. (E. B. S.)

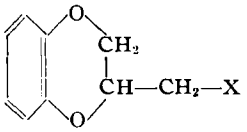
Barbituric Acids—Di- and Trialkyl. The preparations of eight new dialkyl malonic esters and twenty-two di- and trialkyl barbituric acids are described. A table of properties of the esters and a table of physical and pharmacological properties of the barbituric acids are given.—H. A. SHOULE and WILBUR J. DORAN. *J. Am. Chem. Soc.*, 58 (1936), 1358. (E. B. S.)

Barbituric Acids—Manufacture of Aqueous Solutions Suitable for Injection from Substituted. A substituted barbituric acid is intimately mixed with a water-soluble aliphatic polyhydric alcohol, an amount of dilute alkali solution is added exactly equivalent to the acid, and the mixture is agitated till a clear solution is obtained.—HEINRICH GRUBER. U. S. pat. 2,067,318, Jan. 12, 1937. (A. P.-C.)

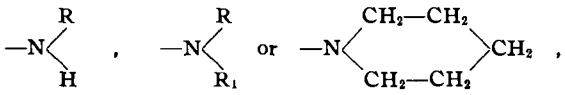
Barbituric Acids—Method of Converting, into Stable Aqueous Solutions. An aqueous solution is prepared of an alkali metal salt of a substituted barbituric acid in which the alkali and acid are combined in substantially equimolecular proportions. The solution is stabilized by addition of a water-soluble, non-albuminous, organic nitrogen-containing hydrotropic substance, in such amount as to prevent any substantial development of free acid or alkali.—HEINRICH GRUBER. U. S. pat. 2,067,317, Jan. 12, 1937. (A. P.-C.)

Barbituric Acids—Some N-Aryl. The preparation and some properties of a series of 1-aryl-5,5-diethyl barbituric acids and a series of 1-aryl-5,5-ethyl-*n*-butyl barbituric acids is given. The N-aryl groups in both series were phenyl, *o*-, *m*- and *p*-tolyl, *o*-, *m*- and *p*-anisyl, *o*-, *m*- and *p*-phenetyl, and *α*- and *β*-naphthyl and the 5,5-dialkyl groups are diethyl, ethyl-*n*-butyl, ethyl-isobutyl and ethylisoamyl. Also a series containing dialkyl amino groups on the N-aryl radicals are given. These include *p*-dimethylaminophenyl and *p*-diethylaminophenyl. The results of the pharmacological tests are to be published elsewhere.—JOHANNES S. BUCK. *J. Am. Chem. Soc.*, 58 (1936), 1284, 2059. (E. B. S.)

Benzodioxane—Therapeutic Bases Derived from. Bases derived from benzodioxane having the general formula:



in which X is



where R and R_1 are alkyl, possess a paralyzing action on the sympathetic nervous system to the extent not only of neutralizing that of adrenalin, but even of reversing it. For example, the injection of salts of these bases not only prevents adrenalin from exerting its hypertensive action, but still further, the injection of adrenalin following that of the bases in question brings about a considerable lowering of the blood pressure. These bases are prepared by treating benzo (chloromethyl) dioxane with organic primary or secondary amines. If desired the benzo (bromomethyl) dioxane may be used.—ERNEST FOURNEAU, assignor to SOCIÉTÉ DES USINES CHIMIQUES RHÔNE-POULENC. U. S. pat. 2,056,046, Sept. 29, 1936. (A. P.-C.)

Bismuth—Organic Salts of. Therapeutic basic bismuth salts of monoalkyl esters of cyclohexane-1,1-diacetic acid are produced by reaction of a basic bismuth compound such as the subnitrate with an ester such as the monoethyl ester of cyclohexane-1,1-diacetic acid in the presence of an equivalent amount of caustic soda solution (by heating in olive oil).—FRANK L. PYMAN and ALEXANDER P. T. EASSON, assignor to BOOTS PURE DRUG CO., LTD. U. S. pat. 2,054,731, Sept. 15, 1936. (A. P.-C.)

2,3-Butylene Glycol—Microbiological Preparation of. In the microbiological preparation of 2,3-butylene glycol, the fermentation stage is accelerated by passing through the fermenting mash a gas consisting chiefly of hydrogen.—MARINUS A. SCHEFFER, assignor to N. V. NEDERLANDSCHE GIST-EN SPIRITUS-FABRIEK. U. S. pat. 2,064,359, Dec. 15, 1936. (A. P.-C.)

Citric Acid—Manufacture of. A liquid containing citric acid and impurities in both true and colloidal solution is treated with a salt of a metal capable of forming an insoluble citrate in amount less than required to reach the p_H point corresponding to the coagulation and precipitation point of the impurities present; the precipitated citrate is separated by filtration and decomposed with an acid.—PIETRO LEONE, assignor to "ARENELLA" SOCIETA ITALIANA PER L'INDUSTRIA DELL' ACIDO CITRICO ED AFFINI. U. S. pat. 2,066,892, Jan. 5, 1937. (A. P.-C.)

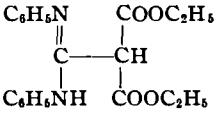
Citric Acid—Process for Manufacture of. A solution of carbohydrate is subjected to acid fermentation with molds until the solution contains 12 to 15% by weight of citric acid.—J. ZANDER. Belg. pat. 414,290, April 30, 1936. (A. P.-C.)

Cyclopentanopolyhydrophenanthrene Series—Acyl Compounds of, Process for Preparation of. Compounds of the cyclopentanopolyhydrophenanthrene series, containing an OH—C—X group (in which X is a hydrocarbon radical), are subjected to the action of acylating agents.—SCHERING-KAHLBAUM A.-G. Belg. pat. 413,977, March 31, 1936. (A. P.-C.)

2,4-Dioxy-3,3-dialkyltetrahydropyridines—Process for Preparation of. Alkaline condensation agents are made to react on aminomethylene-dialkylacetoacetic esters obtained by the action of ammonia on oxymethylene-dialkylacetoacetic esters.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 415,768, June 30, 1936. (A. P.-C.)

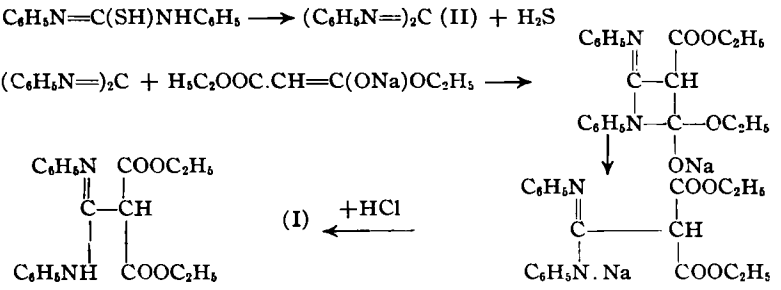
2,4-Dioxytetrahydropyridine Derivatives—Process for Manufacture of. Alkali salts of 2,4-dioxypyridine, 2,4-dioxy-6-methylpyridine, or their 3-monoalkyl derivatives, are made to react with halogen alkyl, β-bromoallyl or β-methylallyl compounds in aqueous solution in presence of copper or of cupric compounds.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 416,504, Aug. 31, 1936. (A. P.-C.)

Diphenylthiourea and Carbodiphenylimide—Reaction of Sodium Malonyl Ester on. Contrary to expectation the compound diphenylthiobarbituric acid was not obtained when sodiummalonyl ester was reacted on diphenylthiourea, instead the conversion in benzene with substitution with hydrochloric acid, rendered a compound (I)



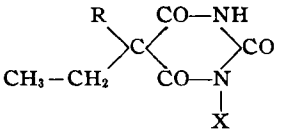
$C_{20}H_{22}O_4N_2$, m. p. 166–167°. There is also only one active (H) atom in this compound. In saponifying this compound with concentrated alkalis, it yielded 2 moles of aniline; in saponifying

it with dilute alkali solutions it rendered the compound $C_6H_5N{=}C(CH_3)NHC_6H_5$, m. p. 131–132°. Because the building up of the compound in I is accompanied by hydrogen sulfide, the intermittent compound was carbodiphenylimide (**II**). As a matter of fact the substitution of sodium malonyl ester with the compound in (**II**), yielded 75% of the compound in **I**. The construction of the compound in I is analogous to the building up of diphenylurea and diphenylguanidine from diphenylthiourea by desulfurizing with oxides of metals in the presence of water and aniline. The course is explained as follows:



—W. J. TISCHTSCHENKO and N. W. KOSCHKIN. *Chem. Zentralb.*, 107 (1936), 541. (G. B.)

Ethylbarbituric Compound—Saturated Branched-Chain Primary-Alkyl. There is claimed as new a barbituric compound represented by the following formula:



in which R represents a saturated branched-chain primary-alkyl radical having a straight chain containing 5 to 7 carbon atoms with a methyl substituent on at least one of the number 2 and number 4 carbon atoms, and X represents a member of the group consisting of hydrogen, an alkali metal, ammonium, monoalkyl ammonium and di-alkyl ammonium.—HORACE A. SHOULE, assignor to ELI LILLY & CO. U. S. pat. 2,066,280, Dec. 29, 1936. (A. P.-C.)

Formaldehyde—Process of Making. In the production of formaldehyde by the catalytic oxidation of methyl alcohol, the methyl alcohol is oxidized in vapor phase in contact with a porous mass consisting of a relatively inert, relatively infusible, rigid, porous carrier impregnated and coated with a mixture of vanadium oxide and an oxide of another metal included in the fifth and sixth groups of the periodic system.—ELTON B. PUNNETT, assignor to NATIONAL ANILINE AND CHEMICAL CO., INC. U. S. pat. 2,065,394, Dec. 22, 1936. (A. P.-C.)

Formaldehyde—Process of Making. Ethylene is mixed with air and passed over a molybdenum oxide catalyst on a silica gel base at a temperature which will cause partial oxidation of ethylene to formaldehyde.—RUDOLPH L. HASCHE, assignor to A. O. SMITH CORP. U. S. pat. 2,066,622, Jan. 5, 1937. (A. P.-C.)

Germicidal Mercury Compounds. Details are given of the production of phenyl mercury diphenate, m. p. 110–120° C., phenyl mercury benzilate, m. p. 157–158° C., phenyl mercury tannate (decomposes above 150° C.), phenyl mercury 3-hydroxy-2-naphthoate, m. p. 205–206° C., phenyl mercury α-naphthoate, m. p. 108.5–109° C., and phenyl mercury naphthalate, m. p. 181–184° C., which may be used in aqueous or other solutions or in tooth pastes, soaps, ointments, etc. The method for producing these compounds consists in causing the polynuclear acid and a compound containing an aromatic mercury radical, such as phenyl mercury hydroxide, to react together.—CARL N. ANDERSEN, assignor to LEVER BROS. CO. U. S. pat. 2,056,161, Oct. 6, 1936. (A. P.-C.)

Glycol Salicylic Ether—Acyl Esters of, Process for Manufacture of. Alkali salts of salicylic acid are heated with β-chloroethyl esters of aliphatic acids.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 414,891, May 30, 1936. (A. P.-C.)

p-Hydroxybenzoic Acid Benzyl Ester—Alkaline Earth Metal Salts of. Salts such as the calcium and magnesium salts of the ethyl, propyl, isopropyl, butyl, isobutyl, isoamyl and benzyl esters of *p*-hydroxybenzoic acid are suitable for use as antiseptics and for preserving foods and beverages. Details are given for the manufacture of the calcium salt of *p*-hydroxybenzoic acid butyl ester and the magnesium salt of *p*-hydroxybenzoic acid benzyl ester.—WILLIAM H. ENGELS and JOHN WEIJLARD, assignors to MERCK AND CO. U. S. pat. 2,056,176, Oct. 6, 1936. (A. P.-C.)

Hydroxyketones—Preparation of New, and Their Esters. Diesters of diols of the type of androstane-diol-3,17 are partially saponified. The liberated carbinol group in 3-position is oxidized to a ketone group and the resultant ketone esters are purified and saponified.—SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 415,994, July 31, 1936. (A. P.-C.)

8-Hydroxyquinoline—Process for Manufacture of, and Its 5-Sulfonic Acids. 8-Chloroquinoline or 2-chloro-1-aniline-5-sulfonic acid is converted into 8-chloroquinoleic sulfonic acid, and the latter (or its salts) converted into hydroxyquinoleic sulfonic acid by hot alkaline treatment. The sulfonic groups is removed by known methods.—J. D. RIEDEL-E. DE HAEN AKT. Belg. pat. 414,617, April 30, 1936. (A. P.-C.)

Iodosalicylic and Acetyliodosalicylic Acids—Process for Obtaining, and Their Salts. In the process using the alkaline method, diethyl ether is added to the reaction mass. In the second process, salicylic acid in hydroalcoholic solution is treated with iodine in presence of iodic acid.—E. VIEL. Belg. pat. 413,803, March 31, 1936. (A. P.-C.)

Isoöxycarbonic Amides—Process for Manufacture of. Isoöxyazolcarbonic compounds, containing one carboxyl and two hydrogen or alkyl radicals, are converted into reactive acid derivatives which can be converted into secondary amines.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 413,518, Feb. 29, 1936. (A. P.-C.)

Isothiourea-isopropylether. There is claimed as new isothiourea-isopropylether, which forms water-soluble salts with acids, the hydrobromide having a melting point of 77° C. and the picrate of 190° C.—BRUNO PUETZER, assignor to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,063,461, Dec. 8, 1906. (A. P.-C.)

Mercury Silicate—Organic, and Process of Preparation. There is claimed as new organic mercury compounds in which one valency of the mercury is attached to an organic radical and the other to a silicic acid.—FRITZ SCHÖNHÖFER and WILHELM BONRATH, assignors to WINTHROP CHEMICAL CO., INC. U. S. 2,067,100, Jan. 5, 1937. (A. P.-C.)

N-Methyl-C,C-allylisopropylbarbituric Acid—Process for Obtaining. C,C-Allylisopropylbarbituric acid is treated with a methylating agent; or N-methyl-C-isopropylbarbituric acid is treated with a halogenated alkyl radical; or allylisopropyl barbiturate is treated with methylurea. In order to obtain the product in a dry stable form, an alcoholic solution having a high concentration of the product is placed in ampuls; the bulk of the solvent is removed by evaporating at ordinary temperature under reduced pressure, and the last traces removed by heating rapidly.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 415,310; 415,311, May 30, 1936. (A. P.-C.)

Monarda Menthæfolia—Chemistry of. Preliminary report is made of chemical investigation of a species of Monarda which grows in Wyoming and Colorado.—R. S. JUSTICE. *J. Am. Pharm. Assoc.*, 25 (1936), 850. (Z. M. C.)

Naphthidine—Preparation of. Naphthidine is a satisfactory oxidation-reduction indicator, particularly as an internal indicator in the volumetric determination of iron and chromium by means of a dichromate. A method is described for the preparation of the reagent, preparing first azonaphthalene from α-naphthalamine hydrochloride, reducing this to hydrazonaphthalene and then rearranged to naphthidine.—S. COHEN and R. E. OESPER. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 306. (E. G. V.)

Naphthoquinonic Arsenical Compounds—Preparation of. 1,2-Naphthoquinone polysulfonic acids, in which one of the sulfonic groups is in 4-position, are treated in presence of oxidizing agents with aminobenzene arsinic acids or their derivatives.—SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 412,669, Jan. 31, 1936. (A. P.-C.)

1-Phenylnaphthalines—Derivatives of. The compound 1-phenylnaphthaline was formed by dehydrating 3,4-dihydro-1-phenylnaphthaline; the mononitro derivative was found to be 4-nitro-1-phenylnaphthaline; the diamine derivative is identical with 3,4-diamino-1-phenylnaphthaline. When the last named compound is placed in contact with phenanthraquinone, a new

product results, which was identified as 1-phenylnaphthaline-3,4-phenanthrazine.—V. VESELY and F. STURSA. *Chem. Listy Vedu Prumysil*, 29 (1935), 257; through *Chem. Zentralb.*, 107 (1936), 1121. (G. B.)

2-Phenylquinoline Series—Synthetic Investigation in. I. 6-Brom- and 4-brom-2-phenylquinoline-4-carboxylic acids are obtained from 5-brom-isatin and acetophenone or from isatin and *p*-bromacetophenone by the method of W. Pfitzinger for the synthesis of Atophan. The bromine in these phenylquinoline derivatives is not reactive, and the derivatives do not in consequence lend themselves to the Grignard reactions. They may be regarded as brom-atophans. To characterize them, a number of derivatives were prepared among which are: esters, hydrazides, amines and urethanes.—K. FEIST and M. KULINSKI. *Arch. Pharm.*, 274 (1936), 244. (L. L. M.)

Pyridine-*o*-dicarboxylic Acids—Substituted Amides of, Preparation of. Pyridine-*o*-dicarboxylic acids or their derivatives are converted into diamides by substituting aliphatic radicals at the amido nitrogen atom.—SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 412,577, Jan. 31, 1936. (A. P.-C.)

Pyrogallol—New Developers in the Series of. The acetylation of certain fractions of wood tar and distillation of the product gives limited yields of a crystalline acetate which, on saponification, yields a new photographic developer, pyrogallol monomethyl ether, m. p. 41°, easily soluble in water and readily condensed with methenamine or urea to give higher melting but photographically equally active compounds.—H. SCHULTES. *Angew. Chem.*, 50 (1937), 84. (C. R. A.)

Terpene-oxide Preparations—Stabilized. A fat-soluble dyestuff capable of absorbing chemically active light is added to a solution of terpene-oxide in a liquid halogenated hydrocarbon to stabilize the solution.—STANISLAUS DEICHSEL, assignor to WINTHROP CHEMICAL CO. INC. U. S. pat. 2,066,717, Jan. 5, 1937. (A. P.-C.)

BIOCHEMISTRY

Antirachitic Products—Process for Obtaining. Unsaponifiable constituents of invertebrates are irradiated.—N. V. PHILIPS' GLOEILAMPENFABRIEKEN. Belg. pat. 415,573, June 30, 1936. (A. P.-C.)

***l*-Ascorbic Acid—Process for Preparation of.** Acid-reacting substances are made to react with esters of bi-methylenic ethers of 2-aceto-*l*-gulonic acid.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 415,751, June 30, 1936. (A. P.-C.)

Ascorbic Acids and Methods of Preparation. A glyoxylic acid ester is made to act on an aldo-sugar in an alkaline medium or on *l*-xylonic acid nitrile in an alcoholic solution of alkaline reaction.—BURCKHARDT HELFERICH and OTTO PETERS. U. S. pat. 2,068,453, Jan. 19, 1937. (A. P.-C.)

Betaine—Determination of, in Sugar Beet By-Products. The authors summarize their work as follows: "Betaine in sugar beet by-products—molasses and molasses beet pulp—can be determined with a considerable degree of accuracy by removing proteins with basic lead acetate, reducing trimethylamine oxide to the base with a zinc-copper couple, boiling off all volatile bases and finally precipitating the betaine as a periodide by means of iodine solution. The periodide is dissolved in alcohol and the solution titrated with sodium thiosulfate solution. Owing to the slight solubility of the periodide, a factor of cc. $N/20$ $Na_2S_2O_3$ × 0.001181 is recommended, instead of the theoretical 0.001171. In samples in which the sugar-content exceeds 2% it has been found necessary to remove the sugars before proceeding with the determination of betaine. It is recommended that the concentrated solution containing the betaine should be treated with concd. sulfuric acid, the charred mass lixiviated with water and the final determination of betaine made on the filtrate."—J. W. BLOOD and H. T. CRANFIELD. *Analyst*, 61 (1936), 829–835. (G. L. W.)

Calciferol and Vitamin D_3—Chemistry of. A review paper on the recent work of vitamin D Irradiated 7-dehydrocholesterol and the tunny liver vitamin are probably identical. It would appear that the C_{22}=C_{23} double bond in calciferol is responsible for its exceptionally potent effect on rachitic rats, compared with that on chicks. The low activity of irradiated 7-dehydrositosterol may be due either to the absence of the C_{22}=C_{23} double bond, or to the extra carbon atom in the side chain, or both. 7-Dehydrostigmasterol which in chemical structure is very similar to calciferol, is antirachitically inactive on irradiation, which is not in accord with the above findings

on hemical structure and vitamin activity. It has been suggested that the number of carbon atoms in the side chain has a profound effect on the absorbability of sterols. Difficulty in accepting such an explanation, however, arises from the effect that ergosterol shows, like sitosterol and other plant sterols, poor absorbability, while cholesterol is very well absorbed, yet the irradiation product of ergosterol is apparently absorbed as easily as that of dehydrocholesterol.—A. L. BACHARACH. *Nature*, 138 (1936), 387–389; through *Scient. Abstr.*, 7 (1936), 227. (E. V. S.)

Casein—Determination of, by Formol after Precipitation with Acid. Casein is precipitated from milk by the method of Moir (*Analyst*, 56 (1931), 147) and washed free of excess acid. The precipitated casein is dissolved in 4–5 cc. of $N/10$ alkali on a water bath, cooled to 21–24° and neutralized to phenolphthalein with $N/10$ alkali using a color standard prepared from an equal volume of the original milk and a few drops of 0.01% rosaniline acetate as a guide to the end-point in this and the subsequent titration. Four cc. of reagent formaldehyde solution (40%) are added and the titration with alkali continued to the same end-point. "The formol titer is influenced by the volume of the solution, the formalin concentration and the temperature, but is not affected by variations in the time allowed for the action of the formalin. Casein can be estimated with an accuracy of $\pm 0.05\%$, the Moir method of casein estimation being taken as standard. The conversion factor for formol titration of casein from 20 cc. milk with $N/10$ caustic soda, under the specified conditions, is 0.92."—F. H. MCDOWALL and A. K. R. MCDOWELL. *Analyst*, 61 (1936), 824–828. (G. L. W.)

Dextrose—Manufacture of. In the production of a high-purity crystalline dextrose from a starch-converted dextrose solution by crystallization in a vacuum pan, a relatively constant vacuum is maintained during the stage at which the dextrose is deposited from solution on the nucleus crystals; as the operation proceeds the temperature is reduced by adding fresh solution to the batch at a rate faster than the rate at which the water content is evaporated so as to gradually reduce the boiling point of the solution; finally, near the end of the operation, water is added and the boiling is continued.—WILLIAM B. NEWKIRK, assignor to INTERNATIONAL PATENTS DEVELOPMENT CO. U. S. pat. 2,065,724, Dec. 29, 1936. (A. P.-C.)

Follicular Hormones—Hydrogenation Products of, and Process for Preparation. Female sexual hormones or products containing them are reduced in alkaline solution by means of metals or alloys which can liberate hydrogen in presence of aqueous alkaline solutions.—SCHERING-KAHLBAUM A. G. Belg. pat. 412,701, Jan. 31, 1936. (A. P.-C.)

Fruits and Vegetables—Ascorbic Acid Content of, with Special Reference to the Effect of Cooking and Canning. The vitamin C content of 20 different English-grown fruits and vegetables has been determined by indophenol titration. Considerable variation is found in the amount of C in different parts of individual fruits and vegetables. Storage at room temperature causes rapid decrease in C content of vegetables, but the loss is diminished at 0°. The effect of cooking and canning on C in plant tissues has been studied and the % destruction found to be comparatively small. C is extracted from fruits and vegetables by the liquid in which it is heated and finally becomes evenly distributed throughout tissue and liquid. Biological tests on bottled gooseberries, canned black currants and canned spinach purée showed good agreement with the results of chemical tests. The C content in canned materials tends to fall on storage, but for all practical purposes the loss is not great. Raw and heated plant tissues are compared for their antiscorbutic value in human diet.—M. OLLIVER. *J. Soc. Chem. Ind.*, 55 (1936), 153T. (E. G. V.)

Greek Fruit—Vitamin Content of. Figs, Carob Beans, Sultanas, Grapes. Figs contained 2.4 units per Gm. of vitamin A, 0.48 unit of B_1 and 0.4–0.5 unit of B_2; C and D were not detected. The beans contained no appreciable amount of any vitamin. Sultanas form a rich source of B, particularly of B_1; A was present in traces; C and D were not detected. Grapes showed marked antiscorbutic acitivity. Most of the vitamin was found in the juice after pressing.—M. SCHIEBLICH and V. VLASSOPOULOS. *Z. Unters. Lebensm.*, 71 (1936), 415; through *J. Soc. Chem. Ind.*, 55 (1936), B., 904. (E. G. V.)

Honeysuckle—Biochemical Researches on Some Species of (Lonicera). IV. The variation in the glucosidal principles in *Lonicera nigra* during the growing season is taken up. The collections of the parts—leaves, bark, one-year branches, fruits—were made several times during the course of the season and were treated in the same manner as described in earlier papers. The results of the studies which were chiefly observations of optical rotation before and after hydrolysis

by invertase and emulsin were recorded in tables. In the leaves, the reducing sugars and the sugars hydrolyzable by invertase varied in the reverse sense until the fruits are formed, from which time the two decreased in a parallel manner; during the yellowing of the leaf, there was a diminution of sucrose and an increase of reducing sugar. The maturation of the fruits was accompanied by an increased production of reducing sugars. The formation of young branches used much of the reducing sugar and the principles hydrolyzable by emulsin.—O. BEGUIN. *Pharm. Acta Helv.*, 11 (1936), 202. (M. F. W. D.)

Hormones. The properties of insulin, adrenalin, thyroxin, pituitary extracts, parathyroid hormone and the sex hormones have been briefly sketched.—RALPH G. HARRY. *Mfg. Chemist*, 8 (1937), 11–15. (C. R. A.)

Hydroxymethylfurfuraldehyde—Exact Detection of, in Sweet Wines. Hydroxymethylfurfuraldehyde is hydrolyzed to levulic acid and formic acid, and the former identified by conversion into 1-phenyl-3-methyl-6-keto-1,4,5,6-tetrahydropyridazine.—W. HUNTENBURG. *Z. Unters. Lebensm.*, 71 (1936), 332; through *J. Soc. Chem. Ind.*, 55 (1936), B., 808. (E. G. V.)

Inorganic Ions Contained in Bordeaux Wines. Analytical results for calcium, magnesium, potassium, sodium, iron, hydroxyl, silicon dioxide, chlorine, sulfate, phosphate and sulfite in red and white wines are recorded.—L. ESPIL. *Bull. soc. chim.*, No. 3 (1936), 879; through *J. Soc. Chem. Ind.*, 55 (1936), B., 662. (E. G. V.)

Insulin Preparation—Homogeneous, Process for Manufacture of. Insulin or insulin hydrochloride is brought into contact, in presence of water, with an alkaline protein or a protein decomposition product that is inert toward insulin.—H. C. HAGEDORN, E. N. JENSEN and I. WOODSTRUP NIELSEN. Belg. pat. 414,925, May 30, 1936. (A. P.-C.)

Iodophosphatide or Iodolecithin-Salicylic Preparation—Process for Manufacture of Organic, in Form of Cod Liver Oil. Dehydrated lecithin or phosphatides dissolved in a therapeutic oil are mixed with shaking with an essential oil solution of salicylic acid and a solution of iodine in a very volatile solvent is added.—HOLLANDSCH LECITHIN KANTOOR. Belg. pat. 414,383, April 30, 1936. (A. P.-C.)

Medicine—Chemical Aspects of. A general review of recent progress which discusses phenanthrenes (including sterols, bile acids, sex hormones, carcinogenic hydrocarbons and heart poisons) and acridines.—CECIL I. B. VOGE. *Mfg. Chemist*, 8 (1937), 5–8. (C. R. A.)

Metalloids—Therapeutic Compounds of, with Nucleotides. By combinations such as those of iodine, selenium, arsenic and antimony with adenine, guanylic acid, mixed nucleoprotides or adenosine, powerful therapeutic bactericides are produced which may be further combined with heavy metals such as gold, mercury or silver to produce products of relatively low toxicity.—SIMON L. RUSKIN, assignor to FRANCES R. RUSKIN. U. S. pat. 2,058,180, Oct. 20, 1936. (A. P.-C.)

Milk—Test for Unboiled. A boiled milk gave no color on the addition of ortol and hydrogen peroxide but when the same test was applied to a boiled milk containing 8% of raw milk a pronounced red color was obtained.—A. G. HOLBOROW. *Analyst*, 61 (1936), 837–838. (G. L. W.)

Proteins—Position of Investigations of Chemical Constitution in the Field of. Lecture discussing products of enzymatic degradation of the proteins and the possible modes of linkage of their constituent parts. The development of methods of analysis and the use of degradation methods is traced. Bibliography with 76 references.—W. GRASSMANN. *Angew. Chem.*, 50 (1937), 65–72. (C. R. A.)

Sterol Group—Biochemistry of. A lecture dealing with the sterols (interconnection and biology of the sterols, the constitution of cholesterol), the bile acids and the neutral saponins.—A. BUTENANDT. *J. Soc. Chem. Ind.*, 55 (1936), 753. (E. G. V.)

Vitamin B_1. Review of several recent publications giving dietary sources, daily requirements of adults and children in health and under increased metabolic conditions, pathological conditions due to lack of vitamin B_1 and treatment by oral and parenteral administration.—STEPP, *et al.* *Therap. Ber.*, 14 (1937), 6. (C. R. A.)

Vitamin-Bearing Oils—Extraction of. The protein of the liver of halibut and kindred fishes is coagulated, the weight ratio of water to "dry liver" is adjusted to between 2 and 4, and the material is extracted with ethylene dichloride, trichloroethylene or dichloroethylether.—

FERDINAND W. NITARDY and WILLIAM S. JONES, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,067,279, Jan. 12, 1937. (A. P.-C.)

Vitamin C—Conservation in Urine by Paraffin Overlayer. According to determinations by Tillmann's method the reduction value of vitamin C solutions and urine samples can be conserved by collection and standing under a liquid paraffin layer.—U. HAHN. *Klin. Wochschr.*, 16 (1937), 23. (C. R. A.)

Vitamin C Content of Human and Cow Milk in Summer. Even in midsummer, when the possibility of a higher vitamin C requirement may be presumed, human milk contains sufficient vitamin for the infant's requirements. Commercial cow milk in summer and throughout the year is far from providing sufficient vitamin C for the care of babies.—A. E. CORRENS. *Klin. Wochschr.*, 16 (1937), 81. (C. R. A.)

Vitamin C—Estimation and Significance of, Excretion in Urine. The stability of vitamin C in the urine on standing has been tested after protection with paraffin, after the addition of acids and treatment with glutathione. The daily excretion before and after addition of large doses of vitamin C to the diet was determined and corrected for oxydase action. All determinations were carried out by Tillmann's method using 2,6-dichloro-phenolindophenol and by the methylene blue method according to Martini and Bonsignori. Although both methods are equally serviceable in the detection of definite hypovitaminosis by tests made with the addition of large supplements to the diet, Tillmann's method fails in light hypovitaminosis. Consequently Tillmann's method should be abandoned in clinical practice and replaced by the more suitable and more stable methylene blue reagent. The use of the oxidase correction factor has no practical clinical value.—KURT WACHHOLDER and PETER HAMEL. *Klin. Wochschr.*, 16 (1937), 10–13. (C. R. A.)

Vitaminized Sugar. Cane or beet sugar is mixed in definite proportions with a solution of irradiated ergosterol in oil.—M. ERNOTTE. Belg. pat. 412,799, Jan. 31, 1936. (A. P.-C.)

Vitamins. A complete review of vitaminology progress covering the study of chemical properties, synthesis, preparation of crystalline concentrates for oral and intravenous administration and therapeutic application of the crystalline forms.—ROBERT JORDON FRASER. *Am. Drug.*, 95, No. 1 (1937), 54. (E. V. S.)

Wine—Determination of the Volatile Acidity of, with the New Jozzi Acidacetimeter. The acidacetimeter (described) consists of an apparatus for distillation of the volatile acids with superheated steam. Results compare satisfactorily with those by the official methods.—G. AMADIO and L. PARONETTO. *Ann. chim. applicata*, 26 (1936), 173; through *J. Soc. Chem. Ind.*, 55 (1936), B., 808. (E. G. V.)

ANALYTICAL

Acetanilid, Acetophenetidin and Neocinchophen—Determination of. Collaborative study of microchemical methods for determination of acetanilid, acetophenetidin and neocinchophen (*J. Assoc. Off. Agr. Chem.*, 19, (1936), 103) showed the methods to be satisfactory.—I. S. SHUPE. *J. Assoc. Off. Agr. Chem.*, 19 (1936), 514. (G. S. W.)

Acetic Tincture of Sabadilla—Comparative Studies of the Alkaloidal Content of. The author has divided the work into three portions: Finding a suitable assay method, comparison of some tinctures prepared according to the 4th and 5th editions of the Swiss Pharmacopœia and tests of the effectiveness of the preparations. The author has developed the following assay method: weigh 30 Gm. of acetic tincture of sabadilla into a tared flask. Concentrate to about one-half its weight on a water-bath, cool and make up to 30 Gm. with water (fatty matter precipitates); let stand for one hour, filter 25 Gm. through a pledget of cotton into a 50-cc. flask and evaporate on a water-bath to about 4 Gm. to completely remove the alcohol. Pour the solution while warm into a 200-cc. flask, rinse the small flask once with 1 cc. of 10% ammonia water and then with 20 cc. of chloroform. Stopper the flask, shake vigorously, allow it to stand for one hour and then decant off the chloroform solution through cotton, washing the flask and aqueous liquid three times with about 20-cc. portions of chloroform. Distil the chloroform solution on a water bath, take up the residue in 5 cc. absolute alcohol, distil off the alcohol and repeat the process twice. Take up the residue in 5 cc. of alcohol, add 20 cc. of petroleum ether, 10 cc. of neutral distilled water and 10 drops of methyl red. Titrate with $N/10$ HCl to a red color in the aqueous layer. The tinctures prepared according to the formulas of Swiss Pharmacopœia IV and V were

found to contain the same amount of alkaloids when prepared from the same lot of seeds. The method of assay given for sabadilla seeds by the 5th edition must be modified slightly if the sample is old. It is also shown that acetic tincture of sabadilla when diluted according to the directions of the Swiss Pharmacopœia V is considerably less effective than the tincture of the 4th editon against human parasites.—F. DUCOMMUN. *Pharm. Acta Helv.*, 11 (1936), 322. (M. F. W. D.)

Acetophenetidin—Determination of, in the Presence of Caffeine and Aspirin. The following methods were studied: For aspirin by the double titration method, 0.2 Gm. of acetophenetidin is shaken in a separatory funnel with 5 cc. of a freshly prepared 10% sodium bicarbonate solution and 5 cc. of water. When the aspirin has dissolved and effervescence ceased, extraction is made with 50 cc. of chloroform. The chloroform layer is removed, washed with the bicarbonate solution plus 4 cc. of water and filtered through cotton. Two additional extractions are made. The combined chloroform extracts are reserved for determination of acetophenetidin and caffeine. The combined aqueous extracts are neutralized to methyl orange with sulfuric acid (1 + 9) with 1 cc. excess. The aspirin is immediately extracted with chloroform using 30, 20, 20, 10, 10 cc. portions. The combined chloroform extracts are washed with 3 cc. of water, filtered through cotton and to them added an additional chloroform extract made on the wash water with 5 cc. of chloroform. The chloroform is removed on the steam-bath, finishing without heat. The residue is dissolved in 10 cc. of alcohol (neutral to phenolphthalein) and titrated with 0.1*N* sodium hydroxide (phenolphthalein indicator). Note the amount used and add an equal volume plus 5 cc. excess and heat on the steam-bath 15 minutes. Titrate the excess alkali with 0.1*N* acid. The total alkali used should be double that of the first titration if the aspirin residue is pure. 1 cc. 0.1*N* sodium hydroxide = 0.009 Gm. of aspirin. A bromine method for aspirin was also studied. The bicarbonate layer, after removal of acetophenetidin and caffeine, is treated with 10 cc. of 5% sodium hydroxide and heated on the steam-bath 10 minutes. If other substances capable of absorbing bromine are present, the double titration method is used up to the point where a dry residue is obtained, then hydrolyzed, or the solution remaining from the method may be used after removal of the alcohol, in which case no further hydrolysis is required. The hydrolysis mixture is made up to 250 cc. with water and an aliquot representing about 0.05 Gm. of aspirin put in an iodine flask, acidified to release carbon dioxide, make alkaline and an excess of 0.1*N* bromine solution added (3 Gm. of potassium bromate and 12 Gm. of potassium bromide to a liter). Five cc. of hydrochloric acid (C.P.) is added and the flask quickly stoppered, shaken at intervals during 30 minutes, keeping it cool and then allowed to stand 15 minutes; 5 cc. of potassium iodide solution (20 Gm. KI in 100 cc. of water) is added, the flask re-stoppered, the contents mixed thoroughly and the liberated iodine titrated with 0.1*N* thiosulfate (1 cc. of 0.1 *N* bromine = 0.003 Gm. of aspirin). Acetophenetidin is determined gravimetrically by reducing the volume of the combined chloroform extracts by evaporation or distillation and finally transferred to a 200-cc. Erlenmeyer flask and evaporated to dryness over steam. Ten cc. of sulfuric acid (1 + 9) is added, and the flask fitted with an air condenser through a foil-lined stopper is heated over steam for 30 minutes. The flask is removed and heated to just boiling for 2 minutes, but not concentrating the liquid to less than 5 cc.; add 5 cc. of water and reflux over steam as before for 30 minutes, cool, transfer to a separatory funnel so that the final volume is about 20 cc. and the assay completed by the A. O. A. C. method. (Methods of Analysis (1930), page 444). Acetophenetidin may be determined volumetrically by reducing the volume of the combined chloroform extracts by distillation, finally transferring the material to a 120-cc. distilling flask and evaporating the solvent. Ten cc. of sulfuric acid (1 + 9) is added, the mount of the flask fitted with a 60 cc. dropping funnel, and a condenser delivering to a 100-cc. graduated cylinder. The upper portion of the flask above the 5-cc. level is protected with an asbestos square with a 2-inch circular perforation. The flask is heated with a low flame until 4 cc. of distillate is collected whereupon water is added to the flask from the separatory funnel at the same rate as distillation occurs, keeping the volume in the flask between 5 and 6 cc. Distillation is continued until the distillate from the condenser becomes neutral to blue litmus (about 60 cc. for 0.2 Gm. acetophenetidin). The distillate is titrated with 0.1*N* sodium hydroxide (phenolphthalein indicator), 1 cc. of 0.1*N* sodium hydroxide = 0.01792 Gm. of acetophenetidin. Sulfuric acid spray in the receiver should be tested for prior to titration by addition of barium sulfate solution. Caffeine is determined by a micro-Kjeldahl method by evaporation of the chloroform as before completing the evaporation in a Pyrex test-tube (12″ x 1″). One cc. of sulfuric acid (C.P.) containing a catalyst (copper sulfate-potassium sulfate or

selenium) and the material is digested over a low flame, protecting the top of the tube with an asbestos shield. After carbonization starts the liquid is kept just boiling (the acid vapor condensed by introduction of a small test-tube in the mouth of the digestion tube) for 15 minutes after the mixture is clear. After cooling and washing down the walls of the tubes with 20 cc. of water, an excess of saturated sodium hydroxide is added. A two-hole rubber stopper is inserted in the test-tube, carrying in one hole a spray trap, in the other a tube drawn to a coarse capillary at the lower end, which dips to the bottom of the liquid. This tube is connected to a wash bottle containing dilute sulfuric acid. The spray trap is connected to a tube leading through one hole of a two-hole stopper to the bottom of a Pyrex test-tube 12″ x 1″. A short tube leads from the other hole to a vacuum pump. Ten cc. of boric acid (saturated solution, pink with methyl red) is put in the receiver tube which is cooled by ice water, and air is drawn through the system at the rate of 3 bubbles per second. The distilling tube is immersed in boiling water for 30 minutes so that the vapor also heats the spray trap. The receiver is disconnected, the delivery tube washed down with water into the boric acid solution and the ammonia titrated with 0.02*N* sulfuric acid. The end-point is compared to a boric acid standard. A blank is run on the reagents and system. 1 cc. of 0.02*N* acid = 0.0009708 Gm. of anhydrous caffeine. These methods were studied collaboratively. It was recommended that the separation of aspirin from acetophenetidin and caffeine be adopted tentatively; that the gravimetric method for acetophenetidin and the method for caffeine be further studied.—S. M. BERMAN. *J. Assoc. Off. Agr. Chem.*, 19 (1936), 520. (G. S. W.)

Adsorption Indicators—Experiments with Phenosafranin, Tartrazine and Rose Bengal as. The above-mentioned substances have been used as adsorption indicators in determining the constituents of mixtures of cyanides, iodides and chlorides. The original publication should be consulted for details of the method. The author summarizes his work as follows: 1. A method for determining the constituents of mixtures of cyanides, iodides and chlorides is described. Since silver bromide is intermediate between silver chloride and iodide in solubility and adsorptive capacity for dyestuffs, the method is not applicable to the determination of bromides in presence of the other halides. 2. The titration of silver in acid solution with potassium bromide with the use of adsorption indicators yields results which compare satisfactorily with those obtained by Volhard's method. 3. A method for using adsorption indicators in the titration of halides of limited or reversible ionization, such as the thallous-thallic halides, is described.—A. J. BERRY. *Analyst*, 61 (1936), 315–319. (A. H. C.)

Bismuth—Destruction by Perchloric Acid Applied to the Determination of, in Organic Salts and Pharmaceutical Preparations. Following pretreatment with sodium sulfate-sulfuric acid-nitric acid, the preparation is digested with perchloric acid-nitric acid, bismuth being subsequently determined by precipitation as bismuth sulfide, which is treated with aqueous silver nitrate and excess of silver nitrate titrated with ammonium thiocyanate. Examples are given.—C. MASINO. *Boll. chim.-farm.*, 75 (1936), 409; through *J. Soc. Chem. Ind.*, 55 (1936), B., 1017. (E. G. V.)

Bismuth—Determination of, as Phosphate. Bismuth can be accurately determined as the phosphate if separated from solutions which contain neither Cl^- nor SO_4^{--} and are approximately 0.2*M* as to nitric acid and approximately 0.065*M* as to soluble phosphate. The method is accurate in the presence of moderate concentrations of Na^+, and K^+, Mg^{++}, Zn^{++}, Cu^{++} and Ca^{++}, gives slightly high results in the presence of Cd^{++}, but is not accurate in the presence of Pb^{++}. The chief source of error is the co-precipitation of basic salts; this can be avoided, in the presence of sufficient H^+, by precipitating from a hot solution with a hot dilute phosphate solution and digesting for an hour at 80° C. A second possible source of error is the occlusion of small amounts of ammonium phosphate; this can be eliminated by avoiding large concentrations of soluble phosphate and by igniting the precipitate to 800° C. before weighing.—W. C. BLASDALE and W. C. PARLE. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 352. (E. G. V.)

Bismuth—Separation and Determination of, with Gallic Acid. The solution is heated to 70° C., a solution of gallic acid added, stirred and then allowed to cool before filtering. Bismuth can be separated and determined in 3% nitric acid solution in the presence of lead, cadmium, copper, zinc, aluminum, chromium, iron, nickel, barium, calcium, sodium and potassium. Bismuth cannot be separated from antimony, mercury, tin and silver.—L. KIEFT and G. C. CHANDLEE. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 392. (E. G. V.)

Chloride Ion—Titration of, with Mercuric Nitrate Solutions. The titration of chloride ion with mercuric nitrate solution using diphenyl carbazide indicator has been found to give accurate results in a definite range of acidity. A probable explanation is given. Mercuric oxide may be used as a primary standard in the preparation of mercuric nitrate solutions. With the method given above, the accuracy of the method is better than 0.3% with ordinary volumetric apparatus.—IRVING ROBERTS. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 365. (E. G. V.)

Camphor—Colorimetric Determination of. The determination of camphor in spirit of camphor, based on the color reactions with furfural and benzaldehyde in presence of sulfuric acid, is described.—A. CASTIGLIONI. *Ann. chim. applicata*, 26 (1936), 53; through *J. Soc. Chem. Ind.*, 55 (1936), B., 570. (E. G. V.)

Cane Sugar—Melting Point of. Commercial cane sugar, recrystallized from ethyl alcohol and dried over phosphorus pentoxide, melts sharply at 188°, irrespective of time and rate of heating, though much lower values (160°) are quoted in the literature.—S. V. SHAH and Y. M. CHAKRADEO. *Current Sci.*, 4 (1936), 652; through *J. Soc. Chem. Ind.*, 55 (1936), B., 564. (E. G. V.)

Essential Oils and Perfumes—Change in Specific Gravity of, with Temperature. Determinations of the specific gravities of a large number of perfumes were made and recorded. A table shows the correction to be made per degree of temperature for each of these perfumes. The perfumes may be tested for specific gravity at the room temperature, and by applying the correction, the specific gravity at 15° C., based on water at 15° C., is obtained.—L. W. BOSART. *Ind. Eng. Chem.*, 28 (1936), 867. (E. G. V.)

Eucalyptus Rostrata—Essential Oil of Italian Grown. The oil from leaves and flowers has d^{15} 0.9100–0.9224, $[\alpha]_D^{15}$ −31.15° to −42.48°, n 1.4805–1.4900, acid value 1.60–2.57, saponification value 23.09–26.57, ester value 23.09–24.0, cineol 30–40% and is soluble in 11–15 volumes of 80% ethyl alcohol.—A. GANDINI. *Ann. chim. applicata*, 26 (1936), 266; through *J. Soc. Chem. Ind.*, 55 (1936), B., 1017. (E. G. V.)

Fats and Oils—Analysis of Commercial, Report of Committee on, American Chemical Society.—*Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 233. (E. G. V.)

Ferrocyanide Ion—Determination of, by Means of Luteocobaltamine Chloride. Dissolve 0.1 to 0.2 Gm. of the ferrocyanide in 15 to 20 cc. of water in a 125-cc. beaker, add sufficient reagent (0.15*M* aqueous solution of hexaminocobaltic chloride) to assure complete precipitation. Allow the precipitate to settle and filter through a Gooch crucible previously ignited to constant weight. Wash thoroughly with ice water (distilled water kept in the refrigerator) to remove excess reagent. The washing may be considered complete when the filtrate is no longer colored. Care must be taken to use the minimum amount of wash water, as an excess tends to lower the results. Dry the crucible in an oven at 100° to 110° C. for $^1/_2$ hour. Ignite slowly over a Bunsen burner until the entire mass in the crucible has ceased to glow, then ignite strongly for about 30 minutes over a Meeker-type burner. On ignition over the Bunsen burner, ammonia an dhydrocyanic acid bases can be readily detected. Cool and weigh. Computations are based on the assumption that the precipitate is $[Co(NH_3)_6]_4[Fe(CN)_6]_3$. Thus, from 18 $K_4Fe(CN)_6.3H_2O$ the ignited precipitate contains 8 Co_3O_4 + 9Fe_2O_3.—W. A. HYNES, M. G. MALKO and L. K. YANOWSKI. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 356. (E. G. V.)

Fluorine—Microdetermination of. The fluorine content of biological and some other materials is so low as to require the use of a micromethod for its accurate determination. Based on the titration of fluorine in aqueous solution with thorium nitrate, such a procedure has been developed. The use of aqueous rather than the usually employed alcoholic solution gives better results because the equivalence of the thorium nitrate solution for fluorine through the range 0.5 to 10 micrograms of fluorine is exact, a situation which is not obtained when alcoholic solutions are employed. In aqueous solution the concentration of perchloric acid required to influence the results is greater than in alcoholic solution. The amount of perchloric acid evolved is reduced by distilling hydrofluosilicic acid in the presence of sodium perchlorate. The fluorine content of some samples of dental enamel, dentine and inorganic phosphates has been determined. A procedure for the removal of chloride, when present in interfering amounts, by the use of silver perchlorate is presented.—W. D. ARMSTRONG. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 384. (E. G. V.)

Glycerophosphates—Analysis of. I. Discussion of Assay Methods for Ferric Glycero-

phosphate and Manganese Glycerophosphate. Report is made of a study of assay methods for these two glycerophosphates. The N. F. VI method for the iron salt improves that of N. F. V, eliminating oxygen by increasing concentration of potassium iodide and of ferric glycerophosphate and by decreasing the concentration of hydrochloric acid. All these changes speed up the reaction but the five minutes allowed is insufficient. A reaction time of 20 minutes at 35–40° C. prevents this difficulty. The N. F. VI method for manganese glycerophosphate does not work because of the large excess of hydrochloric acid. Using 0.5 cc. is an improvement over 5.0 cc. Even then results are not reliable because of the variability of manganous-manganic oxide. Double precipitation of manganese ammonium phosphate and ignition to manganese pyrophosphate gives better results. Details of experimental work are reported. Tabulations show effect of temperature upon the completion of ferric glycerophosphate and hydriodic acid by N. F. VI procedure; typical analyses of several commercial samples of ferric glycerophosphate by modified N. F. VI procedure; analyses of a stock solution of manganese sulfate for manganese; and manganese content of manganese glycerophosphate by the sulfide and pyrophosphate methods.—R. M. HITCHENS. *J. Am. Pharm. Assoc.*, 25 (1936), 985. (Z. M. C.)

Hydroxyl Groups—Determination of, in Organic Compounds. The acetylation method of Verley and Bolsing has been modified to make possible the analysis of small samples of organic compounds. The new method is rapid and convenient and does not require the use of condensers or ground-glass stoppers. It has been applied successfully to representative organic compounds. Tertiary alcohols cannot be estimated.—M. FREED and A. M. WYNNE. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 278. (E. G. V.)

Indicators. Possibilities for the further development of acid-base indicators for the measurement of hydrogen-ion activity and concentration, of oxidation-reduction indicators at high and low oxidation potentials, of adsorption indicators and of specific indicators for volumetric purposes are discussed.—I. M. KOLTHOFF. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 237. (E. G. V.)

Methyl Alcohol—Influence of, in the Determination of Higher Alcohols in Spirits. A determination is made of the correction given in graphical form which must be applied to the values obtained by Rose's method for the determination of amyl alcohol in aqueous solution, in presence of known amounts of methyl alcohol.—J. M. CLAVERA and F. M. MARTIN. *Anal. Fis. Quim.*, 34 (1936), 507; through *J. Soc. Chem. Ind.*, 55 (1936), B., 902. (E. G. V.)

Molecular Weight—Micro-Vaporimetric Determination of. A few mg. of a substance, either liquid or solid, are vaporized in a closed system in such a way as to permit an accurate indirect volume determination with suitable provisions for pressure and temperature control and constancy at any point for a temperature range of 300° C. Mercury, the sealing fluid, is displaced instead of air as in an older method.—J. B. NIEDERL, O. R. TRAUTZ and A. A. PLENTL. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 252. (E. G. V.)

Oils—Animal and Vegetable, Viscosity-Temperature Characteristics. Kinematic and Saybolt viscosities at 100° and 210° F. were determined for some thirty oils of various types. Other constants, including acid number, saponification number, specific gravity and refractive index are given.—A. R. RESCORLA and F. L. CARNAHAN. *Ind. Eng. Chem.*, 28 (1936), 1212. (E. G. V.)

Oxalate—Determination of. The authors make use of the two following reactions for the determination of small quantities of oxalate: (1) 1 cc. of the solution to be determined is mixed in a test-tube with 0.5 cc. of 0.1*N* bichromate. In another tube the same volume of bichromate is mixed with half a volume of water and 2–3 drops of indigo solution (1 in 10). When the two solutions are mixed the blue color disappears immediately or very rapidly depending upon the amount of oxalate present. A definite quantity of sulfuric acid hastens the reaction. S'', SO_3'' and S_2O_3 disturb the reaction and must be removed beforehand by boiling with dilute sulfuric acid. If iodine is set free by the bichromate the solution must be made acid with nitric acid and the iodide precipitated by the addition of the smallest quantity of silver nitrate possible. (2) The oxalate is precipitated by the addition of calcium chloride, the precipitate dissolved in a small quantity (0.5 to 1 cc.) of dilute sulfuric acid, the solution warmed and titrated with 0.01*N* potassium permanganate. The quantity of oxalate can be determined from the number of drops required.—N. A. TANANAEFF and A. A. BUDKEWITSCH. *Z. anal. Chem.*, 103 (1935), 353; through *Pharm. Weekblad*, 73 (1936), 1226. (E. H. W.)

Plant Tissue—Analysis of. A semi-micro Kjeldahl method, suitable for the determination of nitrogen in plant tissues, is described. The method is rapid, inexpensive, suitable for small samples and facilitates determination of large numbers of samples. Its precision and accuracy on the basis of a statistical analysis of the data are given.—W. W. UMBREIT and V. S. BOND. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 276. (E. G. V.)

Spirit of Ethyl Nitrite—Assay of. An assay method for this spirit was introduced into the sixth revision of the pharmacopœia. In the seventh revision it was changed to the nitrometer method but U. S. P. XI introduces a titration method. Both U. S. P. X and U. S. P. XI introduces a titration method. Both U. S. P. X and U. S. P. XI methods depend on the reaction between ethyl nitrite, potassium iodide and an acid, liberating nitric oxide and iodine. U. S. P. X measured the volume of gas; U. S. P. XI titrates liberated iodine. The present investigation used three methods for each sample, a Bradley nitrometer, the U. S. P. XI and a modification of it. Results are tabulated. The first method, essentially that of U. S. P. X, takes less time and gave close checks. U. S. P. XI showed a variation up to 0.7 cc. of 0.1*N* sodium thiosulfate. U. S. P. XI modified overcame difficulties, variation of 0.1 cc. of 0.1*N* sodium thiosulfate being maximum. Calculations are based on actual weight of sample rather than weight calculated from specific gravity.—RAY S. KELLEY. *J. Am. Pharm. Assoc.*, 25 (1936), 977. (Z. M. C.)

Tricresols—Viscosity Measurements of. The Scheiber method (*Angew. Chem.*, 46 (1933), 503), applied to the determination of *o*-cresol in crude cresol obtained by distillation from Lysol does not afford consistent results. The viscosities of ternary systems of pure synthetic cresols do not remain constant, but diminish upon aging. The change may be attributable to absorption of water and to molecular association. It does not appear to be related to autoxidation.—H. DÜLL. *Arch. Pharm.*, 274 (1936), 221. (L. L. M.)

Tung Oil—Condensation of Maleic Anhydride with. A New "Constant" for Oils. An accurately weighed sample is refluxed for 3 hours with an excess of maleic anhydride (6% solution in dry toluene) (I). The excess of (I) is hydrolyzed with water, the reaction mixture washed into a separatory funnel with ether and water and the water solution of maleic acid is separated and titrated with *N* sodium hydroxide (phenolphthalein indicator). The "maleic anhydride value" (M. A. V.) is calculated in terms of iodine as a measure of the conjugated double bonds in the fat. A blank determination is made on another portion of (I).

$$\text{M. A. V.} = \frac{12.692 \times \text{cc. } N \text{ sodium hydroxide}}{\text{wt. of sample in Gm.}}$$

The time of refluxing can be shortened to one hour by the addition of 0.2 cc. of approximately *N*/10 iodine in toluene as a catalyst. The M. A. V. for isolated samples of castor, perilla, soya, olive and linseed oils are given.—B. A. ELLIS and R. A. JONES. *Analyst*, 61 (1936), 812–816. (G. L. W.)

TOXICOLOGICAL CHEMISTRY

Lead—Detection of, in Urine and Feces. The following procedure is recommended: "Evaporate cautiously 50 cc. of urine after the addition of 2 Gm. of saltpeter and 1 Gm. of soda in a porcelain crucible over an open flame. Ignite the residue until it becomes white, dissolve in water and add 2–3 drops of normal potassium cyanide solution, 2–3 drops of ammonia and then 1 cc. of a solution of dithizone (diphenylthiocarbazone) in 100 cc. of chloroform. The presence of lead is indicated by a beautiful red coloration. To detect the same substance in feces use 10 Gm. of the fresh material and double the amount of saltpeter-soda mixture.—FISCHER and H. STRALLER. *Apoth. Ztg.*, 51 (1936), 1718. (H. M. B.)

PHARMACOGNOSY

VEGETABLE DRUGS

Drugs from Bolivia—Systematic, Anatomic and Chemical Examination of Collection of. A twenty-six page report with illustrations in which characteristics of the following drugs are given: *Dorstenia brasiliensis*, Nototriche spec., Hypseocharis spec., *Phorodendron Meliæ* Trel., *Cissampelos Pereiræ*, *Turnera diffusa*, *Buddleia ignea* Kraenzl., *Micromeria boliviana* Benth., *Jacaranda brasiliana* Pers., *Werneria Lorentziana* Hier., Diplostephium spec., *Perezia bidentata* Mey. The constituents of the rhizome of *Dorstenia brasiliensis* are given as: a crystalline sub-

stance probably of the composition $C_{34}H_{18}O_{10}$, a crystalline acid of characteristic odor, fatty oil, alcohols of high molecular weight, an acid $C_{37}H_{28}O_{10}$, carbohydrates and alkaloids. *Cissampelos Pereiræ* yielded free bases, phenolic alkaloids and quartenary ammonium bases. *Buddleia ignea* contained esters, fats, alkaloids, sterols and wax alcohols, *Werneria Lorentziana* gave essential oil, fat, sterols and wax alcohols. In *Perezia bidentata* were found mucilage, carbohydrates, esters, free acids, lactones, bitter principles and traces of alkaloids.—L. KOCH. *Arch. Pharm.*, 274 (1936), 343. (L. L. M.)

Drugs—Systematic Examination of. To leaves or flowers of the drug in a small porcelain dish covered with a special glass cap provided with a small funnel add a mixture of 7 cc. 96% alcohol and 3 cc. distilled water, weigh the glass cap by putting a large glass ball in the funnel and warm the dish cautiously on a microburner until half of the solvent evaporates. Add 10 cc. *N* alcoholic sodium hydroxide (7 cc. 4% NaOH and 3 cc. 96% alcohol) and boil 4–5 min. more. Add 10 cc. 3% hydrogen peroxide and boil 1 minute. Let stand 10 min., pour off the liquid, wash the residue with water and treat with 10 cc. of a mixture containing 7 cc. 96% alcohol and 3 cc. ethyl acetate. Wash again with water and examine under the microscope. Photomicrographs of various drugs are reproduced. The drugs are classified as (1) showing characteristic calcium oxalate crystals, (2) showing no crystals but special hairy protuberances and (3) having peculiar textures.—JÁNOS BOZÓ. *Magyar Gyógyszerésztud. Társaság Értesitője*, 12 (1936), 271–282; through *Chem. Abstr.*, 30 (1936), 4622. (E. V. S.)

Male Myrrh—Sesquiterpenes from, and Its Detection. A di- and a tri-cyclic sesquiterpene are isolated from male (herabol) myrrh, which give all the characteristic color reactions of the gum resin.—F. ROST and B. DORO. *Ann. chim. applicata*, No. 26 (1936), 126; through *J. Soc. Chem. Ind.*, 55 (1936), B., 619. (E. G. V.)

Stramonium—Cultivated. The values for total ash (15.18%) and total alkaloids (0.195%) obtained for the dried leaves are less than those recorded in the Chinese and other Pharmacopœias.—P. N. TSAO and S. Y. CHEN. *J. Chinese Chem. Soc.*, 3 (1935), 372; through *J. Soc. Chem. Ind.*, 55 (1936), B., 219. (E. G. V.)

Vegetable Drugs—Research in, in Siam. Analytical constants for hydnocarpus oil and for the mixed ethyl esters are given. The difficulty of collecting the high yielding seeds of the Strychnos species has not yet been overcome. Yang Nong, an arrow poison and Mai Chanchamot, a perfumed wood, were also investigated.—ANON. *Pharm. J.*, 137 (1936), 438. (W. B. B.)

PHARMACY

GALENICAL

Emulsions—Breaking, by Freezing. The mechanism of the breaking of emulsions by freezing is discussed on the basis of microscopical observations. The existence of a plastic membrane surrounding each globule is verified, and the destruction of this membrane, rather than mere freezing of the continuous phase, is shown to be essential to coalescence of the globules and breaking. Breaking by freezing may be ascribed to the following causes, in sequence: (1) Withdrawal of free and/or bound water from the films between touching droplets, by crystallization as ice or by concentrating of any solutes present. (2) Establishment of true contact between adjacent films of emulsifier, with loss of the orienting influence of water. (3) Diffusion of the emulsifier in the film away from these thick regions. (4) Decrease in film area and coalescence of droplets as soon as thawing of the ice permits them to change shape.—T. G. ROCHOW and C. W. MASON. *Ind. Eng. Chem.*, 28 (1936), 1296. (E. G. V.)

Ether for Anesthesia. F. finds the vanadin-sulfuric acid test of the German Pharmacopœia VI and Nessler's Reagent valuable in detecting rapidly the purity of ether. The decomposition reaction of ether and air are given in the following reactions:

(1) $C_2H_5{\cdot}O{\cdot}C_2H_5 + O_2 \longrightarrow C_2H_5{\cdot}O{\cdot}CH(O{\cdot}OH){\cdot}CH_3$ dioxyethyl hydroperoxide

(2) $C_2H_5{\cdot}O{\cdot}CH(O{\cdot}OH){\cdot}CH_3 \longrightarrow C_2H_5OH + \begin{matrix} O \\ | \\ O \end{matrix}\!\!>\!CH{\cdot}CH_3$ ethylidene peroxide

(3) $C_2H_5{\cdot}O{\cdot}CH(O{\cdot}OH){\cdot}CH_3 + H_2O \longrightarrow H_2O_2 + C_2H_5OH + CH_3{\cdot}CHO$

(4) $CH_3{\cdot}CHO + H_2O_2 \longrightarrow CH_3{\cdot}CH(O{\cdot}OH){\cdot}OH$ oxyethyl hydroperoxide

(5) $CH_3{\cdot}CH(O{\cdot}OH){\cdot}OH + C_2H_5OH \longrightarrow CH_3{\cdot}OH(O{\cdot}OH){\cdot}OC_2H_5 + H_2O$

Titanium-sulfuric acid reacts similarly to give TiO_3 and the test is described as follows: Heat a trace of TiO_2 with some drops of concentrated sulfuric acid to fuming, cool and dilute with 5 cc. cold water; a few drops of this solution gives a yellow red color with hydrogen dioxide and a similar color reaction with ether containing peroxides.—K. FEIST. *Apoth. Ztg.*, 51 (1936), 1110. (H. M. B.)

Ether—Packaging. Metallic iron (suitably in the form of iron or steel wire or filings) is placed with ether in containers such as tin-plated cans and serves to inhibit decomposition by oxidation.—FERDINAND W. NITARDY, assignor to E. R. SQUIBB AND SONS. U. S. pat, 2,058,250, Oct. 20, 1936). (A. P.-C.)

Ether—Peroxide in Anesthetic. Sudan I (0.05%) and α-naphthol (0.1%) inhibited the formation of peroxide in anesthetic ether to some extent. A roll of bright copper gauze placed in a previously opened bottle completely inhibited the formation of peroxide but was ineffective in removing it from samples previously oxidized.—ANNUAL REPORT OF THE CHEMICAL BRANCH, Mines Dept., Western Australia (1935). *Analyst*, 61 (1936), 846–848. (G. L. W.)

Ethocaine Solutions—p_H of, Determination of. By electrometric determinations the p_H of ethocaine solutions of 2% and 4% strength is determined. Both solutions are initially of p_H 5.9 and to bring them to about p_H 4.3 three drops of normal hydrochloric acid should be added per 100 Gm. of solution. When thus adjusted in acidity the solutions are stable for at least 30 days.—H. RUNEBERG. *Farm. Revy.*, 35 (1936), 757. (C. S. L.)

Liver Fraction—Purification of Dakin and West's. Dakin and West's original liver fraction (anahemin) has been subjected to further purification. The resulting product has been tested in twenty cases of pernicious anemia and compared with the original anahemin and certain preparations thereof in respect to the production of reticulocyte response, increase in red blood cells, and clinical improvement. On the whole the reticulocyte responses and increments of red blood cells differ little from results reported and others unpublished which were obtained with certain highly purified products; while the responses to 25 mg. were often small, 50 and 75 mg. mostly gave satisfactory results comparable to those produced by 200 mg. of the original anahemin. The variations in response to a given dose even in individuals with similar initial red cell levels were so great, however, that it was difficult accurately to compare the potency of the two products on the basis of effects observed. This difficulty was to some extent overcome by the use of the double reticulocyte method, the materials to be compared being administered daily to the same individual in consecutive periods of ten to fourteen days. As judged by the results of such experiments the potency of 5 mg. of original anahemin was exceeded by 2 mg. of the more purified fraction, and at least equalled by 1.75 mg. thereof; while 4 mg. of original anahemin was surpassed in effect by 1.75 mg. of the newer product. These findings are believed to indicate that the more purified product has not less than two and a half times the potency of the original anahemin; an estimate which is in keeping with the results obtained with single injections of 25, 50 and 75 mg.—C. C. UNGLEY. *Lancet*, 231 (1936), 1513. (W. H. H.)

Lotions—Eye, Fungoid Growth in. If fungoid growth occurs in eye lotions, one of the soluble Nipagin series can be used effectively as a preservative.—ANON. *Pharm. J.*, 137 (1936), 369. (W. B. B.)

Olive Oil—Cold, Prevention of Deposit in. In a letter to *Nature* (November 7, 1936), W. Clayton, S. Back, R. I. Johnson and J. F. Morse record their observation that very small amounts of air-blown cacao butter (iodine no. =20), added to olive oil, will enable the oil to keep liquid and free from stearin deposit when it is stored at temperatures between 2° C. and 4° C. Untreated olive oil at these temperatures sets solid within twelve hours. The amount of blown cacao butter needed to prevent the deposition of stearin varies from 0.1 to 0.5%, depending on the technic of its oxidation and the length of time the olive oil is to be in cold storage. No other blown oil or fat has been found to serve so well, and other oils, such as arachis or cotton seed, are not similarly protected. The inhibition effect in olive oil has persisted even after four years of storage at 2° C.—ANON. Through *Pharm. J.*, 137 (1936), 662. (W. B. B.)

Opium Extract, Swed. Phar. X.—Opium as offered to the apothecary is often mixed with milk sugar. This may bring the morphine content too low for the preparation of the extract by the method of the Swedish Phar. No provisions are made for the procedure in this case. If an opium contains 10% morphine and 10% lactose a water extract dissolves about 50% of the opium and all the lactose, so that a preparation of pharmacopœial strength cannot be made if lactose is

added as the monograph provides. An equation is cited for calculation of the quantity of lactose which may be added. It is recommended that the supplier be required to furnish information both as to morphine content and lactose content of preparations offered.—G. OLIN. *Farm. Revy*, 35 (1936), 775. (C. S. L.)

Pills—Studies of the Disintegration of, under Natural and Artificial Conditions. The author conclude that: (1) The general opinion that pills having become stone-hard disintegrate with difficulty is corroborated, and also that hard pills are generally difficultly soluble in the digestive trace. All of the pills studied had become stone-hard but in spite of this, they disintegrated in the stomach after 10, 5 or even a few minutes. (2) Only pills made with wax, lanolin, vaseline and other fats, as also those prepared with tragacanth and ointment of glycerin, remained soft and elastic. Pills made with lanolin disintegrated after 6 or 7 hours in the intestine while pills made with wax passed from the intestine undissolved. (3) In general, pills prepared with plant extracts or plant powders as, for example, sugar, gum arabic, tragacanth, easily disintegrate in the digestive tract, even after storing them for 6 months. (4) On comparison of the disintegration of pills under laboratory conditions with those under natural conditions, it is evident that pills which easily disintegrate in *in vitro* studies likewise easily dissolve in the natural conditions. However, those which remain unchanged in *in vitro* studies may disintegrate in the digestive tract. This emphasizes the fact that in the body numerous factors which cannot be duplicated in the laboratory influence the disintegration of pills.—YRJÖ AHONEN. *Farmaceutiskt Notisblad*, 45 (1936), 126; through *Schweiz. Apoth.-Ztg.*, 74 (1936), 757. (M. F. W. D.)

Pharmacist—Hospital, Some Notes of a. A hospital pharmacist discusses a few of the varied problems that confront the pharmacist in the hospital. By individual experimentation, a good sterile dressing was developed; this dressing meeting a special demand in the hospital. It was found that, in order to prevent the absorption of atmospheric moisture by magnesium sulfate, sealing with hard paraffin was very helpful.—E. T. GRIFFITHS. *Pharm. J.*, 137 (1936), 570. (W. B. B.)

Quinine Solutions for Parenteral Use. The usage of certain substances to increase the solubility of drugs for parenteral injection is well known. This is done in order that a desired quantity of the drug may be injected in as small a volume as possible. Ethylurethane and antipyrine have thus been used to increase the solubility of quinine hydrochloride. Such quinine solutions, however, show irritation and destruction of the tissues upon injection. This seems to be due to the acidity, which may be overcome by adjusting the p_H to that of the blood which *in vivo* is 7.3 to 7.4. This adjustment may be accomplished by neutralizing 9.7 to 11.7% of the quinine hydrochloride; that is by the addition of 0.24 to 0.30 cc. *N* alkali per gram of quinine hydrochloride. A solution for parenteral injection must also be of such a nature that it will not precipitate upon addition to larger volumes of liquid. In order to determine the most suitable solution for parenteral injection the author prepared the following solutions and titrated them with water until a permanent cloudiness appeared. The solutions are calculated on a 100 cc. volume.

		Solution Containing 30 Gm. Quinine Hydrochloride					
		Gm. Antipyrine.			Gm. Ethylurethane.		
Cc. *N* Alkali.	p_H.	15	20	25	15	20	25
9	7.4		22.5			5.8	
8		14	25	40	6	11	15
7.6						8.8	
7.4	7.3		34.6				
6.4	7.2					16.4	
6			>70				
5.4	7.1					28.4	

From these results it will be seen that antipyrine is more suitable than urethane for the preparation of weakly alkaline, concentrated quinine hydrochloride solutions. The solutions prepared with antipyrine allow a much greater dilution and thus diminish the danger of crystalline deposits. The antipyrine-quinine solutions have a greater viscosity. Annoyance from this may be overcome by the use of a suitable needle and by slightly warming the solution before use. The author concludes that it is impossible to prepare a quinine hydrochloride-antipyrine solution or a quinine hydrochloride-ethylurethane solution which contains 30 w/v % of quinine hydrochloride, have a

p_H of 7.3 to 7.4 and be miscible with water in unlimited volume. The most practical solution that can be devised is as follows: Quinine hydrochloride 30 Gm., antipyrine 20 Gm., *N* sodium hydroxide 7.5 cc., water (double distilled) *q. s.* 100 cc. This solution will tolerate dilution with three volumes of water.—E. H. VOGELENZANG. *Pharm. Weekblad*, 73 (1936), 1030. (E. H. W.)

Sodium Salicylate—Oxidation of, in Solutions Containing Sodium Bicarbonate. Darkening of sodium salicylate (I)-sodium bicarbonate (II) solutions due to formation of benzoquinone is accelerated by traces of copper and iron, light, microörganisms and oxidizing agents. Pharmaceutical preparations are best made by boiling the aqueous (I) before addition of (II).—C. H. LIBERALLI. *Bol. assoc. brasil. farm.*, No. 16 (1935), 154; through *J. Soc. Chem. Ind.*, 55 (1936), B., 667. (E. G. V.)

PHARMACOPŒIAS AND FORMULARIES

British Pharmacopœia—Supplement to. A review of the supplement to the British Pharmacopœia appearing Dec. 26, 1936, is given, listing briefly all of the changes introduced.—C. A. ROTENHEIM. *Schweiz. Apoth.-Ztg.*, 74 (1936), 773. (M. F. W. D.)

Pharmacopœia—Addendum. Changes in Official Standards. The long-awaited Addendum to the British Pharmacopœia is now available. In accordance with the provisions of the Medical Council Act 1862 the Pharmacopœia and any addenda to it become official as soon as they are published; hence it is customary to delay the actual date of publication by three months to allow copies to be consulted in order to have in readiness preparations which comply with the new standards. A list of additions to the B. P. 1932 is given and briefly discussed.—ANON. *Pharm. J.*, 137 (1936), 347, 406, 437. (W. B. B.)

NON-OFFICIAL FORMULÆ

Cold Cream Formulas—Tested. Cold creams made according to the U. S. P. XI, the German and Swiss pharmacopœias are completely unsatisfactory as cosmetic preparations. Fourteen formulas using 5% borax calculated on the basis of the weight of beeswax (A) used and varying amounts of mineral oil and water on the basis of 1 part of (A) were used and the products compared. The following observations were made: (1) Amount of borax should not be less than 5 and not more than 8% depending on the acid number of (A) used; (2) the hardness of the cream increases as the amount of (A) increases; creams containing less than 15% (A) are liable to be too soft; (3) mineral oil in relation to water has a stiffening effect as the amount is increased; if more than 60% is present the product shows signs of instability; (4) increase in the amount of water softens the cream; if too low the cream may change from the usual oil-in-water type to a water-in-oil type; increasing amounts produce finer grained and more lustrous creams and (5) the proper water-oil ratios seem to vary from 1:2 to 2:1. The following eight tested formulas are offered:

Beeswax	25.00	25.00	16.67	14.28	25.00	20.00	16.67	14.28
Mineral oil	25.00	37.50	33.33	57.14	50.00	40.00	50.00	42.84
Water	48.75	36.25	49.17	27.87	23.75	39.00	32.50	42.13
Borax	1.25	1.25	0.83	0.71	1.25	1.00	0.83	0.71

Formulas 3 and 7 seem to be superior in lustre, texture and consistency.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 39 (1936), 736, 745. (H. M. B.)

Cough Therapy. The following formulas effective in the treatment of cough are offered and the action of ingredients discussed: (1) Potassium guaiacolsulfonate gr. 16, sodium monobenzylsuccinate gr. 20, tartar emetic gr. $^1/_{15}$, syr. thyme *q. s.* oz. 1; (2) sodium citrate gr. 40, potassium guaiacolsulfonate gr. 16, benzycin gr. 20, syr. thyme *q. s.* oz. 1; (3) syr. ipecac min. 48, sodium citrate gr. 40, benzycin gr. 20, syr. thyme *q. s.* oz. 1; (4) sodium citrate gr. 40, ephedrine sulfate gr. $^1/_2$, syr. thyme *q. s.* oz. 1.—L. STAMBOVSKY. *Drug. and Cosmetic Ind.*, 39 (1936), 742, 771. (H. M. B.)

Germicidal Composition and Process of Preparation. The product is a mercury compound obtained by reaction of a double iodide of mercury and a glycol or a glycol ether above atmospheric temperature and pressure.—HAROLD B. KIMERLIN. U. S. pat. 2,067,674, Jan. 12, 1937. (A. P.-C.)

Herbicide. The product contains chlorates and aluminum compounds.—UNION CHIMIQUE BELGE, SOC. ANON. Belg. pat. 416,211, July 31, 1936. (A. P.-C.)

Insecticide. Chloro- or dichloroisothymol is dissolved in petroleum and an emulsifier such as Turkey red oil is added.—SCHERING-KAHLBAUM A. G. Belg. pat. 413,211, Feb. 29, 1936. (A. P.-C.)

Insecticide. The product contains an aliphatic sulfofluoride, specifically, methane sulfofluoride.—I. G. FARBENINDUSTRIE A. G. Belg. pat. 414,809, June 30, 1936. (A. P.-C.)

Insecticide and Process for Making. The water-soluble product of the reaction of nicotine and humic acid or peat is used as an insecticide.—LOUIS N. MARKWOOD. U. S. pat. 2,066,941, Jan. 5, 1937. (A. P.-C.)

Parasiticide. The product consists of an aqueous solution of an alkali or alkaline-earth hypochlorite and of a dispersing agent consisting of oil, petroleum or a pyrethrum extract.—CLOROX CHEMICAL CO. Belg. pat. 415,386, June 30, 1936. (A. P.-C.)

Preservative for Animal and Vegetable Substances. Animal and vegetable substances may be preserved by treating with an aqueous solution of sodium sulfate and sodium fluoride (neutral or acid) with kaolin suspended therein, the quantity of sodium sulfate (as decahydrate) constituting at least 30% and the quantity of sodium fluoride at least 2% of the solid ingredients.—JOHN BLEECK. U. S. pat. 2,066,453, Jan. 5, 1937. (A. P.-C.)

Rodenticide. The bait used contains halogen derivatives of polyhydric alcohols.—I. G. FARBENINDUSTRIE A. G. Belg. pat. 415,269, May 30, 1936. (A. P.-C.)

Skin Protectives. The following are offered for cold weather protectives: (1) *Heavy Protective Cream.*—White petrolatum 3, anhydrous lanolin 2, talc 2, titanium oxide 2, white beeswax 3, alcohol 10, water 66, glyceryl monostearate 12. Heat the ingredients together until a smooth emulsion is formed adding the alcohol when the cream has cooled. (2) *Flaxseed Cream.*—Flaxseed mucilage 40, glyceryl monostearate 10, lanolin anhydrous 2, cetyl alcohol 2, cod liver oil 3, glycerin 5, water 38, perfume. The mucilage is made by soaking 1 part of flaxseed in 6 parts of hot water for 5 or 6 hours, strain and add to the cream made as in (1). Add 0.1–0.5% by weight of preservative. (3) *Emollient Vanishing Cream.*—Stearic acid 20, potassium hydroxide 0.75, water 60.75, cholesterin 1, lecithin 0.5, cetyl alcohol 2, linseed oil 5, glycerin 10. Melt the acid with the oil, alcohol and cholesterin. Dissolve the hydroxide in the water and glycerin, heat and stir in the stearic acid mixture. After saponification has occurred add the lecithin. The three creams may be camphorated or medicated. (4) *Pineapple Juice Lotion.*—Mucilage of Irish Moss 3% 2, glycerin 4, alcohol 2, boric acid 0.25, tr. benzoin 4, cod liver oil 6, pineapple juice *q. s.* 20. Perfume to suit. (5) *Flaxseed Lotion.*—Flaxseed mucilage 24, boric acid 0.25, glycerin 2, alcohol 12, pineapple juice 12. Mix and add preservative and perfume.—ANON. *Drug and Cosmetic Ind.*, 39 (1936), 598, 602. (H. M. B.)

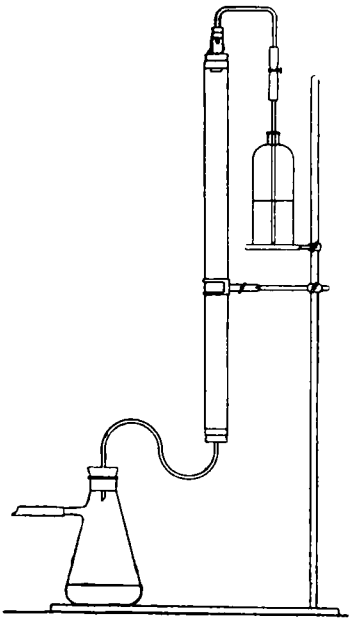
DISPENSING

Ampul-Filling Apparatus. A convenient apparatus for filling either small or large numbers of ampuls is described and illustrated. The advantages claimed are: exact dosage, easy sterilization of the apparatus, only small loss of solution, no liquid adhering to the neck of the ampul, ease of manipulation, adaption to small and medium size establishments.—SCHENKER. *Schweiz. Apoth.-Ztg.*, 74 (1936), 737. (M. F. W. D.)

Bee Venom—Process for Obtaining. Bees are made to sting an animal skin which is rough on the flesh side and smooth on the other, the thickness being such that the sting passes completely through it. The venom which accumulates on the opposite side is scraped off after drying.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 414,158, April 30, 1936. (A. P.-C.)

Extract and Tincture Preparation—Modern. If the methods employed for the preparation of extracts and tinctures from vegetable drugs are critically examined one arrives at the conclusion that they are far from ideal. The authors discuss the history of percolation, maceration and other methods of extraction, the various forms of percolators and the development of processes from the work of Count Real at the beginning of the 19th century to and including the work of Breddin in 1930–1933. Breddin developed a process of pressure percolation, called diacolation in which the drug is placed in a closed cylinder, the menstruum permeating upward through the drug under pressure. A sketch of Breddin's apparatus is shown in the paper. The authors employ a somewhat similar apparatus devised by Kessler (*Pharm. Ztg.*, 80 (1935). 1080) in which the drug is packed in a closed cylindrical tube the lower end being connected with a suction flask from which the air is removed, the liquid being forced through the drug by the

air pressure above. The rate of flow is adjusted by means of a pinch-clamp placed between the reservoir and the cylindrical tube. This process of extraction is known as evacolation. The apparatus is illustrated herewith. Several preparations were made by the official methods and by evacolation, and the resulting preparations comparatively checked as to specific gravity, percentage of dried residue after evaporation and percentage of active constituent, wherever possible. Among the preparations made were tinctures of myrrh, ipecac, rhatany and opium, Tinctura Opii crocata, Tinctura Polygalæ amaræ, Tinctura Aurantiorum, Extractum Cola liquidum and Extractum Secalis cornuti liquidum. Results are given in various tabulations. In general, the results were considerably more favorable when evacolation was employed.—C. J. BLOK and H. J. A. TER WEE. *Pharm. Weekblad*, 73 (1936), 1334. (E. H. W.)



Kessler's Apparatus

Extracts—Production of, by Means of Fermentation Process. Extracts of drugs were made (1) according to the methods of Pharm. Hung. IV, (2) by fermentation with fresh yeast for 24 hrs., (3) by warming the mixture for 1 hr. with Faex medicinalis and fermenting for 5 days, (4) by method (3) except that fermentation lasted 10 days, (5) by fermenting with Faex without any previous treatment and warming the mixture for 30 min. after fermentation and (6) by method (5) except that the procedure was repeated after pressing out the juice. Fermentation by means of Faex seems to be suitable for producing Extractum Belladonnæ Siccum, Hyoscyami Siccum and Chinæ Siccum. It cannot be used for Extract Strychni. In Ext. Opii fermentation did not affect the morphine content of the product but increased the content of the secondary alkaloids.—ZSIGMOND BARI. *Magyar Gyógyszerésztud. Társaság Értesitője*, 12 (1936), 258–270; through *Chem. Abstr.*, 30 (1936), 4622. (E. V. S.)

Fat—Emulsification of, for Intravenous Administration. Supersonic irradiation supplies a suitable means for preparing fat emulsion for intravenous injections in man.—ROBERT J. MYERS and HAROLD BLUMBERG. *Proc. Soc. Exptl. Biol. and Med.*, 35 (1936), 79. (A. E. M.)

Isotonic Solutions—Calculations for. It was found that repetition of the necessary calculations to obtain the amount of sodium chloride (or other osmotically active substances) required to render solutions, containing various proportions of a given medicinal substance, isotonic with the blood serum could be obviated by the use of a graphical method. In order to construct the graph, two factors must be determined: (*a*) The percentage w/v of sodium chloride (or other adjusting agent) necessary to produce a solution isotonic with the blood serum or the lachrymal secretion as required; and (*b*) the percentage w/v of the medicinal agent necessary to produce the same effect as in (*a*). Formulas are given to show how these values are obtained. Four graphs illustrate a practical means of preparation of isotonic solutions of a few substances. It is an easy matter to extend the range of the graphic curves to other substances.—W. NIXON. *Pharm. J.*, 137 (1936), 568. (W. B. B.)

Isotonic Solutions—Preparation of. A method is described by which it is possible to calculate the amounts of substances commonly used for the preparation of isotonic solutions such as those of blood serum and lachrymal fluid. It is necessary that the molecular weight of the substance be known. If the substance is an electrolyte, one must know the number of ions in the solution. The solutions, in this case, may not be above 0.1 molar in concentration. By assuming complete dissociation, the limit of error does not exceed 5%. This accuracy should be sufficient in practice, especially since here only solutions of low concentration are employed in which the error is correspondingly slight.—H. BOHME. *Arch. Pharm.*, 274 (1936), 255. (L. L. M.)

Licorice Mass—Process of Making. A concentrated licorice extract is dried to obtain finely divided solid licorice particles and the latter molded under pressure to coalesce them.—WILLIAM L. GEDDES, assignor to MACANDREWS and FORBES CO. U. S. pat. 2,067,913, Jan. 19, 1937. (A. P.-C.)

Narcotic Suppositories. The customary method of making suppositories containing dried extracts results in an uneven product. The authors recommend that the solution of the dried extract be first mixed with an intermediate fat to form an emulsion, Vasolimentum purum spissum having been found very satisfactory for this purpose, and this then being incorporated with the warm cacao butter. Vasolimentum does not rancidify, it forms a perfect emulsion with tinctures, fluidextracts and ethereal oils, and the suppositories have a uniform appearance with no droplets of the solution and no spots. The hydrogenated peanut oil of Siegfried also works very well for the same purpose.—C. A. GUIDINI and J. GOLDMAN. *Schweiz. Apoth.-Ztg.*, 74 (1936), 709.
(M. F. W. D.)

PHARMACEUTICAL EDUCATION

Pharmacology Is Essential to the Professional Pharmacist—Greater Knowledge of. The author directs attention to the requirement of the Public Health Service that pharmacologists have a bachelor's degree "with major courses in pharmacology" and summarizes his discussion as follows: "The M.D. degree is not a requirement for a pharmacologist. The pharmacist is the logical man to grasp the opportunity by studying advanced pharmacology. Pharmacology offers a new opportunity for prescription pharmacists and is essential to a successful prescription business. The pharmacological action of drugs should be considered before making a purchase of medicinal preparations for resale. Pharmacology enters into the medico-legal aspects of pharmacy. Classification of drug stores, into professional and semi-professional, is dependent on the training of the personnel as well as equipment and stock of drugs."—A. O. MICKELSEN. *J. Am. Pharm. Assoc.*, 25 (1936), 998. (Z. M. C.)

MISCELLANEOUS

Animal Fat Dyes. From 0.9 Kg. kidney fat taken from an old cow, they obtained 2.5 mg. of a crystallized red dye, which was found to be a mixture of α- and β-carotene.—L. ZECHMEISTER and F. TUZSON. *Seifensieder Ztg.*, through *Am. Perfumer*, 33, No. 5 (1936), 73.
(G. W. F.)

Bandages—Deodorizing and Sterilizing. A catamenial bandage consists of a body of absorbent material encased in a textile cover. The bandage contains a concealed, flexible, substantially non-absorbent, chemically inert, moisture- and gas-proof envelope, into which is sealed a small quantity of calcium hypochlorite, which will liberate free chlorine on interaction with the components of the atmosphere when the seal of the envelope is broken, while remaining substantially dry.—CLARENCE K. REIMAN. U. S. pat. 2,066,946, Jan. 5, 1937. (A. P.-C.)

Cetyl Alcohol—Its Properties and Pharmaceutical Applications. Cetyl alcohol $C_{16}H_{33}OH$ is a white wax-like solid, melting point 48–49°, acetyl value 197, insoluble in water, soluble in alcohol, oils and most organic solvents. It is odorless and tasteless. Methods of preparation are given which necessitate the use of high grade spermaceti. The question of impurites is discussed. A mixture of vaseline, cetyl alcohol, lard and olive oil is used as a base for the official cold cream of the new Swiss Pharmacopœia. The contrast between the water-emulsifying powers of cetyl alcohol and lanolin with hydrogenated arachis or with lard is remarkable. Cetyl alcohol is much more efficient while the opposite tendency is noted with vaseline as the main constituent. Mixtures of 17% cetyl alcohol with 83% arachis or almond oil give a homogeneous mass which shrinks well on cooling, is quite hard, difficult to break at room temperature and which melts at about 37° C. Its use in the manufacture of suppositories is suggested.—FRANK ATKINS. *Mfg. Chemist*, 8 (1937), 9-10. (C. R. A.)

Cosmetic Preparations—Improved. Cosmetic preparations in which the capacity for being rubbed in, firmly retained and resorbed, particularly preparations containing water or oil or both, for instance, stearate creams, cold creams, creamy or fluid powders, are enhanced by incorporating in the preparation undecylic acid or another saturated fatty acid having an uneven number of carbon atoms from C_9 to C_{17}.—W. W. GROVES, assignee of I. G. FARB. AKT. British pat. 454,970. *Perfumery Essent. Oil Record*, 27 (1936), 423. (A. C. DeD.)

Drugs—Packing of. One of the problems continually before the pharmaceutical manufacturer is the choice of the most suitable type of packing for each preparation. The question is frequently before the research department, often requiring lengthy tests before a decision can be reached. The ideal should be to provide a packing which, without placing too heavy a burden

on the cost of the article, will ensure such conditions that the product will be preserved in its original state for the maximum time without deterioration of therapeutic potency, flavor, odor, appearance or sterility. It is necessary to bear in mind the worst conditions of temperature, etc., under which the product is likely to be stored and, if the preparation is exported, to provide for prolonged exposure to temperatures around 120° F. It is probable that a majority of products handled by the pharmacist would keep better if protected from light, such as cod liver oil, the vitamin A of which is rapidly destroyed; the production of free acid in chloroform; the yellowing of santonin; the darkening of certain bismuth compounds or mixtures, since certain bismuth compounds are reputedly photosensitive under certain conditions. However, there is one well-known example in which light is beneficial, namely, Syrupus Ferri Iodidi, as it prevents the liberating of iodine. While it is easy to provide protection from light, it is a more difficult matter to prevent oxidation. Liquids liable to oxidation should be packed in small quantities and a minimum of air-space left in the container. Stoppers or some other form of air-tight closure should always be used in perference to corks, which, unless waxed, allow the passage of air into and out of the container. The difficulty of loss of volatile constituents is usually solved by the provision of an air-tight packing, but this is not always easy. On the other hand, air-tight packing is not always desirable, as air-tight salines are liable to evolve carbon dioxide in hot weather sufficient to burst the bottle. The problem of absorption or loss of moisture is generally solved by the provision of an air-tight container. Glass is not the stable impermeable material it appears to be as ordinary bottle glass is attacked readily by acid or alkaline liquids. In the presence of an acid liquid soda is removed from the glass, the acidity of the liquid is reduced and may even become alkaline. Moreover, glass which has been in contact with acids will remove alkali from a liquid stored in it. Collapsible tubes sometimes raise problems due to the blackening of the surface produced by contact with tooth-pastes. This blackening does not occur when the tubes are covered with a coating of tin. Rubber and bakelite are rapidly finding an extended usefulness. The ideal packing for all products is yet to be discovered.—N. EVERS. *Pharm. J.*, 137 (1936), 377. (W. B. B.)

Extraction—Approach toward the Limit in the Process of. Extraction in four systems is shown to follow closely the theoretical path, calculated from an extraction formula.—C. W. GRIFFIN and M. VON SAAF. *Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 358. (E. G. V.)

Extraction Products Contained in Cells. Emulsions are used for extracting essential oils from flowers, plants, etc.—LABORATOIRE MARCO, SOC. ANON. Belg. pat. 415,871, July 31, 1936. (A. P.-C.)

Germicidal Preparations. A germicidal preparation of relatively low toxicity and adapted for use in suitable concentration in destroying bacteria in contact with higher animal tissues, comprises an aromatic mercury compound resulting from the reaction of a boron oxyacid with an aromatic mercury hydroxide of the kind in which the mercury is attached directly to the carbon atom of an aromatic structure in which none of the carbon atoms has direct linkage with any element other than carbon, hydrogen and mercury.—CARL N. ANDERSEN, assignor to LEVER BROS. CO. U. S. pat. 2,065,849, Dec. 29, 1936. (A. P.-C.)

Insecticide and Insect Repellent and Method of Making. Petroleum oil is extracted with a solvent having a preferential solvent action for aromatic and unsaturated hydrocarbons. The solvent is removed; the separated extract is hydrogenated, and the active principles of a fish poisoning plant are dissolved in the hydrogenated extract.—LOUIS A. MIKESKA, assignor to STANDARD OIL DEVELOPMENT CO. U. S. pat. 2,066,184, Dec. 29, 1936. (A. P.-C.)

Metallic Soaps—Novel Applications of. Uses of various linoleates and stearates are discussed. But the naphthenates are the apotheosis of oil-soluble metal compounds on account of their stability and solubility; thus the sodium soap has high disinfecting properties; the naphthenates are good catalysts for the production of fatty acids from petroleum oils; the zinc soap has antiseptic and fungicidal properties and is an excellent agent for causing miscibility of immiscible bodies; the copper soap is used as an insecticide and preservative; the aluminum soap has excellent emulsifying properties.—H. C. COURTNEY. *J. Soc. Chem. Ind.*, 55 (1936), 781. (E. G. V.)