

PHARMACEUTICAL ABSTRACTS

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

ABSTRACTORS

C. R. ADDINALL	WILLIAM H. HUNT
WILLIAM B. BAKER	ESTELLA KOOZIN
GERSTON BRUCH	ROLAND E. KREMBERS
HENRY M. BURLAGE	CLIFFORD S. LEONARD
ZADA M. COOPER	NATHAN LEVIN
AMELIA C. DeDOMINICIS	L. LAVAN MANCHEY
MELVIN F. W. DUNKER	ARTHUR E. MEYER
GEORGE W. FIBRO	A. PAPINBAU-COUTURE
PERRY A. FOOTB	E. V. SHULMAN
RALPH R. FORAN	FRANK J. SLAMA
GEORGINA S. GITTINGER	EDGAR B. STARKEY
SAMUHL W. GOLDSTEIN	E. G. VANDEN BOSCH
THOMAS C. GRUBB	G. L. WEBSTER
H. B. HAAG	ANNA E. WHITE
G. W. HARGREAVES	ELMER H. WIRTH

CONTENTS

Pharmacology, Toxicology and Therapeutics:	
Toxicology (<i>Continued</i>).....	146
Therapeutics.....	146
New Remedies:	
Synthetics.....	148
Specialties.....	149
Bacteriology.....	153
Botany.....	159
Chemistry:	
General and Physical.....	161
Inorganic.....	164
Organic:	
Alkaloids.....	165
Essential Oils and Related Products.....	168
Glycosides, Ferments and Carbohydrates.....	171
Other Plant Principles.....	172
Fixed Oils, Fats and Waxes.....	173
Unclassified.....	177
Biochemistry.....	185

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

TOXICOLOGY (*Continued*)

Vitamin C—Study of the Action of, in Benzene Intoxication. Guinea pigs were subjected to subacute benzene poisoning through the respiratory tract, and at the same time were injected 2 cg. of vitamin C. The experiment was carried out for 1 hour a day during 4 months, the animals being placed in an atmosphere which, during the first 3 months contained 6.4 mg. of benzene per liter, and contained 25 mg. per liter during the 4th month. From the determination of the blood formulæ, the time of hemorrhage and of coagulation, and the weight curve, it is concluded that ascorbic acid possesses an antagonistic activity relatively to benzene. As it is well tolerated by man, even in large doses, it can be administered without fear of hypervitaminosis.—G. CASTROVILLI. *Medicina Lavoro*, 28 (1937), 106-111; through *Chimie & Industrie*, 39 (1938), 272. (A. P.-C.)

THERAPEUTICS

Acetylsalicylic Acid—Water-Soluble Alkaline Earth Metal Salts of. Therapeutic products are formed by reactions such as that of acetylsalicylic acid and calcium succrate (suitably in aqueous methanol at 0° to 50° C.).—CLEMMY O. MILLER and ARTHUR E. SIEHRS. U. S. pat. 2,114,541, April 19, 1938. (A. P.-C.)

Aloes—External Use of. The results of the use of aloes in an ointment and in the powdered state in ulcerated conditions, in eczema, in ivy poisoning and in the treatment of burns is reported by the author. The gelatinous surface of the split leaves of aloes when applied in a painful and annoying case of palmar eczema caused healing of the lesions after four successive applications. When the split leaves of the plant were applied to ulcers on the stumps of the legs of a patient the pain practically subsided and edema was much reduced after twenty-four hours of treatment. Small ulcers healed in about two weeks, while a larger ulcer which had not responded as quickly to the aloes treatment was then treated with hot packs, scarlet red ointment, balsam of Peru, calamine ointment and zinc oxide ointment. The size of the ulcer seemed to increase and healing had stopped, but further applications of aloes ointment and powdered aloes resulted in the ulcer being completely healed. In the seven cases of pruritus vulvæ which were treated with aloes, five responded satisfactorily and promptly. When aloes ointment was used in a case of ulcers of advanced mammary carcinoma, the discharge and odor were controlled in a few days. In treating a case of ivy poisoning aloes ointment was applied to the thigh of the right side of the patient, while solution of permanganate of potash was applied to the left side. On the side to which the ointment was applied the discomfort subsided more quickly and the condition cleared up more readily than the side on which permanganate was used. Liberal applications of aloes ointment to a severe burn from boiling water reduced the pain, no infection developed, and the patient returned to work nineteen days after the accident occurred. The author concluded that fresh aloes and aloes ointment appears to relieve pain, burning and itching; have some antiseptic action; stimulates the rapid granulation and formation of new tissue; is effective in eliminating the foul odors accompanying infection.—J. E. CREWE. *Minnesota Medicine*, 20 (1937), 10; through *Am. J. Pharm.*, 110 (1938), 145. (A. C. DeD.)

Amino Acids as Therapeutic Agents. A review of uses and actions with 36 references.—M. A. LESSER. *Drug Cosmetic Ind.*, 43 (1938), 43-45, 53. (H. M. B.)

Ascorbic Acid and Dehydroascorbic Acid—New Studies on the Action Against Cancer of Soluble Organometallic Complexes of, When Iron Is Replaced by Copper or Titanium. The titanium and copper complexes of ascorbic and dehydroascorbic acids are useful in the chemotherapy of cancer but the former shows occasional toxic action and the latter a limited activity.—F. ARLOING, A. MOREL and A. JOSSEMAND. *Compt. Rend. Acad. Sci.*, 204 (1937), 824-825; through *Chimie & Industrie*, 39 (1938), 322. (A. P.-C.)

Bee Venom. I. The richness of bee venom in active principles can be increased by extraction and repeated recrystallization by means of aqueous alcohol of increasing water contents. As the purity of the venom increases, its nitrogen, sulfur and phosphorus contents also increase. The product obtained by extraction with 60% ethanol contains 13.78% nitrogen, 1.67% sulfur and 1.17% phosphorus. It is decomposed by proteolytic ferments; heating with organic acids removes the neurotoxic constituents; treatment with mineral acids also eliminates all the other

effects, including the hemolytic power.—G. HAHN and H. OSTERMAYER. *Ber. Deut. Chem. Ges.*, 69 (1936), 2407-2419; through *Chimie & Industrie*, 39 (1938), 315-316. (A. P.-C.)

Belladonna Root Treatment—Bulgarian, for Chronic Encephalitis Lethargica. A description.—I. DEININGER. *Deut. Apoth. Ztg.*, 53 (1938), 719. (H. M. B.)

Bromoferron—Possibility of Substituting, for Iodine in Surgical Practice. The use of bromoferron (composition: bromi puri 8.0, ferri sesquichloridi 28.0, kali bromati 20.0, kali rhodanati 14.0, spiritus vini 70°, 1000) in place of iodine in 140 operations gave equally good results. Bromoferron has the advantage of cheapness and does not injure linen.—M. A. KOLESNIKOV. *Trav. acad. militaire med. armee rouge U. R. S. S.*, 2 (1935), 171-173; through *Chem. Abstr.*, 32 (1938), 7211. (F. J. S.)

Burns—New Treatment of. A brief report of the treatment of burns with ultraviolet light. Illustrated.—F. H. W. LOEWE. *Schweiz. Apoth.-Ztg.*, 76 (1938), 398-400. (M. F. W. D.)

Calcium Ascorbate—Therapeutic Double Salts of. Easily water-soluble double salts are formed of calcium ascorbate with other salts such as calcium gluconate, calcium quininate, etc.—KURT WARNAT, assignor to HOFFMANN-LAROCHE, Inc. U. S. pat. 2,117,777, May 17, 1938. (A. P.-C.)

Chemical Constitution and Local Anesthetic Activity—A Series of Contributions to the Question of Relation between. II. Some Alkoxy Benzoates of Dialkylamino Alcohols. Several series of alkoxy benzoic esters of alkylamino alcohols have been prepared and isolated as hydrochlorides. All of these compounds have proved to be local anesthetics. Details of the studies will be presented. Compounds reported in the paper are arranged in three tables: diethylaminoethyl *p*-alkoxy benzoate hydrochlorides; *p*-ethoxy benzoic ester hydrochlorides of various alkylamino alcohols; and *p*-butoxy benzoic ester hydrochlorides of various alkylamino alcohols.—W. A. LOTT, S. E. HARRIS and W. G. CHRISTIANSEN. *J. Am. Pharm. Assoc.*, 27 (1938), 661. (Z. M. C.)

Di(*p*-Acetylaminophenyl)-Sulfone—Chemotherapy of Pneumococcal Infection by. The toxicity of the product is very low; 200 mg. administered orally is perfectly tolerated by a 20-Gm. mouse. It is very active in streptococcal infections. The active dose is 10 times smaller than that of *p*-aminophenylsulfamide. The most remarkable results, however, are those obtained in the pneumococcal septicemia of mice, in which 1 mg. exerts the same protective action on mice as 10 mg. of *p*-aminophenylsulfamide. On increasing the dose there is observed a considerable increase in the therapeutic effect, which is remarkably constant for all strains of pneumococci. On the whole, the results are very much better than those obtained with optiquine and gold salts.—E. FOURNEAU, J. TREFOUEL, MME. J. TREFOUEL, F. NITTI and D. BOVET. *Compt. Rend. Acad. Sci.*, 205 (1937), 299-300; through *Chimie & Industrie*, 39 (1938), 321-322. (A. P.-C.)

Glycerol-Salicylic Acid Reaction Products, Etc. By reactions such as that of glycerol with salicylic acid (suitably in the presence of a small proportion of a sulfuric ester of glycerol as a catalyst), products are formed which are suitable for use in lotions and ointments for external application in the treatment of neuralgia, neuritis, rheumatism, sprains, bruises, etc. Various operative details and formulæ are given.—ROBERT A. HALL, assignor to COLGATE-PALMOLIVE-PEET Co. U. S. pat. 2,113,374, April 5, 1938. (A. P.-C.)

Head, Tooth and Similar Aches—Drugs Used for the Treatment of. Analgesics, divided into two classes: (I) those which also act as sedatives and those (II) which are stimulating, are discussed. I includes 33 substances and II 18 substances.—ERICH HERRMANN. *Deut. Apoth. Ztg.*, 53 (1938), 836-840. (H. M. B.)

Hemorrhage—Pledget for the Treatment of Accessible, with Snake Venom. A pledget is moistened with a solution containing snake venom having blood coagulating properties *in vitro*. The pledget is used by topical application.—SAMUEL ROSENFELD and SIDNEY E. LENKE, assignors to MARK A. LENKE. U. S. pat. 2,120,680, June 14, 1938. (A. P.-C.)

Hypnotic Derivatives and Their Action. A review of the various hypnotics which belong to the methane, aldehyde and ketone series is given.—G. ZAFFUTO. *Il farm. ital.*, 6 (1938), 427. (A. C. DeD.)

Hypnotic—New. Caponal ("Pola"), a combination of dehydrocholic acid with 32.6% of phenylethylbarbituric acid, is a useful hypnotic.—T. MARTI. *Schweiz. med. Wochschr.*, 68 (1938), 382-384; through *Chem. Abstr.*, 32 (1938), 8071. (F. J. S.)

Nearsphenamine—Effect of the Age of, on Reaction Expectancy.—C. S. STEPHENSON, T. F. PROBEY and W. T. HARRISON. *U. S. Naval Med. Bull.*, 36 (1938), 425-428; through *Chem. Abstr.*, 32 (1938), 7663. (F. J. S.)

Organo-Arsenic Compounds. I. Preliminary Report on the Chemotherapeutic Study in Syphilis. A review of the previous work on the chemotherapy of syphilis by means of various organo-arsenic compounds is given, together with analyses of samples of arsphenamine and nearsphenamine both prepared by the author and bought on the open market.—P. S. YANG. *Sci. Repts. Natl. Univ. Peking*, 1 (1936), No. 4, 1-8; through *Chimie & Industrie*, 39 (1938), 722. (A. P.-C.)

Protein Compounds—Sulfur-Containing. Products which may be used in treating and preventing cancer are obtained by treating carbon disulfide with a protein hydrolysate such as that from glue and lime water at a hydroxyl-ion concentration which at most corresponds to that of a solution of slaked lime, the sulfurized products thus obtained being oxidized in aqueous solution with liberation of hydrogen sulfide by use of an oxidation catalyst such as manganese dioxide, etc.—OSKAR HUPPERT. *U. S. pat.* 2,112,210, March 22, 1938. (A. P.-C.)

Tin, Calcium, Bismuth, Copper, Etc.—Therapeutic Organic Compounds of. Various details are given for making compounds such as tin adenylate or other tin compounds of nucleoproteins, etc., and related compounds of other metals and compounds containing iodine, etc., various of which may be used in the treatment of diseases such as agranulocytosis, benzene poisoning, X-ray poisoning and various leucopenias incident to exhaustion of the reticulo-endothelial systems.—SIMON L. RUSKIN, assignor to FRANCIS R. RUSKIN. *U. S. pat.* 2,115,751, May 3, 1938. (A. P.-C.)

Tropical Ailments and Their Treatment.—KANNEGIESSER. *Pharm. Monatsh.*, 19 (1938), 114-115. (H. M. B.)

Valerian Root—Investigation of the Sedative Action of the Juice, Alcoholic Extract and Distillates of. The alcoholic extract (after distillation of the alcohol) is the most active, the fresh juice, the distillation condensate and the essential oil being much less effective. The oil behaves in a very special manner; its effect is not immediate, but is reproduced at about the same hour during several days, after a single administration. On the other hand, the small quantities of essential oil present in the fresh juice and in the alcoholic extract are completely inactive. The essential oil is therefore not the principal factor of the activity of the drug; the compounds dissolved in the distillation condensate contribute much more to the sedative action of valerian. The alkaloids chatin and valerin were found only in the fresh roots; it is possible, however, that they pass in the alcoholic extract.—W. RUSIECKI. *Farm. Wspolczesna*, 6 (1937), 3-11; through *Chimie & Industrie*, 39 (1938), 320. (A. P.-C.)

NEW REMEDIES

SYNTHETICS

Aludrox is a colloidal suspension of aluminum hydroxide. It neutralizes only free acid, and the acid removed from the stomach is reformed in the duodenum, thus safeguarding the acid-base equilibrium of the blood. It is recommended for the treatment of peptic ulcer, and hyperacidity, controlling the acid factor without the dangers of alkalosis, or secondary hypersecretion.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 796. (S. W. G.)

Cycliton (F. Hoffmann-LaRoche and Co., A. G., Berlin) is 2,4-dimethyl-isoxazol-3-carboxylic acid-diethylamide. It is supplied as a 25% aqueous solution for intravenous and intramuscular injections, and is recommended in the treatment of circulatory disorders.—*Pharm. Zentralhalle*, 79 (1938), 355. (N. L.)

Ditonal Strong (Triplex) (Athenstaedt & Redeker, Hemelinger b. Bremen) contains (in each dose) trichlorbutylsalicylic acid 0.72 Gm., dimethylaminophenazon 0.9 Gm. and also 0.048 Gm. It is used as an analgesic.—*Pharm. Zentralhalle*, 79 (1938), 356. (N. L.)

Hesperidin Tablets each contain 0.25 Gm. of 7-rhamnosidoxy-5:3'-dihydroxy-4'-methoxyflavanone or vitamin P, a flavone glycoside abundant in the juice of citrus fruits, and particularly in that of the unripe orange. The physiological activity is said to differ from that of vitamin C inasmuch as certain conditions characterized by an increased permeability or fragility of the capillary wall respond to hesperidin or to impure preparations of vitamin C, but are not affected by

administration of pure ascorbic acid. Hesperidin is also capable of reducing the occurrence of induced petechiæ and of petechiæ caused by bismuth or arsenic medication in patients with general vitamin deficiency, when given in doses of 1 Gm. or less daily. The dosage of hesperidin tablets is therefore recommended as 1 to 4 daily. This preparation is supplied in bottles of 50 tablets.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 798. (S. W. G.)

Jucundal (Schering A. G., Berlin) is tri-*n*-butylacetamide. It is supplied in capsules of 0.4 Gm. and is recommended as an antispasmodic.—*Pharm. Zentralhalle*, 79 (1938), 356. (N. L.)

Opacin (Pharmaceutical Specialities (May & Baker) Ltd., Dagenham, London) is iodophthalein. It is used in intravenous administration in radiological visualization of the gall bladder. Dose: adult, average weight, 3 to 3.5 Gm., dissolved in 30–50-cc. water. Administered in two injections, given slowly. Must be freshly prepared and sterilized, if the ampuls of stable solution are not employed. It is marketed in powder: bottles of 25 Gm.; solution: single ampuls (each containing 1.75 Gm. in 20-cc. sterile distilled water).—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

O-R-95 Throat Tablets contain the ethylbutyl ester of diamidodiethylamidoethylcarbamido-dicarboxy-diphenylmethane-acridino-oxyquinoline, $C_{50}H_{63}N_6O_9$, 0.6025%; borax, 0.3125%; potassium sulfate, 0.625%; and benzocaine, 0.0375%. This substance, $C_{50}H_{63}N_6O_9$, is a newly synthesized compound which is neutral, crystalline, water-soluble and of a slightly bitter taste. It is stable in all solvents, resists boiling and is not precipitated by salines, sera or proteins. These tablets are unusually effective in controlling pain on swallowing, and inflammatory conditions, due to the high antiseptic activity of the new organic substance which has a very low toxicity. One tablet should be sucked slowly every three hours or oftener if necessary, but should not be chewed; no harmful effects have followed the use of 5 to 10 a day. They are supplied in boxes of 20 or bottles of 100.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 799. (S. W. G.)

Sanulom (Milton Proprietary Ltd., London) is herbal-silver colloid. It is used in gingivitis, stomatitis, parodontal disease, pyorrhœa, alveolaris and sockets after dental extractions, dental root dressing and permanent root filling. It is applied as an injection into the gum, applied as a dressing, etc. It is marketed in bottles of 1 ounce.—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

Stilboestrol is a synthetic compound, 4:4'-dihydroxy- α,β -diethylstilbene or diethylstilboestrol, having powerful oestrogenic activity. Its action in animals is the same as that of oestrone and it can be used in treatment, either by injection or by mouth, for the same purposes as the natural hormone. It is indicated in amenorrhœa, menopausal symptoms and conditions of follicular hormone deficiency generally. The injection is issued in ampuls containing 1 mg. or 5 mg. in 1 cc., singly or in boxes of 6 or 12. For oral administration tablets containing 0.1, 0.5, 1 and 5 mg. are available in bottles of 25 or 100.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 799. (S. W. G.)

Testoviron (Schering Ltd., London) is the propionic acid ester of the pure crystalline male hormone testosterone. It is used primarily in conditions attributable to decreased functional activity of, or senile changes in, the prostate and seminal vesicles; also in gynæcology. The dose is 5–10 mg. daily by injection; after the fifth injection, 2 or 3 per week of 5 mg. each; total course, 12 injections. It is supplied in boxes of 4 x 1 cc. ampuls each 5 mg.; 4 x 1 cc. ampuls each of 10 mg.; 2 x 1 cc. ampuls each 25 mg.—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

SPECIALTIES

Anaclasine Tablets contain magnesium and sodium hyposulfites, halogen salts of magnesium and multiple specific polypeptides. This combination is suggested for the prevention of anaphylactic shock, and to desensitize the body. It possesses a powerful cholagogue action, detoxicates the bowels and viscera, and restores sympathetic equilibrium. The dose recommended is 3 to 5 tablets daily.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 796. (S. W. G.)

Anastil-Calcium (Vial & Uhlmann, Inh. Apoth. E. Roth, Frankfurt a. M.) consists of anastil (guaiaicol) and calcium glutamate. It is recommended for use in pneumonia.—*Pharm. Zentralhalle*, 79 (1938), 355. (N. L.)

Caldeferrum Tablets contain ferrous iron, calcium and vitamin D, in such proportions that 4 tablets provide 25 mg. of iron, 0.5 Gm. of calcium and 2000 units of vitamin D. The amount

of iron is 10 mg. in excess of that required daily by the normal adult, and 5 mg. in excess of that necessary in pregnancy and lactation; the calcium content is sufficient to supplement the normal dietary intake to the level of 1.5 Gm. per day required during pregnancy and lactation, while the vitamin D present is sufficient to insure that all the calcium ingested during the day is fully utilized. Caldeferrum tablets are recommended for the expectant or nursing mother, for the growing child and in all cases where a nutritionally adequate intake of iron, calcium and vitamin D is required. The dose is 4 tablets daily, taken after meals. Caldeferrum tablets are supplied in bottles of 50, 100, 500 and 1000.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 796. (S. W. G.)

Cletos-Blutreinigungstee (Marien-Apotheke, & Scheilner, Neusalza-Spremberg) consists chiefly of senna leaves, raspberry, calendula and arnica. It is recommended as a blood tonic and laxative.—*Pharm. Zentralhalle*, 79 (1938), 371. (N. L.)

Combizym is a multivalent digestive enzyme preparation. It contains pancreatic and vegetable enzymes, and is active in both alkaline and acid media (p_H 2.5 to p_H 9). The action therefore extends from the stomach to the large intestine, and includes the whole of the foodstuffs. It is recommended for the treatment of dyspeptic disturbances of varying origin. Combizym is supplied in the form of dragees, the dose is 1 to 2 dragees uncrushed in the course of a meal or immediately after it. If necessary the dose may be increased, as it is harmless and well tolerated. Combizym is supplied in packets of 30 dragees.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 797. (S. W. G.)

Contrapect Drops (Flora, G. m. b. H., Fabrik für chem.-pharm. und kosmetische Mittel, Köln a. Rhein) consists of fluidextract of althææ 55 parts, extract of thyme 20 parts, fluidextract of licorice 24 parts and codeine phosphate 1 part. It is indicated in the treatment of pertussis, bronchitis, gripe and pneumonia, and is supplied in drop-flasks, each containing 20 cc.—*Pharm. Ztg.*, 82 (1937), 1129. (N. L.)

Dotrigen (Dr. W. H. Trippen & Co., Chem. Fabrik, Freiburg, Breisig) is a disinfectant consisting chiefly of para-chlor-meta-cresol and para-chlor-meta-xylene.—*Pharm. Zentralhalle*, 79 (1938), 434. (N. L.)

Examen is a liver extract intended for parenteral use in the treatment of pernicious anemia; 2 cc. representing the active hemopoietic factor of 100 Gm. of fresh liver. It is protein-free and contains a minimum of inert matter, thus insuring that injection is painless, since each cc. contains only 5.7 mg. of solid matter. Each batch of the material is clinically tested to insure potency before issue. In the average case of pernicious anemia, the initial dose is 4 cc., followed by 2 cc. every two weeks until red cells and hemoglobin are normal; thereafter 2 cc. every three to five weeks is usually an adequate maintenance dosage. Examen is supplied in 2-cc. ampuls in boxes of 3 or 6, and in 12-cc. phials.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 797. (S. W. G.)

Grüßix-Kräuter (Labor. G. Graichen, Leipzig, Newirederitzsch) contains oil of pine needles, oil of lavender, oil of rosemary, menthol and a compound solution of ammonia and soap. It is used as a liniment in rheumatism, etc.—*Pharm. Zentralhalle*, 79 (1938), 282. (N. L.)

Hemostyl (The Antigen Laboratories, London) is a polyhormonal biological tonic prepared from horse serum of second bleeding. It is used in secondary anemia and debility. The dose in ampuls (oral) is 1-2 ampuls, per day. **Hemostyl Syrup** in adult doses: one tablespoonful 2-3 times daily. It is marketed in boxes of 6 ampuls, 10 cc. per ampul; boxes of 18 ampuls. Syrup in 10 ounce bottles.—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

Hepatex-T is a solution of the principles of mammalian liver, including the vitamin B complex, which is effective in the treatment of nutritional macrocytic anemia. It has been found that tropical macrocytic anemia, is resistant to treatment with the highly purified pernicious anemia factor, but whole liver with improvement in diet, restored the blood to a state of normality. Hepatex-T contains a high concentration of the tropical anti-anemia factor together with pure crystalline vitamin B₁ and therapeutically active fractions of the vitamin B₂ complex. It is administered by intramuscular injection, commencing with 2 cc. daily. Hepatex-T is supplied in boxes of 6 x 2 cc. ampuls, and in rubber-capped bottles containing 10 cc.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 797. (S. W. G.)

Histopin-Balsam (Nitritfabrik A. G., Berlin-Köpenick) consists of histopin (an extract of various staphylococci strains) in an ointment base of lanolin and vaselin with the addition of bismuth subnitrate, bioform, zinc oxide and balsam of Peru. It is recommended in the treatment of skin diseases.—*Pharm. Zentralhalle*, 79 (1938), 356. (N. L.)

Hormodyn-Sodium (Nordmark-Werke, Hamburg) contains cysteine, glycocholic acid, glutamic acid, sodium salts and vitamin C. It is marketed as a granulated powder.—*Pharm. Zentralhalle*, 79 (1938), 356. (N. L.)

J. B. 5 Suppositories (Pharmaz. Fabrik. J. Ch. Bellas, Berlin) consist chiefly of dried intestine extract, pancreatic extract, hepatic extract, spleen and a magnesium compound. It is recommended in the treatment of tumors.—*Pharm. Zentralhalle*, 79 (1938), 282. (N. L.)

Kaomin (Eli Lilly & Co. Ltd., London) contains bismuth subcarbonate, 100; kaolin, 280; magnesium hydroxide, 60; sucrose, 180; vegetable mucilage, 20; vanillin, 0.60 parts. It is used for spasticity of the intestines, intestinal fermentation, diarrhoea, colonic dysfunction, hyperacidity, peptic ulcer. The dose is one tablespoonful or dessertspoonful in half a glass of water, one to four times daily, as prescribed. It is marketed in jars of 4 ounces and 1 pound.—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

Kombetin is a preparation of *K*-strophanthin obtained from the seeds of *Strophanthus Kombé*, intended for injection in cases of acute circulatory failure and chronic heart insufficiency. Intravenous strophanthus medication is of advantage since it assures rapidity and reliability of action, absence of all intestinal discomforts and immediate onset of sedative and soporific action. The dose is 0.25 to 0.5 mg. given at intervals of at least twenty-four hours and depending on the patient's condition. No injections may be given while the heart is still under the influence of previous digitalis medication. Kombetin is issued in ampuls containing 0.5 mg. in 1 cc.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 798. (S. W. G.)

Kyaugutt (Kyffhäuser-Laboratorium, Bad Frankenhausen) contains the extracted principles of adonis, squill, strophanthus, camphor, valerian and spigelia. It is marketed as drops and is recommended as a nervine in functional cardiac disorders.—*Pharm. Zentralhalle*, 79 (1938), 356. (N. L.)

Mancitrop (Fabrik pharm. Präparate Ifah, G.m.b.H., Hamburg) consists of the calcium salt of mandelic acid in combination with ammonium chloride.—*Pharm. Zentralhalle*, 79 (1938), 435. (N. L.)

Mastizin (Dr. Kirstein, Bakteriologischen Institute, Berlin) is a perfumed formaldehyde soap solution used in the treatment of streptococcic mastitis.—*Pharm. Zentralhalle*, 79 (1938), 282. (N. L.)

Mucidan preparations combine the effect of rhodanides in liquefying mucus with the antiseptic effect of formaldehyde. The tincture contains potassium rhodanide, formaldehyde and gelatin. It is described as a penetrative gargle, the potassium rhodanide liquefies pus and mucus, allowing the formaldehyde to penetrate to the focus of the infection. The formalin is loosely bound to the gelatin, to inhibit its irritant effect. It is indicated for the treatment of angina, influenza, diphtheria and other infections of the mouth and throat. For gargling, and as a mouth wash, a dilute solution is used. For painting the tonsils it is diluted 1 to 3 with water. Nasal tampons with a dilution of 1 to 20 can be used for the treatment of diphtheria carriers. Mucidan tincture is supplied in 25-cc. bottles. The tablets contain ammonium rhodanide, combined with hexamine as a mild antiseptic, flavored with sugar and aromatic substances. The tablets are indicated as an expectorant in hoarseness, and dryness of mouth after X-ray treatment. One or two tablets can be slowly dissolved in the mouth about every two hours. Mucidan tablets are supplied in boxes of 25 and 100 tablets.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 798. (S. W. G.)

Neo-Femergin (Sandoz Products, London) is ergobassine (ergomatrine tartrate) and ergotamine tartrate. It is used in uterine hemorrhages, especially those due to post-partumotomy, Caesarian section, etc. It is supplied in tablets, solution and ampuls.—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

Colax (Asepsia-Werke, Bayer & Kitz, Frankfurt a. M.) contains chiefly extract of aloe, extract of colocynth, resin of jalap, soap and intestinal extract. It is supplied in pill form and is used as a purgative.—*Pharm. Zentralhalle*, 79 (1938), 282. (N. L.)

Parbutole (Sharp & Dohme Ltd., London) is a dietary supplement. It contains carbohydrates, 14%; proteins, 5%; fats, 2%; vitamin A, 2400 U. S. P. XI units; calcium hypophosphite, $\frac{2}{8}$ gr.; iron hypophosphite, $\frac{1}{4}$ gr.; manganese hypophosphite, $\frac{1}{8}$ gr.; potassium hypophosphite, $\frac{1}{4}$ gr.; sodium hypophosphite, $\frac{1}{8}$ gr.; sodium salicylate, $\frac{3}{4}$ gr.; alcohol, 17%; flavor *q. s.* The dose is 1 or 2 tablespoonfuls in orange juice, milk or water four times a day. It is supplied in bottles of 6 and 12 ounces.—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

Promucin (Apotheker F. Michalowsky, Berlin) is a 3% ephedrine salve used in the treatment of inflamed nasal conditions.—*Pharm. Zentralhalle*, 79 (1938), 283. (N. L.)

Quinuryl contains quinic acid, an anti-oxidant which prevents the formation of urea, and extract of orthosiphonia, a vegetable diuretic, which stimulates the hepatic functions, and increases the elimination of water, urea and uric acid. It is claimed to decrease the amount of urea in the blood, and therefore to relieve the symptoms of azotemia, such as headache and vertigo. Quinuryl is supplied in tablets, and the dose is 4 to 8 tablets daily.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 799. (S. W. G.)

Ravima Preparations (C. Waltzinger, chem.-pharm. u. med.-di-ätet. Präparate, München, 2 NO) consist chiefly of extract of malt with calcium hypophosphate, ferric pyrophosphate or a mixture of hormones (thymus, thyroid, suprarenal, ovarium, etc.). They are recommended as nervines in the treatment of anorexia, neurasthenia and anemia.—*Pharm. Ztg.*, 82 (1937), 1150. (N. L.)

Saccharucal (Chem. Fabrik. Endezie, G.m.b.H., Stetten) is a sterile dextrose solution of potassium chloride and is used in cardiac disturbances.—*Pharm. Zentralhalle*, 79 (1938), 283. (N. L.)

Sicaphos (Pharmakochemie Immenstadt, Immenstadt (Alig)) contains salts of calcium, copper, potassium, magnesium, manganese, phosphorus, silicon, with lactose, glucose and maltose. It is marketed as a powder and is recommended in the treatment of scrofula, tuberculosis, anemia, etc.—*Pharm. Zentralhalle*, 79 (1938), 283. (N. L.)

Siphuryl is a solution of orthosiphonia extract, recommended as a diuretic with hepatorenal action and no contra-indications. It can be used in cases of acute nitrogenous oliguria, all infectious conditions, gout and rheumatism. The dose is 50 drops three times daily.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 799. (S. W. G.)

Syngasept (Syngala, Wien) consists of an addition compound of metallic silver and manganese dioxide. It is marketed as a 1% colloidal solution, salve and bandage.—*Pharm. Zentralhalle*, 79 (1938), 435. (N. L.)

Uzaryl (Uzara-Werk, Melsungen) contains uzaron, sodium phenobarbital and extract of belladonna.—*Pharm. Zentralhalle*, 79 (1938), 435. (N. L.)

Vacagen respiratory mixed vaccine for oral use is standardized on the basis of complement fixation and each tablet contains the soluble antigenic fractions of pneumococcus, types I, II and III, 25,000 million; streptococcus, hemolytic, nonhemolytic and viridans, 15,000 million; influenza bacillus, 5000 million; *micrococcus catarrhalis*, 5000 million; *staphylococcus aureus*, 5000 million; and Friedlander bacillus, 5000 million. The soluble antigenic substances are vacuum-dried, and incorporated into enteric coated tablets, which are indicated as an active immunizing agent against infections of bacterial origin common to the respiratory tract. The dose is 1 tablet daily, to be taken on an empty stomach preferably an hour before breakfast with a glass of cold water, on seven successive days; since immunity is relatively slight and of short duration, resistance to infection may be maintained by taking 1 tablet once or twice a week. The same dosage is applicable to children. Vacagen tablets, which should be stored in a refrigerator, are supplied in vials of 20 tablets.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 800. (S. W. G.)

Vegemucin (H. R. Napp Ltd., London) is a combination of vegetable mucins; flavored coarse powder; contains no alkalis. It is used in hyperacidity and allied conditions. The dose is one teaspoonful after meals with water. It is supplied in tins of 4, 8 and 16 ounces.—*Australasian J. Pharm.*, 19 (1938), 1194. (A. C. DeD.)

Vitabene Tonic Tablets contain tricalcium phosphate 30.9; stabilized kola powder, 26.0; potassium carbonate, 14.0; anhydrous sodium carbonate, 14.0; magnesium carbonate, 3.2; caffeine, 1.6; manganese carbonate, 1.2; cupric sulfate, 0.1; orange flavoring powder, 0.6; excipient, 8.4. The stabilized kola powder employed has been treated to destroy the enzymes present, while retaining intact the active principle kolatine-caffeine, a complex from which kolatine may be extracted in prismatic crystals, $C_8H_8O_4$, m. p. 148° C. This substance has a direct stimulating effect on the brain, a circulatory effect due to an increased tonus of cardiac muscle and causes a general increase in the tonus of skeletal muscle. These tablets contain also the elements valuable in nutrition, copper, manganese, calcium and phosphorus, together with sodium, potassium and magnesium salts which are intended to reinforce the alkalinizing or base-producing value of the diet. Vitabene tablets are intended as a general tonic for those following a sedentary life,

in convalescence or in temporary or permanently lowered vitality; they are also of value when feats of strength are attempted and for athletic contests. The dosage for adults is 2 tablets three times daily with water; during pregnancy or lactation 2 tablets should be taken four times daily. The dosage for children is half the above.—*Quart. J. Pharm. Pharmacol.*, 11 (1938), 800.

(S. W. G.)

BACTERIOLOGY

Antidiphtheritic Immunization—Peranal. In rabbits and guinea pigs there was no development of immunity after the peranal administration of anatoxin or antiserum. The administration of ox bile peranally 15 minutes before the anatoxin or antiserum resulted in the production of some degree of immunity by some of the animals. There was, however, a marked individual variation produced among the rabbits and guinea pigs used.—H. HAMADA. *Acta dermatol. (Japan)*, 28 (1937), 123; through *Am. J. Pharm.*, 110 (1938), 208.

(A. C. DeD.)

Antiseptics—Critical Review of Methods for the Evaluation of. The discussion involves the phenol coefficient, tests for inhibition and penetration, wet and dry filter paper methods, tests for germicides, tests for fungicides and miscellaneous tests, *e. g.*, antiseptic tablets and cough drops. Heineman recommends that uniform methods be adopted by all laboratories which market antiseptics. He proposes the following: To each tube containing 5-cc. antiseptic in a given concentration 0.5 cc. of the culture is added. From each of the mixtures (with decreasing concentrations of antiseptic) at intervals of 5, 10 and 15 minutes, one 4-mm. loopful is carried over into tubes containing broth (10 cc. each). The content of the 4-mm. loop consists of 10/11 antiseptic and 1/11 culture. Therefore the culture must contain ample growth in order that the amount of antiseptic carried over may be small. The tubes inoculated are incubated at 37° for 48 hours. From the 48-hour cultures of the concentrations which after the 5 minute exposure show growth and after the 10 minute exposure show no growth and from those of the lowest concentrations which after the 5 minute exposure show no growth 1-cc. amounts, respectively, are carried over into a second series of broth tubes. This series is incubated at 37° for 7 days. Phenol solutions are prepared and mixed with 0.5 cc. of culture to determine whether the resistance of the organism is satisfactory. Tests for germicidal activity are made in the same manner as tests for the phenol coefficient with the exception that cultures are prepared at different intervals of time. When agar plate and agar plate cup methods are used, the clear as well as the opaque areas are measured for size. Cultures are prepared from the opaque zones and may also be made from the clear zones. Determinations of fungicidal properties are made in Sabouraud's honey mediums. Determinations of fungistatic activity are made in a like manner. The inoculum for a test of a fungicide consists of a suspension of 10,000 spores per cu. mm.—P. G. HEINEMAN. *Arch. Path.*, 26 (1938), 320; through *Squibb Abstr. Bull.*, 11 (1938), A-1212.

(F. J. S.)

Antiseptics—History of Early. The period "Before Lister" is reviewed.—M. F. W. DUNKER. *J. Chem. Educ.*, 15 (1938), 58-61.

(G. V.)

Antistreptococcic Agents. Antistreptococcic compounds are formed by reactions such as treating *p*-aminobenzenesulfonamide or *p*-aminobenzenesulfonyl-*p'*-sulfonamidophenylamide with a soluble nitrite in the presence of excess of inorganic acid to form a diazonium compound and then reducing the acidity of the solution to cause the diazonium salt to combine with itself to form a compound of higher molecular weight which may be used in the form of its alkali metal, alkaline-earth metal, ammonium, alkyl-substituted-ammonium or alkanol-substituted-ammonium salts. Various details and examples are given.—ERVIN C. KLEIDERER and HORACE A. SHONLE, assignors to ELI LILLY AND CO. U. S. pat. 2,117,251, May 10, 1938.

(A. P.-C.)

Antitoxins—Treatment of. In the purification of antitoxin contained in a solution of serum proteins by selectively digesting the greater portion of the serum proteins with a proteolytic enzyme and without substantial destruction of the antitoxin, the solution after digestion is treated with finely divided tricalcium phosphate to absorb undesirable materials.—IVAN A. PARFENTJEV, assignor to LEDERLE LABORATORIES, INC. U. S. pat. 2,123,198, July 12, 1938.

(A. P.-C.)

Bacteria Coli—Presumptive Test for False Positive Reaction for, in Water. Three types of false positive reactions were found in testing water samples obtained in Victoria: (a) synergic reactions; there were two different pairs, each one of which contained a member of the *Proteus* group, associated in one case with *Str. faecalis* and in the other with *B. coli anærogenes*; (b) anærobic types; the anærobe concerned was *Cl. Welchii*; and (c) masked positives; these were

only rarely found.—N. ATKINSON and E. J. F. WOOD. *Austral. J. Exp. Biol.*, 16 (1938), 103–109; through *J. Soc. Chem. Ind.*, 57 (1938), 989. (E. G. V.)

Bacterium Paratyphosum B—Isolation of, from the Excreta of Patients with Paratyphoid Fever. Since epidemics of paratyphoid fever are rare, the findings described in this report are of considerable interest. The feces and urine of 118 cases of paratyphoid B fever were examined bacteriologically. The fecal and urine specimens were streaked directly on brilliant green eosin agar and inoculated into tetrathionate broth. After 24 hours incubation at 37° C. the tetrathionate cultures were streaked on the brilliant green eosin agar. *Bact. paratyphosum B* was isolated from 91.4% of the fecal specimens and 35.7% of the urine specimens. Fecal and urine specimens were examined from the first to the fifteenth week of the disease. After the second week there was a gradual disappearance of the organisms. Contrary to the commonly accepted belief, organisms were found in the feces during the first week of the disease. No blood cultures were made and the results of agglutination tests were not reported.—V. GLASS and H. D. WRIGHT. *J. Path. Bact.*, 45 (1937), 431. (T. C. G.)

Botulism—Seal Meat as a Source of. A toxin due to *B. botulinus* was found in seal meat having caused the death of four persons. The fat of the same portion of meat did not contain any. This strain differed from *B. botulinus* A, B and C and the toxin which is produced was not neutralized by the botulinus antitoxins A, B and C. Morphologically and biologically (but not toxicologically) the new strain E was closest to strain C.—B. I. KUROCHKIN and K. G. EMELYAN-CHIK. *Voprosy Pitaniya*, 6 (1937), No. 1, 141–148; through *Chimie & Industrie*, 39 (1938), 765. (A. P.-C.)

Calomel Ointment—Improved, Bactericidal Effectiveness of. An investigation as to the cause of the increased efficiency of the Improved Calomel Ointment is reported. On the basis of experimental results it seems evident that the presence of gelatin in the suspension is a factor of foremost significance in producing a wide zone of inhibition when ointments containing such suspensions are tested by the *F. D. A.* agar plate technic. A considerably simplified method of preparation is suggested which, unless further evidence to the contrary is obtained would seem to provide an equally effective product.—F. W. SCHILLER. *Am. J. Pharm.*, 110 (1938), 289. (A. C. DeD.)

Coli-Aerogenes Group—Comparison of Methods for Detection of, in Water. Lactose broth (with indicator) was found to be a more suitable medium for use in the presumptive test with Victorian drinking water than MacConkey broth, crystal violet broth, a synthetic medium or Dominick and Lauter medium. Eosin-methylene-blue agar gave better results as plating medium for the confirmatory test than MacConkey, Endo or violet-red bile agar. It was concluded that the confirmation of presumptive positives (those giving acid and gas within 24 hours) was unnecessary and of doubtful tests essential.—N. ATKINSON and E. J. F. WOOD. *Austral. J. Exp. Biol.*, 16 (1938), 103–109; through *J. Soc. Chem. Ind.*, 57 (1938), 989. (E. G. V.)

Corynebacterium Diphtheriae—Effect of Serum on Colonial Form of. Various concentrations of horse, ox, sheep, rabbit, guinea pig, rat and human serum were added to liquid and solid media inoculated with *gravis*, *mitis* or intermediate strains of *Corynebacterium diphtheriae*. All *mitis* strains produced smooth, round colonies with all sera in all concentrations. Rabbit and guinea pig sera (15%) did not affect the characteristic colonial morphology of *gravis* and intermediate strains, while horse, ox and to a lesser degree, sheep serum converted *gravis* and intermediate strains to typical *mitis* colonies. Human and rat sera gave poor type differentiation. In liquid media, *mitis* strains produced a characteristic uniform turbidity with all types of sera, while *gravis* strains in media containing intermediate concentrations of horse, ox, sheep and rabbit sera also produced a uniformly turbid growth. Media containing *gravis* antibacterial serum induced *gravis* strains to develop typical *mitis* colonies. High titre horse antitoxic serum had the same effect on *gravis* colonies as similar concentrations of normal horse serum. No attempt was made to investigate the significance of these effects of serum of the colonial morphology of *Corynebacterium diphtheriae*, but the importance of using the proper concentration of the serum which gives the most distinct type differentiation is apparent where an attempt is made to distinguish the various types of the diphtheria bacillus for routine diagnostic or research purposes.—R. KNOX. *J. Path. Bact.*, 45 (1937), 733. (T. C. G.)

Corynebacterium Diphtheriae—Routine Diagnosis of, with Clauberg's Tellurite Indicator Medium. The reader is referred to the original article for the composition and preparation of this

rather complicated medium which contains fresh and glycerinated ox blood, water blue 6 B extra P, metachrome yellow II R. D., cystin, potassium tellurite, placenta infusion, peptone, sodium chloride, sodium dihydrogen phosphate and agar. After 16-24 hours incubation on this medium, the diphtheria bacillus produces a blue color in sharp contrast to the red color of the medium. The appearance of the diphtheria bacillus on this medium is so characteristic that it can be readily distinguished from diphtheroids and other contaminants with the naked eye. In the routine examination of 3675 swabs from cases, carriers and convalescents which were streaked concurrently on Loeffler's and Clauberg's media, 42.2% of the swabs were positive only on Clauberg's medium, indicating the superiority of this medium for the isolation of *C. diphtheriae*.—P. L. SUTHERLAND and J. L. G. IREDALE. *J. Path. Bact.*, 45 (1937), 325. (T. C. G.)

Cyclic Ether Compounds—Guanidino and Biguanidino Derivatives of. Various bactericidal compounds are obtained by the reaction upon an amino-substituted ether in which a six-member carbocyclic nucleus is linked to a second, at most bicyclic, ring system consisting of six-membered carbocyclic rings, by an atom of oxygen or sulfur, with cyanamide or dicyanodiamide, in the presence of an inert solvent. Numerous examples are given.—BRUNO PUETZER, assignor to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,107,712, Feb. 8, 1938. (A. P.-C.)

Diphtheria Prophylaxis. Diphtheria immunization by a single injection of alum precipitated toxoid is strongly condemned; 568 Schick-positive children treated with one 0.5-cc. dose resulted in 20% being Schick-positive when retested 3 to 5 months later. Positive Schick reactions occurred 3 to 5 months after injection in only 8% of 611 children, 2 doses being given at 14 day intervals. Of 87 children originally Schick-negative using a single injection, 28% were strongly Schick-positive after one year. Of 25,000 children inoculated during the last 12 years with 3 doses of any antigen, none developed a serious case of diphtheria. An attempt at immunization by breathing air in which toxoid had been sprayed was not completed due to marked reactions which developed.—G. B. BOUSFIELD. *M. Officer*, 59 (1938), 5; through *Am. J. Pharm.*, 110 (1938), 208. (A. C. DeD.)

Diphtheria Toxin-Antitoxin Complex—Action of Aminophenylarsenates on. The compounds of pentavalent arsenic, sodium acetyl-*p*-aminophenylarsenate and sodium aminophenylarsenate, precipitate the toxin-antitoxin complex like the corresponding antimony compounds, but they precipitate the toxin only from dilute solutions or after removal of protective colloids.—H. Goldie. *Compt. Rend. Soc. Biol.*, 123 (1936), 883-887; through *Chimie & Industrie*, 39 (1938), 717. (A. P.-C.)

Diphtheria Toxin-Antitoxin Complex—Influence of Aminophenylstibinates on the. Addition of small quantities (1 to 3 mg.) of a very slightly acid aminophenylstibinate, such as ureastibamine, to diphtheria toxin, either pure or diluted 1:10 or 1:20, produces a partial, belated precipitation of the toxin. In more dilute solutions of the toxin, *e. g.*, 1:100 or 1:200, there is merely an opalescence. With diphtheria toxin-antitoxin mixtures the same doses of aminophenylstibinate produces a rapid and abundant precipitation in the concentrated mixtures and an intense opalescence in the dilute mixtures. Maximum velocity of precipitation is obtained with mixtures of equivalent quantities of toxin and antitoxin.—H. GOLDIE. *Compt. Rend. Soc. Biol.*, 123 (1936), 768-770; through *Chimie & Industrie*, 39 (1939), 316. (A. P.-C.)

Disinfectants—Analysis of. The merits of the *F. D. A.* method for determining phenol coefficient are briefly discussed, and adoption of the method as official is recommended.—C. M. BREWER. *J. Assoc. Official Agr. Chem.*, 21 (1938), 417-418; through *Chem. Abstr.*, 32 (1938), 8698. (F. J. S.)

Disinfectants and Deodorants. A discussion of composition, applications and new products.—H. SILMAN. *Soap* (Sanitary Products Sect.), 14 (1938), 101, 105, 121; through *Chem. Abstr.*, 32 (1938), 7675. (F. J. S.)

Dysentery—Bacillary, in the Glasgow Area. This paper is of interest because it throws some light upon our rather scant knowledge of the epidemiology and bacteriological diagnosis of the bacillary dysenteries. 1379 fecal specimens from 1104 suspected cases were examined over a period of 16 months. *B. dysenteriae* Sonne was isolated from 120 (10.8%) cases, and *B. dysenteriae* Flexner from 88 (7.0%) cases. Out of 215 typical dysenteric stools, dysentery organisms were isolated from only 56.7%, indicating the inadequacy of present-day methods for the isolation of these organisms. The specimens were streaked directly upon litmus bile-salt lactose agar plates. All but one of the Flexner strains fell into one of the V, W, X, Y or Z serological groups; and all

of the Sonne strains were agglutinated by the same antiserum. No fecal specimens yielded more than one type of organism, and repeat specimens yielded the original types. After the sixth day of the disease, the chances of isolating dysentery bacilli from stools rapidly decrease. Occasionally agglutination tests in Sonne cases gave suggestive results, but the titres found in Flexner cases were usually too low to be significant. The attack rate for both sexes was approximately equal, but 67% of the cases occurred in those under 15 years of age. There was no marked seasonal incidence of the disease. Usually the Flexner cases were more severe than the Sonne cases. The case fatality rate was 2.5%. It is believed that the disease is endemic because of the constant presence of convalescent rather than chronic carriers in the population.—H. S. CARTER. *J. Path. Bact.*, 45 (1937), 447. (T. C. G.)

Germicidal Activity of "Liquid Antiseptics." A Modified Reddish Cup Technic. Phenol coefficient tests are still used to determine antiseptic strength but results are not considered reliable by some authorities. The paper shows how they may be checked with visual interpretation in terms of width of zones of inhibition against pyogenic cocci or other test organisms. The blotter impregnation technic gives uniform results if the culture media is standardized. U. S. P. arsenicals, iodides, coal tars and silver preparations have high germicidal coefficients when compared with 10% phenol. Ten per cent phenol gives a zone of 1 cm., so phenol coefficients equaled the zone widths in these tests.—AUTHUR H. BRYAN. *J. Am. Pharm. Assoc.*, 27 (1938), 654. (Z. M. C.)

Lecithin Soap—Studies of. I. Bactericidal and Detoxifying Effect on Intestinal Flora. Reference is made to previous work on bacteriostatic property of soaps. The present study endeavored to find a soap that would not affect gastric mucosa but emulsify in the intestines with the least possible irritation. Lipids and lecithins were found to be most nearly suited. Soaps were tested and the results of treatments on a human subject are tabulated and discussed. It was concluded that lecithin soap shows specific bactericidal properties on intestinal *Streptococcus* and *B. coli*; also that it is a useful detoxifying agent and bactericide in arthritic cases.—L. J. HADJOPoulos and SAUL CASPE. *J. Am. Pharm. Assoc.*, 27 (1938), 559. (Z. M. C.)

Medicaments—Incidence of Microorganisms in Common Solid. Samples were taken from stock bottles which had been opened and were in use. Of 47 examined, only sodium chloride, sodium bicarbonate, glucose, peptone, liquid paraffin and castor, linseed and olive oils produced growth on nutrient agar.—G. R. MILNE. *J. Roy. Tech. Coll.*, 4 (1938), 415-416; through *J. Soc. Chem. Ind.*, 57 (1938), 728. (E. G. V.)

Microorganisms in Products Prepared on Doctors' Prescriptions and Their Elimination. Six preparations were obtained from two apothecaries in Berlin and from one in a small place nearby and these were examined for the presence of organisms by the development of colonies on gelatin plates. Results showed that the preparations made in the large city apothecaries were prepared under more careful and cleaner working conditions. The influence of inhibiting agents such as nipasol and nipagen is shown.—TH. SABALITSCHKA and E. PILGER. *Pharm. Monatsh.*, 19 (1938), 93-96. (H. M. B.)

Neisseria in Cellular Exudates Improved Method of Staining. The following combined Gram-Pappenheim stain is claimed to give excellent differentiation of gonococci and meningococci in the microscopic examination of smears from clinical material. The slide is stained by Gram's method in the usual manner up to the end of decolorization, then it is counterstained with the following solution: methyl green, 0.15 Gm.; pyronin, 0.5 Gm.; 95% alcohol, 5.0 cc.; glycerol, 20 cc.; and a 2% aqueous solution of carbolic acid, 75 cc. The counterstain is washed off after two minutes and the slide blotted dry and examined. The counterstain will keep up to two or three months at room temperatures even up to 80-90° F.—B. R. SANDIFORD. *J. Path. Bact.*, 45 (1937), 467. (T. C. G.)

Polyhydroxy Poly-*sec*-Alkyl Phenol Germicides. Di-*sec*-hexylresorcinol, boiling at 178° to 182° C. under 6 to 7 mm. pressure, is produced by a process involving heating, on an oil bath, resorcinol, hexyl alcohol and zinc chloride, cooling, further warming with water, separating the resulting viscous top layer, washing it with water and distilling. The preparation of various poly-alkyl polyhydroxy phenols involves mixing an alkyl alcohol, a polyhydroxy phenol and fused zinc chloride, heating and like subsequent treatment. Mention is made of the preparation of numerous such derivatives of pyrogallol, resorcinol, phloroglucinol and hydroquinone.—ALBERT

L. RAWLINS and HERBERT C. HAMILTON, assignors to PARKE, DAVIS & CO. U. S. pat. 2,107,307, Feb. 8, 1938. (A. P.-C.)

Protective Inoculation with Heat-Killed Tubercle Bacilli—Experimental Study of. Since the protective inoculation against tuberculosis with B. C. G. vaccine has always been open to the criticism that there is a potential danger in the injection of living organisms, an attempt was made to devise a vaccine of killed tubercle bacilli which would give at least the same protection as B. C. G. Large numbers of rabbits were injected intradermally and subcutaneously with bovine tubercle bacilli killed by heating at 60° C. for 30 minutes and preserved with 0.35% tricresol. The immunized and unimmunized control rabbits were then injected intravenously with living bovine tubercle bacilli and the degree of protection given to the vaccinated animals was indicated by the number of days longer than the controls that they lived. The immunized animals lived twice as long as the controls, and approximately 10% were entirely free from tuberculosis; but rabbits immunized with similar amounts of B. C. G. lived considerably longer (100 days) than those given the heat-killed vaccine. However, when horse serum, diluted with sodium carbonate and heated at 100° C. for 30 minutes, was added to the heat-killed vaccine and injected into rabbits this vaccine gave equally as good protection to rabbits as the B. C. G. vaccine. The authors conclude that their heat-killed vaccine plus horse serum should be equally as effective a prophylactic against tuberculosis as B. C. G. without the inherent dangers of the latter vaccine.—E. L. OPIE and J. FREUND. *J. Exp. Med.*, 66 (1937), 761. (T. C. G.)

RZ (Crude "Zephirol")—Studies on the New Disinfectant. RZ is insoluble in fats but forms emulsions, is not injured by low temperatures, but separates at high temperatures, and does not injure skin. If stronger than 1%, it attacks dyes. It is active against colon bacilli at a dilution of 1:300, and is still more active against staphylococci. Blood serum inhibits its action. It is most active at 0° and less at 12° or 18°.—F. PELS LEUSDEN and R. DORING. *Zentr. Bakt. Parasitenk I Abl. Orig.*, 142 (1938), 197-208; through *Chem. Abstr.*, 32 (1938), 8469. (F. J. S.)

Serum—Instability of, in Distilled Water and Its Relation to the Serum Proteins. The tendency of serums to flocculate in distilled water has been shown to be a function of the euglobulin content. Where the euglobulins form 50, 37, 32 and 29-30% of the total protein, the serums flocculate in water dilutions of 1:3, 1:4, 1:9 and 1:9, respectively.—V. CHORINE. *Ann. inst. Pasteur*, 60 (1938), 633; through *Squibb Abstr. Bull.*, 11 (1938), A-1214. (F. J. S.)

Staphylocoagulase. Staphylocoagulase is apparently an enzyme-like substance secreted by certain strains of staphylococci which acts like thrombin upon the plasma of various animal species including man. The presence of staphylocoagulase may be demonstrated by inoculating a loopful of a staphylococcus culture into a 1:10 dilution of human, rabbit, ox, horse, sheep or guinea pig plasma and incubating the tube at 37° C. for several hours. Within one to three hours a loose, fibrinous clot forms so that the tube may be inverted without spilling its contents. The majority of pathogenic *Staphylococcus aureus* and *albus* variant strains produce staphylocoagulase, while the non-pathogenic *Staphylococcus albus* strains rarely do. Absorption experiments demonstrated that staphylocoagulase is a separate and distinct substance from *a*-hemolysin, also produced by staphylococci. Experiments correlating pathogenicity with fermentation tests, coagulation of milk, gelatin liquefaction, *a*-hemolysin and staphylocoagulase production clearly indicated that coagulase and *a*-hemolysin production were the most constant characteristics of pathogenic staphylococcus strains. In staphylococcus infections, staphylocoagulase possibly produces thrombi, delimiting the focus and protecting the organisms from the defensive mechanisms of the body.—R. CRUICKSHANK. *J. Path. Bact.*, 45 (1937), 295. (T. C. G.)

Staphylococcus Infection—Experimental, Resistance to, by Circulating Antitoxin. A large series of rabbits were immunized with living and formalized staphylococci, plain staphylococcus and alum precipitated staphylococcus toxoid. Titrations of the circulating antitoxin in the rabbits' blood showed that those injected with the living or killed organisms had lower titres than those immunized with the formalized filtrates. When these rabbits were subsequently injected intravenously with an 8 M. L. D suspension of staphylococci, those with the highest concentration of circulating antitoxin had the lowest fatality rate. That is, those with 0.02-1.0 units of antitoxin had a fatality rate of 80%, while those with 8.0-30.0 units had a 9% fatality rate. These experiments suggest that there is some correlation between the antitoxin content of the blood and the resistance to staphylococcus infections.—M. L. Smith. *J. Path. Bact.*, 45 (1937), 305. (T. C. G.)

Sulfanilamide in Oral Infections. Sulfanilamide has been packed into tooth sockets ($2\frac{1}{2}$ grs. per socket) after extractions for pyorrhea or periapical infection in more than 350 cases, with prompt bactericidal effect and no complications.—W. D. LANIER. *Med. Bull. Veterans' Admin.*, 15 (1938), 65-68; through *Chem. Abstr.*, 32 (1938), 7210. (F. J. S.)

Sulfanilamide—Mode of Action of, in Experimental Streptococcus Empyema. The general belief that sulfanilamide *per se* does not have any appreciable bacteriostatic or bactericidal action on streptococci *in vitro* was confirmed by these workers. However, when sulfanilamide is combined with some body fluid such as blood, it becomes a potent bacteriostatic agent as the following experiment demonstrated. Streptococci were inoculated into media containing sera from normal rabbits and rabbits previously injected with 1.6 Gm. of sulfanilamide. Total counts made at subsequent intervals showed a marked inhibition (but not sterilization) of the growth in the sulfanilamide serum as compared with the counts from the control series containing normal rabbit serum. The streptococci growing in the sulfanilamide serum exhibited a degenerated or pleomorphic morphology. However, these organisms retained their original virulence, for their M. L. D. for rabbits was the same as the organisms which had grown in normal serum. Since it was repeatedly demonstrated that three daily doses of 1.2 Gm. of sulfanilamide will protect a rabbit from an invariably fatal empyema induced by injecting a 1,000-2,000 M. L. D. of streptococci into the pleural cavity, an attempt was made to determine the mechanism of this protection. Since it was found that injections of sulfanilamide inhibited the multiplication of the organisms in the pleural cavity but did not increase the number of polymorphonuclear or mononuclear leucocytes found in the parietal or visceral pleura, it was concluded that the beneficial action of the drug in empyema lies in its bacteriostatic action which permits the leucocytes to mobilize without extensive destruction by the streptococci.—F. P. GAY and A. R. CLARK. *J. Exp. Med.*, 66 (1937), 535. (T. C. G.)

Sulfur Derivatives—Organic Antistreptococcal Action of. *p*-Acetylamino benzenesulfonic acid possesses a certain antistreptococcal action which is, however, inferior to that of carboxysulfamidochrysoïdin. Acetylaminothiophenol possesses an antistreptococcal action about equal to that of carboxysulfamidochrysoïdin, when given in equal amounts. In several experiments in which heavy inoculations were made, a retardation of the experimental infection was observed equal to that obtained with the chrysoïdin derivative. These results show that the antistreptococcal action is not an exclusive property of bodies possessing the function of a sulfonamide, but that it exists also in bodies containing sulfur in some other form.—P. GLEY. *Compt. Rend. Acad. Sci.*, 204 (1937), 1907-1908; through *Chimie & Industrie*, 39 (1938), 321. (A. P.-C.)

Syphilis—Test Reagent for. The reagent for syphilis is prepared by adding a compound tincture of benzoin and Scarlet Red or Sudan III to cholesterolized antigen and diluting the mixture with the amount of an aqueous solution of an electrolyte such as a saline solution sufficient to adjust the reagent to a desired standard of sensitivity. In use, the resulting reagent is used for agglutination tests on blood serum.—GEORGE F. LAUGHLIN. U. S. pat. 2,111,976, March 22, 1938. (A. P.-C.)

Syphilis—Testing for, Production of Test Fluid for the Procedure of. To an ethyl alcohol extract of animal heart or other muscle, prepared by prolonged extraction at 40-75°, are added cholesterol and a dye stain for microorganisms.—S. and T. Ide. Brit. pat. 478,324; through *J. Soc. Chem. Ind.*, 57 (1938), 982. (E. G. V.)

Tubercle Bacilli—Separation of Mixed Cultures of, on Media with Different Degrees of Alkalinity. By using media with different degrees of acidity, it was possible to separate bovine as well as human types of tubercle bacilli from all of 48 human and 20 bovine cultures.—E. Groh. *Zentr. Bakt. Parasitenk. I Abt. Orig.*, 142 (1938), 190-197; through *Chem. Abstr.*, 32 (1938), 8469. (F. J. S.)

Tuberculin—Method of Purification of. The culture filtrate is treated with phosphotungstic and the precipitate is washed with fifth-normal sulfuric acid. The precipitate is decomposed with barium hydroxide, yielding a very stable tuberculin superior to crude tuberculin for intradermal reactions.—A. BOQUET and G. SANDOR. *Ann. Inst. Pasteur*, 57 (1936), 622-630; through *Chimie & Industrie*, 39 (1938), 718. (A. P.-C.)

Vaccine Bottles—Rubber-Capped. A description of a skirted type of rubber vaccine cap which is capable, when wired on to the bottle, of withstanding the pressure developed during the official autoclaving process (10 lbs.) in an ordinary autoclave without distortion or bursting. Ad-

vantages of this method of packaging sterile solutions are pointed out as follows: (1) It reproduces ampul conditions in a multiple dose container, the preparation being sterilized in its final sealed container. (2) When the dome cap is screwed down, the bottle may be autoclaved or boiled at any time even when the cap has been pierced many times by the needle. (3) The surface of the rubber cap can be maintained sterile. (4) The dome cap protects the rubber cap from light, thus considerably increasing its period of usefulness. (5) The bottle is very stoutly made of Woods alkaline-free resistant glass which will stand great temperature changes and rough handling. It provides a neat dispensing pack, particularly if finely wrapped in cellophane.—H. BERRY. *Pharm. J.*, 140 (1938), 627. (W. B. B.)

Vaccine Lymph. A smallpox vaccine lymph is prepared by cultivating the virus of smallpox on a medium comprising meat juice, degraded albumin (peptone or an amino acid), salt and sugar, sufficient sodium silicate or alkali carbonate to neutralize the mixture, a hormone selected from the hormones of the pituitary body, the thyroid gland or adrenal capsule and active elements from a bird ovum during the process of hatching, *i. e.*, embryonic ectoblast tissue, and plasma of the choroid urethral membrane. Legal vaccine lymph is cultivated in a medium prepared as above, the product is filtered and glycerol or phenol is added.—KISHIRO SUKEGAWA. U. S. pat. 2,112,507, March 29, 1938. (A. P.-C.)

Zephirol—Unfitness of, for the Complete Sterilization of Aqueous Pharmaceutical Solutions. S.'s experiments show that this substance is not suited as a sterilizing agent contradicting a previous report (*Deuth. Ztg.*, 53 (1938), 172).—TH SABALITSCHKA. *Deut. Apoth. Ztg.*, 53 (1938), 913-915. (H. M. B.)

BOTANY

Amino Acids of Certain Marine Algæ. Amino acid analyses have been made on formic acid extracts of four marine algæ. In the lowest in the phylogenetic series, *Ulva*, no methionine, tyrosine or lysine could be detected. In the next, *Laminaria*, methionine and lysine were absent. The higher members, *Sargassum* and *Chondrus*, lacked only methionine among the 16 acids sought. A higher autotrophic plant, the fern *Osmunda*, yielded all the acids which were absent in the lower forms. *Phormidium*, a blue-green fresh water organism low in the evolutionary series but probably only distantly related to the marine algæ, lacked lysine and cystine.—A. MAZUR and H. T. CLARKE. *J. Biol. Chem.*, 123 (1938), 729-740; through *Chem. Abstr.*, 32 (1938), 8469. (F. J. S.)

Arsenical Products for Agricultural Use. In France only insoluble arsenicals are permitted for agricultural use. The principal ones in use are described (lead, calcium and aluminum arsenates, copper aceto-arsenite or Paris green).—RENÉ GROS. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.-Oct. 1937), 455-458. (A. P.-C.)

Auxin—Rôle of, in the Higher Plants. The author presents a review of the more important recent results together with a discussion of some of the unsolved problems which have to do with growth hormones. Methods of determination and extraction of auxin; chemistry of auxin; physiological effects; translocation; effects on root growth, tropisms, secondary thickenings and apical dominance; the relation of auxin to other hormones; the effects of internal conditions on auxin formation.—H. SODING. *Z. Botan.*, 32 (1938), 497-521; through *Chem. Abstr.*, 32 (1938), 9173. (F. J. S.)

Cherry Laurel—Action of Nitrogenous Fertilizer on Hydrocyanic Acid Content of, and Other Perennial Rosaceæ. Addition of nitrogenous fertilizer (corresponding to 100 Gm. of ammonium sulfate at the base of each plant) causes an increase both absolute and relative in the total hydrocyanic acid in the foliage. The results are tabulated and show the changes in different months and in leaves from different parts of the plant.—R. SALGUES. *J. pharm. chim.*, 27 (1938), 339-348. (S. W. G.)

Crystals and Cystoliths—Found in Plant Cells. I. Crystals. The nature, occurrence, crystal types and formation of calcium carbonate and $\text{CaC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ in plants are discussed.—W. H. S. CHEAVIN. *Microscope*, 2 (1938), 155-158; through *Chem. Abstr.*, 32 (1938), 9175. (F. J. S.)

Crystals and Cystoliths—Found in Plant Cells. II. Cystoliths. Cystoliths are generally bodies of an excretory nature and, for unknown reasons, plants exhibiting these structures require considerable quantities of calcium, and special reservoirs are needed for the large amounts of calcium carbonate that become superfluous in the processes of metabolism. The structure and

formation of cystoliths are described.—W. H. S. CHEAVIN. *Microscope*, 2 (1938), 155–158; through *Chem. Abstr.*, 32 (1938), 9175. (F. J. S.)

Fruits Grown in the Philippines—Proximate Physical and Chemical Composition of 26 Species of Citrus and 12 Non-Citrus. Analytical data are recorded—A. C. CABBAG and F. A. SOLIVEN. *Philippine Agric.*, 26 (1938), 644–654; through *J. Soc. Chem. Ind.*, 57 (1938), 973. (E. G. V.)

Hydrocyanic Acid Content of Different Parts of the Sorghum Plant. The hydrocyanic acid content of sorghum leaves was 3 to 25 times that of the corresponding stalks of plants that had reached the boot stage. Heads and leaf sheaths were low in hydrocyanic acid. Upper leaves contained more hydrocyanic acid than lower leaves. The proximal half of the leaf was higher in hydrocyanic acid than the distal half. The hydrocyanic acid content of the leaf blades was 6 times that of the midribs. The hydrocyanic acid content of stalk internodes decreased progressively downward, the lower internodes containing only small quantities. Axillary branches were much higher in hydrocyanic acid than the older main stalks and in most cases tillers were higher in hydrocyanic acid than the older main stalks of the same plants.—J. H. MARTIN, J. F. COUCH and R. R. BRIESE. *J. Am. Soc. Agron.*, 30 (1938), 725–734; through *Chem. Abstr.*, 32 (1938), 8470. (F. J. S.)

Insecticidal Compositions. 2,121,038. A product adapted to be incorporated in an aqueous emulsion suitable for application as insecticide to living plants comprises a petroleum distillate having at least 50% of unsulfonatable residue and up to 10% by weight of a 2,4-dinitrophenol compound substituted in the benzene ring by an alkyl, aralkyl or cycloalkyl radical containing at least two carbon atoms. 2,121,039. An aqueous insecticidal emulsion, suitable for application to living plants without injuring them, comprises up to 5% of a petroleum distillate containing at least 50% of unsulfonatable residue, up to 0.2% of a dinitrocresol and up to 0.8% of an emulsifying agent compatible with the other constituents.—LINDLEY E. MILLS, assignor to THE DOW CHEMICAL CO. U. S. pats. 2,121,038 and 2,121,039, June 21, 1938. (A. P.-C.)

Nicotine Sulfate and Anabasine Sulfate—Use of, Against Beet Flies. Nicotine sulfate is more potent than anabasine sulfate and can be used at lower concentration. Under favorable meteorological conditions, and in presence of soft or medium-hard water, and provided liquid soap is added to the solution, nicotine sulfate can be used at a concentration of 0.06%, and anabasine sulfate at 0.08%. If the water is hard or the weather is cool, the concentration of the solutions should be increased by 0.01 to 0.02%. Liquid soap can be replaced by sulfonates derived from petroleum and, in certain cases, even by sodium carbonate.—R. N. SAVCHENKO. *Sov. Sakhar*, 14 (1936), No. 8, 9–11; through *Chimie & Industrie*, 39 (1938), 752. (A. P.-C.)

Oil Seeds—Psychometric Determination of Moisture in Whole and Crushed. The water content of the material is derived from that of a stream of air which has been passed through it, using the special apparatus described.—V. RSHECHIN and N. POGONKINA. *Maslob. Zhir. Delo*, No. 3 (1938), 18–19; through *J. Soc. Chem. Ind.*, 57 (1938), 1066. (E. G. V.)

Oxidation-Reduction—Phenomenon of, in Vegetable Biology. The author briefly emphasizes the importance of the oxidation-reduction reactions in biology, toxicology and galenical pharmacy. Some interesting cytological methods which tend to establish the evolution of the essential biological principles in cytoplasm are pointed out. Observations on glutathione, cysteine, ascorbic acid and lactoflavine confirm the importance of the vacuole in the accumulation of these substances. Contrary to the reports of other authors, the chondriosomes do not appear to be the supporting material of the oxidation-reduction bodies.—ANDRÉ MIRIMANOFF. *Pharm. Acta Helv.*, 13 (1938), 82–86. (M. F. W. D.)

Parasitocides—Physical Property of. From a study of the mechanism of wetting it is concluded that the determination of surface tension, the measurement of the contact angle, and the "leaf immersion" test, taken individually, are insufficient for evaluating wetting. In order to have a correct notion of wetting, it is necessary to compare the results obtained by all three methods (two of which possess the very great disadvantage of requiring freshly cut specimens of the plants to which the parasiticide is to be applied).—FRANCIS BARILLET and ANNE CHOISNARD. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.–Oct. 1937), 530–534. (A. P.-C.)

Phytohormones and Seed Disinfection. The addition of 0.01–10 p. m. of 3-indolyl-, 1-naphthyl- or phenyl-acetic acid to disinfecting solutions of formaldehyde, cupric chloride or mercuric chloride in the control of smut in cereals reduces the damage to the seed resulting from

the treatment with the disinfectant. A marked improvement is also produced in the germination and growth of seed treated with hot water for smut control.—N. H. GRACE. *Nature*, 142 (1938), 77; through *J. Soc. Chem. Ind.*, 57 (1938), 1085. (E. G. V.)

Potentillæ Aureæ L.—Adulteration of. *Potentilla aurea* L. enters into the composition of many teas of Swiss manufacture. However, *Potentilla verna* subsp. *puberula* var. *Gaudini* is quite often substituted for it. Botanical descriptions of the two drugs and several diagrams of the parts are given. The characteristic radial hairs on *Potentilla puberula* and the lack of cilia on the bottom of the leaf easily differentiate it from *Potentilla aurea*.—E. MÜHLEMANN. *Pharm. Acta Helv.*, 13 (1938), 67–70. (M. F. W. D.)

Seed Pickling with Hydrogen Peroxide. The fungicidal action of hydrogen peroxide on bunt spores in wheat seed was greater when the seed was treated in air-tight containers. The germination capacity of treated seed diminished somewhat with increasing hydrogen peroxide (15–30%) used.—M. VON MIKLOS. *Z. Pflanzenschutz*, 46 (1936), 1–6; through *J. Soc. Chem. Ind.*, 57 (1938), 1085. (E. G. V.)

Starch. The sources of starch and starch derivatives, the gelatinization of starch, and the industrial applications of these products are discussed.—R. S. SHANE. *J. Chem. Educ.*, 14 (1937), 460–463. (E. G. V.)

Sulfur Derivatives (Natural and Synthetic) and Cocaine—Action of, on Certain of the Higher Plants. Investigations carried out on *Lens esculenta* with hot sulfur spring waters and with sodium thiosulfate solutions containing a trace of iron sulfide showed that the weak natural waters had a greater root stimulation effect than more concentrated ones, while the synthetic solutions exhibited a slight inhibiting action. With willows, the more concentrated natural water gave stronger roots, which appeared earlier, but were less numerous than in the controls. Iodine (as potassium iodide solution) was definitely inhibiting. Cocaine has a definitely marked stimulating action which manifests itself by the length of the roots and of the stems and by the number of radicles. Similar results are indicated for experiments on selected tobacco seed, which are not yet finished.—A. VALATX and J. DUFRENOY. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.-Oct. 1937), 494–495. (A. P.-C.)

Tephrosia—Indian. Rotenone occurs in the root bark (0.35%) and seeds (0.5%) of *T. candida*, D. C., and in *T. purpurea*.—S. KRISHNA and T. P. GHOSE. *Currene Sci.*, 6 (1938), 454; through *J. Soc. Chem. Ind.*, 57 (1938), 961. (E. G. V.)

Yeasts—Identification of. An outline of the work done during the past 50 years with a description of various classifications and of methods used for identifying yeasts.—E. KUPFERATH. *Ann. Zymol.*, 4 (1938), 152–167. (A. P.-C.)

CHEMISTRY

GENERAL AND PHYSICAL

Acetylsalicylic Acid—X-Ray Investigation of the Form of, in Certain Sugars. The diffraction data for combinations of sucrose (I) and glucose (II) with acetylsalicylic acid (III) show that III does not seem to form a solid solution with I and II, which were kept in the ratio of 7 to 3 while III was varied from 0 to 20%. The samples were prepared by heating the sugar mixtures to 160°, removing essentially all the water and allowing to cool. III was then incorporated in one set of samples at 140° and in another set at 110–115°, *i. e.*, both above and below 134°, the melting point of III. The former samples were far more hygroscopic than the latter.—S. S. SIDHU. *J. Applied Phys.*, 9 (1938), 546–550; through *Chem. Abstr.*, 32 (1938), 7665. (F. J. S.)

Antifoaming Device for Use in Concentration of Non-Inflammable Liquors. A coil, electrically heated, is used to heat the surfaces above the liquor level in the distillation flask, destroying the foam by vaporizing the liquid film. The coil consists of 88 cm. of No. 22 Nichrome wire, in the form of a helix, and it is connected to 110 volts, using a resistance in series. The device is particularly useful in the distillation of many aqueous foam-producing solutions.—E. A. GASTROCK and J. D. REID. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 440. (E. G. V.)

Base-Metal Thermocouples—Their Characteristics. Nichrome-constantan couples are trustworthy for temperatures not greater than 800. The thermo-electromotive force obtainable is as wide as that with iron and copper-constantan couples. The irregularity obtained between 250 and 400 in the thermo-electromotive force curves of the thermocouples containing nickel disappears

in the constantan couples. The neutral points for iron nichrome and copper and iron couples lie at 205 and 275, respectively.—M. R. MANDLEKAR and H. N. BANERJEA. *Current Sci.*, 6 (1938), 447-448; through *J. Soc. Chem. Ind.*, 57 (1938), 853. (E. G. V.)

Boiling Points for Pressure—Correction of. A table is given which shows the close similarity between the observed and calculated boiling points of ether, acetone, chloroform, carbon tetrachloride, alcohol and methyl salicylate under small changes of pressure.—J. JACKSON. *Pharm. J.*, 140 (1938), 621. (W. B. B.)

Carbon Monoxide—Absorption of, in Cuprous Ammonium Chloride and Acid Cuprous Chloride Solutions. Comparative test on the absorption of carbon monoxide by solutions of cuprous chloride in aqueous ammonium chloride and in aqueous hydrochloric acid show the acid to be the more efficient solvent.—H. G. PYKE. *J. Proc. Austral. Chem. Inst.*, 5 (1938), 201-206; through *J. Soc. Chem. Ind.*, 57 (1938), 905. (E. G. V.)

Chemical Reactions—Retardation of. VIII. Darkening of Alkaline Solutions of Sodium Salicylate. The darkening of sodium salicylate-sodium bicarbonate solutions is due to absorption of oxygen and not of ammonia, is unaffected by light, and for medicinal purposes is best retarded by 0.1% of sodium thiosulfate or 0.04% of thiourea.—J. HILTON and K. C. BAILEY. *J. C. S.* (1938), 631-633; through *J. Soc. Chem. Ind.*, 57 (1938), 977. (E. G. V.)

Electrode—Glass. An obstacle to the more general adoption of the glass electrode lies in its high electrical resistance, which necessitates complicated and expensive apparatus including a special amplifying electromagnetic lamp. Use of an ordinary radio lamp would be possible if the internal resistance of the glass electrodes (generally of the order of 10 to 100 megohms) could be reduced to 1 to 2 megohms. Three methods are theoretically available for this: (1) increasing the conductivity of the glass, (2) decreasing the thickness of the glass membrane, (3) increasing the surface of the electrode. (1) and (2) are not considered practically possible; (3) is readily obtained by making the electrode in the form of one (or preferably several) tube with a number of bulbs blown in it.—MME. C. ROY-POCHON. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.-Oct. 1937), 445-447. (A. P. C.)

Electrodialysis—Use of, in Toxicological Studies. The apparatus used for electrodialysis is described and illustrated. The tissue to be tested is boiled in water, the mixture is transferred to a cylindrical dialyzing chamber, with a cellophane membrane bottom, which is separated from a slightly smaller dialyzing chamber standing in it by glass tubes through which a stream of cold water passes. The two dialyzers are placed in a crystallizing dish along the bottom of which are glass tubes carrying cold water and on which the larger outside dialyzer rests. Distilled water is added to the smaller inside dialyzer and the platinum in glass cathode is inserted. Distilled water is added to the crystallizing dish and the platinum in glass anode is inserted. The current (110-120 V) is turned on and after 15 hours about 150 cc. of the liquid in the dish is removed and replaced with distilled water. Three hours later the liquid in the dish is removed and combined with the first portion removed. The amount of dialyzed substance is then determined by chemical reactions. Application of this procedure to toxicologic determinations of fluorine and barbiturates is discussed.—R. FABRE. *J. pharm. chim.*, 27 (1938), 467-476. (S. W. G.)

Flame Spectra—Device for Producing. A micro-burette is used to drop the liquid to be observed upon a test-tube, heating the latter with a Bunsen burner placed at an angle. As one drop is dried upon the outside of the test-tube, another is liberated, so that a continuous flame is produced to carry out spectral analysis.—A. R. CLARK. *J. Chem. Educ.*, 15 (1938), 39. (E. G. V.)

Geiger Counter Unit—Portable. A readily portable unit with entirely self-contained power supply, for operation of a low-voltage Geiger-Müller tube counter is described. The Neher-Harper circuit is incorporated in an integrating circuit which yields one pulse for approximately 60 counter pulses. The output pulse operates a Cenco counter. The sensitivity is such that 1 microgram of radium can be measured at 1 meter or 1 mg. at about 30 meters. The unit can therefore be used for measuring the gamma-ray activity of feebly active samples and also to detect slight contamination due to spilled or broken radium preparations. It also makes a very sensitive device for locating lost radium. Since it is operated entirely from dry batteries mounted in the case it can be used anywhere. The total weight is 13 pounds.—LEON F. CURTISS. *J. Research National Bur. Standards*, 21 (1938), 779. (F. J. S.)

Honey—Mutarotation of. Mutarotation is not complete after boiling for 5 minutes. Aqueous ammonia and sodium carbonate are more rapid in their action, but in some instances 3 hours are required for completion. The most trustworthy method of obtaining a steady value is to keep for 24 hours. The use of lead acetate as clarifier accelerates mutarotation as compared with kieselguhr, the use of which in, for example, dextrorotatory brown honeys results in a slow change in "alpha" continuing for some days.—S. MIHAELOFF. *Ann. Chim. Analyt.*, iii, 20 (1938), 145-149; through *J. Soc. Chem. Ind.*, 57 (1938), 1089. (E. G. V.)

Infra-Red Spectroscopy—Survey of. II. Origin, Appearance and Interpretation of Infra-Red Spectrum. The spectra of various gases, liquids and crystals are discussed, including hydrogen chloride, hydrogen cyanide, ammonia, water vapor, alkali halides, etc.—R. B. BARNES and L. G. BONNER. *J. Chem. Educ.*, 15 (1938), 25-39. (E. G. V.)

Photometric Analysis. Photometry of substances or colorimetry without comparative standard solutions permits direct measurement of the absolute value of luminous absorption. The percentage fall in intensity of the light passing through a solution of the substance is recorded. The percentages are plotted as ordinates and the concentrations are plotted as abscissæ, and the ratio between these values is represented graphically. A curve which is concave toward the top is obtained. In place of the percentages the negative logarithms may be used, and then the curve obtained is a straight line. The concentration of the solution and the negative logarithm of the luminous absorption (called "extinction") are directly proportional. The solution must respond to the requirements of Beer's law. The method is not applicable unless the dispersion is molecular. Results within 1% may be obtained.—J. J. DONKERS. *Folia Pharm.*, (Feb. 1938); through *J. pharm. Belg.*, 20 (1938), 539. (S. W. G.)

Powdered Products—Apparent Density of. Bulk volume is a function chiefly of grain shape, texture and degree of subsidence. From apparent specific volume measurements on inorganic salts and oxides, maximum, minimum and mean volumes are distinguished and empirically related to yield criteria useful in commercial specification, sampling and packing.—F. MARTIN. *Compt. rend. XXVII Cong. Chim. Ind.*, (1937), 231-235; through *J. Soc. Chem. Ind.*, 57 (1938), 993. (E. G. V.)

Powders—Determination of the Specific Surface of. The method suggested for obtaining the specific surface of fine powders depends upon measuring the permeability of a small sample to a liquid of known viscosity. The equation used has been found to hold over a wide range of conditions.—P. C. CARMAN. *J. Soc. Chem. Ind.*, 57 (1938), 225-234. (E. G. V.)

Organic Systems—Calorimetric Analysis of. IV. Consistency Lines of Fats and Elaidinized Oils. Consistency lines, that is, curves showing the rise in temperature of the substance as heat is introduced at a constant rate, give a good picture of the behavior of a fat or mixture on melting. They are of service when fats or oils of desired consistency characteristics are required.—J. STRAUB and R. N. M. A. MALOTAUX. *Rec. Trav. chim.*, 57 (1938), 789-794; through *J. Soc. Chem. Ind.*, 57 (1938), 1066. (E. G. V.)

Reciprocal Behavior of Substances with Pharmacodynamic Properties in Three-Substance Systems. The eutectic melting point was studied of mixtures of acetanilide, sulfonal and salipyrine with changing percentages of acetanilide and sulfonal, respectively. A eutectic is formed with 60% salipyrine, 27.8% acetanilide and 12.2% sulfonal, the eutectic temperature being 59.6° C. There is complete miscibility of the constituents in the liquid state, and formation of solid crystalline mixtures, but no mixed crystals.—K. HRYNAKOWSKI and H. STASZEWSKI. *Arch. Pharmazie* (1936), No. 9, 519-526; through *Chimie & Industrie*, 39 (1938), 723. (A. P.-C.)

Size Reduction by Impact. Use of swing hammer mills is advocated for the coarse breaking, fine crushing or shreading of materials varying from hard and abrasive materials to resinous and fibrous organic matter.—J. T. FOWLER. *Chem. Met. Eng.*, 45 (1938), 230-233; through *J. Soc. Chem. Ind.*, 57 (1938), 855. (E. G. V.)

Solids—Mechanical Disintegration of. It is claimed that finer grinding than is obtained in existing "colloid" mills can be carried out in a suitably designed and operated roll mill. Stress is laid on the need for a suitable material of construction and for the attainment of highly finished roll surfaces, while the roll pressures should be high. The operating modifications include the adjustment of the relative speeds, of the rolls to suit the hardness of the material to be ground and the application to the roll surface of an extremely thin film of some material such as glue without undue cushioning. Careful control of the rate of feed and a suitable means for the re-

removal of the disintegrated material must be provided.—J. AUMARECHAL. *Compt. rend. XVII Cong. Chim. Ind.*, (1937), 942-946; through *J. Soc. Chem. Ind.*, 57 (1938), 855. (E. G. V.)

Tautomerism—Application of Infra-Red Spectral Method to Study of. The procedure for the determination of the spectral values is described. The phenomenon of tautomerism is shown by obtaining values indicating the presence of hydroxyl groups in compounds having carbonyl groups. Results are more trustworthy with straight chain carbon compounds than with cyclic derivatives.—P. BAYARD. *J. pharm. Belg.*, 20 (1938), 553-556. (S. W. G.)

Temperature Measurements with the Thermocouple. The error due to voltage drop in the thermocouple and lead is compensated for by means of a shunt resistance.—H. DE RYCKER. *Rev. Univ. Min.*, 14 (1938), 299-307; through *J. Soc. Chem. Ind.*, 57 (1938), 853. (E. G. V.)

Triethanolamine—Salts of. Report is made of a study which compared the salts of a number of fatty acids with triethanolamine. Surface tension, suds, alkalinity and emulsifying power were determined. Surface tension decreased and relative foam production increased with the number of carbon atoms of the saturated fatty acid up to 12 and then decreased. The p_H increased with the number of carbon atoms. The stearate, oleate and laurate exhibited the best emulsifying powers.—GEORGE W. FIERO. *J. Am. Pharm. Assoc.*, 27 (1938), 658. (Z. M. C.)

Wine Acidity—Analytical and Physico-Chemical Study of. Individual basic and inorganic and organic acidic radicals have been determined in a number of samples of Algerian wines. A reasonably accurate balance is found in that total anions in milliequivalents equals total cations plus titratable acidity (phenol red), or, alternatively, total organic acids equals corrected titratable acidity plus correct ash alkalinity. Further, a knowledge of p_H is necessary for the complete description of the acidity relationships, the quinhydrone method being preferred. Variations in wine properties, especially stability toward "tourne" and iron-tannin deposit, with p_H are discussed, together with the value of the acidity and p_H determinations in detecting adulteration.—E. BREMOND. *Ann. Ferm.*, 4 (1938), 86-102; through *J. Soc. Chem. Ind.*, 57 (1938), 715. (E. G. V.)

INORGANIC

Calcium Arsenate—Manufacture of. An aqueous arsenic acid solution is introduced gradually below the surface of milk of lime and adjacent to the periphery of a rapidly rotating agitator to effect substantially instantaneous diffusion of the arsenic acid through the milk of lime. The arsenic acid solution addition is regulated so that the molar ratio of arsenate to calcium in the mixture does not exceed the ratio in basic calcium arsenate. The product obtained can be applied directly to foliage without burning it.—ARTHUR H. HENNINGER, assignor to GENERAL CHEMICAL CO. U. S. pat. 2,122,861, July 5, 1938. (A. P.-C.)

Hydrogen Peroxide—Production of. Hydrogen peroxide is distilled under reduced pressure from a solution of sulfuric acid (300) and ammonium persulfate (200) preferably containing also ammonium sulfate (200 Gm./liter) by heating directly in thin layers by means of alternating current. The solution flows slowly through a tube of insulating material, for example, quartz, and an alternating e. m. f. is applied at the ends. Dry steam and/or an inert gas may also be introduced to aid removal of hydrogen peroxide.—NAAML. VENNOOTS. *Industr. Maats. voorh. Noury & van der Lande*. Brit. pat. 747,709; through *J. Soc. Chem. Ind.*, 57 (1938), 1035. (E. G. V.)

Hydrogen Sulfide—Determination of, in Air. Amounts of not greater than 2 mg. of hydrogen sulfide per cc. of air are determined by a modification of Fischer's method.—V. P. MAEVSKAJA. *Zavod. Lab.*, 7 (1938), 181-183; through *J. Soc. Chem. Ind.*, 57 (1938), 851. (E. G. V.)

Qualitative Analysis Without the Use of Hydrogen Sulfide. The reactions recommended are well known and the only novelty consists in dividing the cations into the following five groups: Group I. Silver, tin and antimony are obtained by adding hydrochloric and nitric acids, evaporating to dryness and extracting the residue of silver chloride and oxides with hot dilute nitric acid. Group II. Barium, strontium, lead and (calcium) are precipitated as sulfates by adding ammonium sulfate to the filtrate from Group I. The sulfates are converted to carbonates which are analyzed in the usual manner. Group III. Iron, aluminum, chromium, manganese, bismuth, calcium and magnesium are precipitated as phosphates, arsenates or hydroxides by adding ammonia and diammonium phosphate. Group IV. Cobalt, nickel, copper, cadmium and mer-

cury are precipitated by boiling with sodium hydroxide. Group V. Zinc and arsenic. The alkalis are detected by boiling the sample with water, filtering, removing the cations with barium hydroxide and sulfuric acid and applying the usual tests. No details are given with respect to possible advantages or disadvantages aside from the escape from noxious hydrogen sulfide.—M. B. RANE and K. KONDAIAH. *J. Indian Chem. Soc.*, 14 (1937), 46-50; through *Chimie & Industrie* 39 (1938), 655. (A. P.-C.)

ORGANIC

Alkaloids

Cinchona Alkaloids—Several Derivatives of the, and Their Rôle in Formation of Epimeric and Heteromeric Bases. A review.—E. LEGER. *J. pharm. chim.*, 27 (1938), 63-79.

(S. W. G.)

Cinchona Bark—Extraction of Quinine and Total Alkaloids from. Methods of extraction of total alkaloids and of quinine from bark grown in Indo-China are described. Bark grown in 1936 yielded on the average 7.4% of total alkaloids and 3.5% of quinine sulfate.—DENIEL. *Bull. soc. med.-chir. Indo-China*, 14 (1936), 616-618; through *Chem. Abstr.*, 32 (1938), 9395.

(F. J. S.)

Codeine Phosphate—Water of Crystallization and Phosphoric Acid Content of. Codeine phosphate prepared by Kabay's method from poppy stems and capsules exists in two forms: (a) an amorphous product with water of crystallization (20 samples) of 5.14-7.74% and a formula $(C_{17}H_{18}(OCH_3)_2N).H_3PO_4.1\frac{1}{2}H_2O$ and (b) as prisms with water of crystallization of 2.21% and a formula $(C_{17}H_{18}(OCH_3)_2N).H_3PO_4.\frac{1}{2}H_2O$. This form is unreported in literature.—KAROLY SZAHLENDER. *Pharm. Monatsh.*, 19 (1938), 79.

(H. M. B.)

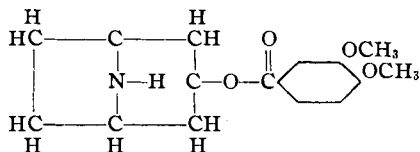
Coffee By-Products—Applications of. Low grade coffee may be utilized in the production of caffeine, hydrochloric acid, cellulose, oil and animal feed; the residues may be burned to raise steam.—A. DO AMARAL. *Rev. Chim. Ind.*, 7 (1938), 56-60; through *J. Soc. Chem. Ind.*, 57 (1938), 974.

(E. G. V.)

Coffee—Natural Caffeine-Free. Samples of the beans of wild coffee, *Coffea Perrieri* and *C. Dubardi* were completely caffeine-free. The extract contents were 26.1 and 36.7%, respectively.—J. PRITZKER and R. JUNGKUNZ. *Z. Unters. Lebensm.*, 75 (1938), 34-35; through *J. Soc. Chem. Ind.*, 57 (1938), 843.

(E. G. V.)

Convolvulus Pseudocanthabricus—Alkaloids of. Four alkaloids have been isolated from *Convolvulus pseudocanthabricus*,—convolvine $C_{16}H_{21}O_4N$, convolamine $C_{17}H_{22}O_4N$, convolvidin and convolvicin. Convolvine and convolamine are both local anesthetics and are chemically related to atropine. Convolamine (m. p. 114-115°) is the veratric acid ester of tropin, and convolvine is the veratric acid ester of nortropin, a secondary amine:



—A. P. ORECHOW and R. A. KONOWALOWA. *Chem. J. Ser. A. J. allg. Chem.*, 7 (69), (1937), 646-653; through *Pharm. Ztg.*, 82 (1937), 1129. (N. L.)

Corynantheine—Study of. Corynantheine hydrochloride which has been described by Raymond-Hamet (*Bull. sci. pharmacol.*, 40 (1933), 523) corresponds to an amorphous levorotatory base which, by repeated recrystallization from diluted ethyl alcohol, is dissociated into a crystalline alkaloid, $C_{22}H_{28}O_3N_2$, $[\alpha]_D^{20} +27.7^\circ$, and a levorotatory alkaloid, not yet identified, but forming a hydrochloride showing an ultraviolet absorption spectra close to that of the crystalline alkaloid.—M.-M. JANOT and R. GOUTAREL. *Bull. sci. pharmacol.*, 45 (1938), 253-255. (S. W. G.)

Equisetum Palustris—Alkaloid of. Equisetine, hitherto considered as the alkaloid of the swamp horsetail is really a mixture of bases from which was isolated a definite alkaloid, palustrin. It is a yellowish oil which boils at 205° to 210° C. under 0.1-mm. pressure and forms a viscous mass on cooling. It is soluble in water (with intensification of its characteristic amine-like odor),

chloroform, ethyl acetate; less soluble in ether and difficultly soluble in benzene and petroleum ether. Its composition corresponds to the formula $C_{12}H_{24}N_2O_2$.—E. GLET, J. GUTSCHMIDT and P. GLET. *Hoppe-Seyler's Z. Physiol. Chem.*, 244 (1936), 229-234; through *Chimie & Industrie*, 39 (1938), 716. (A. P.-C.)

Ergot Alkaloids—Separating Mixed. An aqueous solution of salts of the ergot alkaloids is mixed with sodium hydroxide, the mixture is shaken with benzene, ergotinine being freed, the liquors of the ergotinine production are mixed with the caustic alkaline aqueous alkaloid solution, the mixture is acidulated and shaken with benzene, ergotoxine being freed; the acidulated aqueous alkaloid solution is alkalized and extracted with benzene, the solvent is evaporated to effect crystallization of ergotoxine, and the product thus obtained is recrystallized to a constant melting point.—WILLY H. KUESSNER, assignor to MERCK & Co. U. S. pat. 2,114,306, April 19, 1938. (A. P.-C.)

Ergot of Carex and Its Parasite, Acylomus Ergoti. The ergot (*Claviceps caricina*, D. Griff.) gives a doubtful biological, but a positive chemical reaction for alkaloids.—E. LEPAGE. *La bonne terre*, 19 (1938), 89-93; through *Chem. Abstr.*, 32 (1938), 7663. (F. J. S.)

Ergot Preparation—Highly Active. A process of obtaining a hitherto unknown component of ergot, designated as ergostetrine, involves the mixing of defatted powdered ergot with an aqueous solution of an alkali, completely extracting the dampened and alkaline drug with an organic solvent, then concentrating the solution of the total alkaloidal bases *in vacuo*, and reducing the volume. Add sulfuric, hydrochloric or phosphoric acid to form salts with the alkaloids and after effecting complete precipitation of all the alkaloids except the desired component, filter out the alkaloidal precipitate, evaporate the filtrate to dryness *in vacuo* and leach the residue with small portions of water to obtain a solution of the component salt. Alkalinize to liberate the free base from the salt, extract with an immiscible organic solvent, and evaporate the solvent *in vacuo*.—MARVIN R. THOMPSON. U. S. pat. 2,116,454, May 3, 1938. (A. P.-C.)

Ergot Product—Purified. A purified ergot product containing an active water-soluble alkaloid of ergot is prepared by extracting ergot with concentrated alcohol by percolation, removing the alcohol, washing the residue with acidified water and filtering the resultant solution.—MARVIN R. THOMPSON, assignor to JOHN WYETH & BROS., INC. U. S. pat. 2,120,635, June 14, 1938. (A. P.-C.)

Erythrina Alkaloids. II. A Review and New Data on the Alkaloids of Species of the Genus Erythrina. The literature is briefly reviewed. Analytical procedure for the experimental work is given. Alkaloidal substances that have a curare-like action on frogs were found in twenty-four species of *Erythrina*.—KARL FOLKERS and KLAUS UNNA. *J. Am. Pharm. Assoc.*, 27 (1938), 693. (Z. M. C.)

Erythroplœum Guineense Alkaloids and Digitalis Glucosides—Investigation of the Chemical Relation between. The author reports preliminary results tending to support the hypothesis of a parental structure between the aglucones (or genins) of the digitalis and a digitaloid glucoside and the new alkaloids isolated by him from *Erythroplœum guineense*. The hypothesis is supported by the following facts: (1) the similarity in composition of cassainic, norcassidinic acids and genins (empirical formula); (2) norcassidine and the dehydration product of norcassidinic acid give an intense Keller-Kiliani reaction (Cloetta's modification); (3) two molecules of norcassidinic acid lose three molecules of water and condense to form a crystalline substance, $C_{44}H_{70}O_9$ (melting point 228° to 291° C.), a phenomenon observed when digitoxigenin is heated with alcoholic hydrochloric acid, loses two molecules of water and forms digitaligenin; (4) the cardiokinetic action of the alkaloids under discussion. The author advances a hypothesis on the structure of the new alkaloids in which he visions methylamides of acids similar to the acids which are at the basis of oxylactones known as cardiokinetic genines. He hazards a structural formula for cassaine in which the position of two hydroxyl groups is still unassigned.—G. DALAMA. *Boll. Soc. Ital. Biol. Sper.*, 11 (1936), 791-794; through *Chimie & Industrie*, 39 (1938), 717. (A. P.-C.)

Formosanine, a New Alkaloid Extracted from Ourouparia Formosana, Matsumura and Hayata. The alkaloid formosanine obtained from *Ourouparia Formosana*, Matsumura and Hayata, differs sharply from rhynchophylline, gambirine and hanademine obtained from three other species of *Ourouparia*. The elementary analysis suggests the formula $C_{21}H_{26}N_2O_4$ or $C_{21}H_{24}N_2O_4$. The compound contains one methoxyl group. It forms colorless needles which melt at

202° to 218° C. according to the rate at which the temperature is raised; the specific optical rotation is 91.3° in chloroform solution and 80.3° in alcoholic solution. The product gives no coloration with nitric acid, sulfuric acid or Fröhde's reagent within 10 minutes. It gives a red-orange, orange, yellow-orange, yellow-green and green color with Mandelin's reagent. The identification of the various alkaloids is significant in the classification of the genus *Ouroouparia*.—RAYMOND-HAMET. *Compt. Rend. Acad. Sci.*, 203 (1936), 1383-1384; through *Chimie & Industrie*, 39 (1938), 718. (A. P.-C.)

Morphine—Estimation of, in Opium. Increased time of contact up to 24 hours of the macerated opium with water leads to an increased precipitation of morphine. A diminution sets in after 24 hours. With 5- and 10-hour macerations the optimum yield is obtained with 18 and 12 hours contact, respectively.—C. FASANO. *Boll. chim. farm.*, 77 (1938), 460, 463; through *Chem. Abstr.*, 32 (1938), 9389. (F. J. S.)

Morphine—New Primary Material for Extraction of. The common variety of poppy, *Papaver somniferum* variety *nigrum*, which formerly was used industrially for the oil content of the seeds is now used as a source of morphine. The secondary alkaloids are not present to as great an extent as morphine and their extraction is not stressed. The dried plants obtained as a by-product after removal of the seeds are powdered and then extracted in a continuous extractor with hydrochloric, sulfuric or sulfurous acid solutions or with a solution of sodium bisulfite. The extraction liquid is evaporated under reduced pressure to one-fifth its volume, calcium hydroxide is added to neutralize the acid and form insoluble salts, then an equal volume of alcohol is added to remove gums and proteins. The precipitated material is separated by centrifuging or filtering. The filtrate is again concentrated to one-fifth its volume, an equal volume of sodium hydroxide solution and the same volume of alcohol are added. The secondary alkaloids are removed by filtration. The filtrate is made slightly acid, concentrated to one-third its volume, then alkalinized with ammonia to throw down the crude morphine. Economic, social, agricultural and industrial problems associated with the production of morphine are discussed.—A. GORIS. *Bull. sci. pharmacol.*, 45 (1938), 265-270. (S. W. G.)

Nicotine—Alkaloid Accompanying, as the Cause of the Slow Release of Nicotine during Steam-Distillation. After steam-distillation of many varieties of tobacco with sodium hydroxide, further quantities of nicotine (I) can be obtained by a second distillation following a period of keeping in air in presence of strong alkali. The process involves oxidation, since it is hastened by addition of hydrogen peroxide and can be prevented by exclusion of air. Assuming that Pfyl and Schmitt's magnesium oxide distillation method gives preformed I only, the new precursor is estimated to amount to 20% of the I content of cigar and pipe tobaccos and 10% of that of cigarette tobacco.—W. PREISS. *Z. Unters. Lebensm.*, 74 (1937), 304-314; through *J. Soc. Chem. Ind.*, 57 (1938), 454. (E. G. V.)

Opium—Analytical Separation of the Principal Secondary Alkaloids of. Klatschkina's method (B., 1934, 121) is modified to give more nearly quantitative results. 15 Gm. of opium are heated (1 hour 50-60°) with 148 Gm. of 5% aqueous acetic acid, then cooled to 40°, and after addition of 2 cc. of dilute (10%) hydrochloric acid the whole is shaken during 2 hours, neutralized with aqueous sodium hydroxide and extracted with chloroform. The crude secondary alkaloids obtained by the removal of the chloroform, are treated with 40 cc. of 2.5% aqueous acetic acid, dilute hydrochloric acid is added until dissolution is just complete and the solution exactly neutralized by addition of 10% aqueous sodium hydroxide until a slight turbidity persists. The nicotine and papaverine are precipitated (98.5% of theory) by addition of 2-10 Gm. of sodium acetate with shaking, and the precipitate is collected and weighed after 15-18 hours. The two alkaloids are satisfactorily separated by Anneler's method. The above method is applicable to crude opium extracts, provided gums which hinder complete precipitation are first removed.—J. DETRIE and S. LELIEVRE. *Compt. rend. XVII Cong. Chim. Ind.*, (1937), 174-177; through *J. Soc. Chem. Ind.*, 57 (1938), 979. (E. G. V.)

Quinine- and Quinidine Sulfates—Distinction between. A. has found the following distinction: Dissolve about 0.2 Gm. of the salt in 2 cc. of warm water, add 0.2 Gm. potassium iodide, shake; a curdy precipitate is obtained with both salts. However, the precipitate with quinine sulfate shows no luminescent properties while that of quinidine sulfate shows a bright green very intense luminescence under ultraviolet light.—P. VON AUFSCHNAITER. *Pharm. Monats.*, 19 (1938), 99. (H. M. B.)

Ramondia Pyrenaica Rich—Chemical Study of. An oily alkaloid, insoluble in water, and having an unpleasant odor, was isolated by extraction with alcoholic tartaric acid, removal of other substances with benzoin and ether treatment, and separation of the alkaloid with an ether-chloroform mixture. The alkaloid is more abundant in the leaves than in the roots and rhizomes. Crystals obtained by microsublimation of the powdered leaves are illustrated.—G. GIRARD and J. MARZAT. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 150-152. (S. W. G.)

Essential Oils and Related Products

Aromatic Products from French Guinea. Oils of orange, orange flower, bitter orange, citrus, citron-petitgrain, bergamot and mandarin-petitgrain are discussed and constants and other properties offered for each one.—L. TRAUBAUD. *Riechstoff-Ind. u. Kosmetik.*, 13 (1938), 116-125. (H. M. B.)

Celery Seed Oil. The production and properties of the ethereal oil from the seeds of *Apium graveolens* L. are discussed. An oil from the 1932 harvest was fractionated by vacuum distillation and the fractions characterized by their physical properties and their odors. The characteristic celery aroma was observed in the fraction $b_{1,6}$ 128-140°.—G. LOUVEAU. *Rev. marques parfum. savon.*, 15 (1937), 37-39; through *Chem. Abstr.*, 32 (1938), 9394. (F. J. S.)

Cinnamomum Kanahirai Hayata or "Shogyu" Oil—Volatile Oil of. I. Constituents of Root Oil. Constituents of the oil are: d_4^{25} 1.0358, α_D^{24} + 6.74°, n_D^{25} 1.5131, acid number 0.18 and ester number 0.84 (after acetylation 48.51). It contained no camphor. Content of safrole seems to be over 80%. Its phenol fraction gave eugenol. The fraction after removal of safroles and phenols contained 42.3% terpene (I), 47.8% terpene alcohol (II) and 4.6% high-boiling fraction (III). I consisted of α -sabinene, α - and γ -terpinene and a small amount of β -pinene, camphene, dipentene and *p*-cymene. II consisted of 77% terpineol-4. III is not a sesquiterpene but seems to be a phenol ether.—T. IKEDA and T. NAITO. *J. Chem. Soc. Japan*, 59 (1938), 213-223; through *Chem. Abstr.*, 32 (1938), 8696. (F. J. S.)

Cinnamomum Kanahirai Hayata or "Shogyu" Oil—Volatile Oil of. II. Constituents of the Trunk Oil. Trunk oil made up 54% of the total oil, it gave no odor of safrole as in root oil but gave an odor like that of 4-terpinenol. It showed d_4^{25} 0.8941, α_D^{17} +23.9°, n_D^{25} 1.4752, acid value 0.82, ester value 3.62 (after acetylation 110.5). It contained no camphor and linalool. Neutral oil after removal of acids, phenols, aldehydes and cineole contained 45.3% terpenes and 44.3% terpene alcohols. Safrole content was less than 3%. Acids consisted of piperonylic acid with a less unsaturated acid, $C_{10}H_{16}O_2$. The phenol fraction contained carbaol and eugenol. The terpene fraction contained α - and γ -terpinene, dipentene, camphene, *p*-cymene and α -thujene. Terpene alcohol contained *d*-4-terpinenol. The high-boiling fraction contained sesquiterpene.—T. IKEDA and T. NAITO. *J. Chem. Soc. Japan*, 59 (1938), 385-398; through *Chem. Abstr.*, 32 (1938), 8696. (F. J. S.)

Coriander Oil—Ethereal, Methods of Collecting, at the Alekseevskii Works. Several technical and economical advantages are claimed for the recovery of ethereal coriander oil from the steam distillate by the use of coriander-seed hulls as the adsorptive material instead of activated charcoal or by absorption in the fatty coriander oil. To this end, the distillate from the Florentine receivers is conducted into the common receiver and is pumped into an elevated tank. The distillate is fed by gravity into a tower packed with the hulls and is held there for one hour at 40-45°. The oil is then freed by steam distillation and the hulls are used again in the process. After 10-15 days' use the adsorber is cleaned and charged with fresh hulls. About 1 Kg. hulls per 5 liters steam distillate is recommended. By this method the mean monthly loss of the oil was reduced to 0.0008%.—M. L. MEZINOVA. *Masloboino Zhirovoe Delo*, 14 (1938), 22-23; through *Chem. Abstr.*, 32 (1938), 8071. (F. J. S.)

Essential Oils—Chemical Microscopy of. A review of literature shows that only fifteen oils have been studied in this manner. The procedure is described for examining the crystalline precipitates. Using phenylhydrazine base, crystalline products were obtained for bitter almonds, cade, caraway, cassia, fennel, lemon, methyl salicylate, myrcia, nutmeg, origanum, pine needle, sweet birch, sweet majoram and wintergreen with bitter almond, caraway and cassia giving the most characteristic crystals; and twenty-five oils yielded no crystalline products. Saturated solution of potassium hydroxide in methyl alcohol gave crystals with anise, star anise, caraway,

clove bud, fennel, myrcia, pine needle and wintergreen and five oils gave no such reaction. Seventeen references.—L. WILSON GREENE. *Drug Cosmetic Ind.*, 43 (1938), 156–158, 174. (H. M. B.)

Essential Oils of Genus Orthodon Labiatae Indigenous to the East Asia. III. Essential Oil of Orthodon Chinese Kudo in Formosa. Steam distillation of fresh plant (250 Gm.) gives 1 Gm. oil b_{763} 238°, d_4^{30} 0.981, n_D^{30} 1.5101. It contains 25% *p*-cymene, 2–3% *l*-terpene (nitroso chloride m. p. 105–108° decomposition), 5% *d*-linalool, 5% *l*-borneol, 10% α -caryophyllene and monocyclic sesquiterpene.—Y. FUJITA. *J. Chem. Soc. Japan*, 59 (1938), 493–499; through *Chem. Abstr.*, 32 (1938), 8697. (F. J. S.)

Essential Oils of Genus Orthodon Labiatae Indigenous to the East Asia. IV. Essential Oil of Orthodon Hirtum Hara in Formosa. Steam distillation of 3 Kg. plant gives 6.9 Gm. oil, d_4^{30} 0.9225 and n_D^{30} 1.5026. It contains 40% thymol, 30% *p*-cymene and a small amount of terpene and terpene alcohol.—Y. FUJITA. *J. Chem. Soc. Japan*, 59 (1938), 500–502; through *Chem. Abstr.*, 32 (1938), 8697. (F. J. S.)

Essential Oils of Lippia Adensis Hochst. The top flowers of two samples of *Lippia adensis* Hochst gave 14.5 and 14.0 Gm. of crude oil per 1000 Gm. of dry material and the leaves gave 3.3 and 3.7. The leaves of a third sample gave 2.9. These quantities of the crude oil contained, in the order given, 4.8, 5.8, 0.2, 0.0 and 0.6 Gm. of *l*-camphor. The physical properties of the various samples of the decamphorated oil varied as follows: *d*. 0.9254 to 0.9270; *n* 1.4750 to 1.4808.—J. RABATE. *Rev. botan. appl. agr. trop.*, 18 (1938), 350–354; through *Chem. Abstr.*, 32 (1938), 8701. (F. J. S.)

Essential Oils of the Netherlands' East Indies.—P. A. ROWAAN. *Koninkl. Ver. Koloniaal Inst. Amsterdam, Mededeel.*, No. 47, *Afdeel. Handelsmuseum* No. 19 (1938), 72 pp. (English summary); through *Chem. Abstr.*, 32 (1938), 8701. (F. J. S.)

Essential Oils—Recent Progress in Chemical Methods Applied to the Functional Analysis of. A review dealing with determination of the degree of unsaturation, alcohol groups, phenol groups, esters, aldehyde and ketone groups, nitrogenous functions and peroxides.—S. SABETAY and Y. R. NAVES. *Compt. Rend. 17me Congr. Chim. Ind., Paris*, (Sept.–Oct. 1937), 777–783. (A. P.-C.)

Hemidescus Indicus (Sarsaparilla)—Preparation of the Essential Oil from the Roots of. The oil prepared had a d_{30}^{30} 0.9553 and a n_D^{30} 1.5342.—B. SANIJIWA RAO, K. S. SUBRAMANIAN and N. C. KELKAR. *Proc. Soc. Biol. Chemists, India*, 3 (1938), 35; through *Chem. Abstr.*, 32 (1938), 8696. (F. J. S.)

Lemon Grass and Citronella Oils from Indo-China. A critical review is made of the cultivation and production of these oils. *C. citratus* grown at Ong-Yem yielded, on steam distillation, 0.6% of oil from high parts and 0.125% from lower parts of the stalk and 0.434% when cut 30–35 cm. from ground level. The yield varies with the season and age of the plant, being highest from young leaves, and is reduced by insufficient pruning. First-year Indo-Chinese lemon-grass oils had d_{15}^{15} 0.878–0.894, citral content 70–82%, and from older plants d_{15}^{15} 0.882–0.902, citral content 78–87%; when freshly distilled the oils are soluble in 7 volumes of 70% ethyl alcohol, but after storing require 10 volumes of 95% ethyl alcohol. Citronella oils from *C. wintorianus* grown in Cochin China is equal, to the finest Java oil with similar yields; 4 samples had d_{15}^{15} 0.889–0.894, α_D $-1^\circ 28'$ to $+0^\circ 20'$, n_D^{20} 1.4684–1.4701, “total geraniol” 86.9–89%, citronellal 35.8–40.2%, primary alcohols, (as geraniol) 31.5–35.6, soluble in not greater than 2–4 volumes of 80% ethyl alcohol.—Y. R. NAVES and R. F. AURIOL. *Compt. rend. XVII Cong. Chim. Ind.*, (1937), 83–89; through *J. Soc. Chem. Ind.*, 57 (1938), 980. (E. G. V.)

Lilac. Extraction with petroleum ether of selected flowers of *Syringa vulgaris* L. yielded 0.24 to 0.36% of a dark green, solid concrete. Extraction of the same flowers with benzene yields 0.6% of blackish green, brittle concrete, containing considerable wax. In both cases the odor in no way resembles that of lilac, but is rather disagreeable. The petroleum ether concrete yields 38% of a green, viscous absolute, the odor of which is no better than that of the concrete. Steam distillation of the absolute with cohobation yields 8.72% of greenish yellow essential oil, having a rather disagreeable, linseed-like odor, with the following characteristics: specific gravity at 15° C. 0.9594, optical rotation at 20° C. $-4^\circ 20'$, refractive index at 20° C. 1.4876, acid value 16.8, ester value 59.92. It reduces ammoniacal silver nitrate, and hot oximation requires 1.4 cc. of half-normal potassium hydroxide per Gm. of oil. Contrary to Bürger, no indol was detected in the absolute.—GEORGES IGOLEN. *Parfums de France*, 16 (1938), 117–118. (A. P.-C.)

"Montsukigaya," *Andropogon Intermedius* R. Br. Variety *Punctatus* Hackel—Essential Oil of. The oil, d_4^{20} 0.8600, n_D^{30} 1.4643, α_D^{30} -10.0° , ester number after acetylation 130.18, yield 0.5%, contained 4-undecanone, a dextrorotatory alcohol, an isomer of decyl alcohol and octyl alcohol. Content of acids from hydrolysis of esters reached 7%; among them were acetic acid, butyric, caproic, enanthic and caprylic acids.—K. KAFUKU, Y. SEBE and R. KATO. *J. Chem. Soc. Japan*, 59 (1938), 312-326; through *Chem. Abstr.*, 32 (1938), 8697. (F. J. S.)

Oil of Cypress from Kenya. Oil obtained by distillation of undried wood and leaves obtained during spring pruning of an unspecified species of cypress from Kenya is a mobile, straw yellow liquid of terpenic odor, possessing the following characteristics: specific gravity at 15° C. 0.8750, optical rotation at 20° C. $22^\circ 40'$, refractive index at 20° C. 1.4788, acid value 0.5, saponification value 21.4, saponification value after acetylation 50.9, distills between 75° C. (under 50 mm.) and 200° C. (under 5 mm.). It was divided into the following 6 fractions: (1) terpenic, boiling from 75° to 110° C. under 50 mm. pressure 64%, (2) boiling from 50° to 70° C. under 5.6 mm., 2.8%, (3) boiling from 80° to 100° C. under 5 mm. pressure, 11.8%, (4) boiling from 100° to 130° C. under 5 mm., 10%, (5) boiling from 130° to 200° C. under 5 mm., 8.6%, (6) residue 2.8%. The terpenic fraction (64%) consists of about 22% (on the oil) of α -pinene, about 18% Δ^3 -carene, small quantity of camphene, about 8% of *d*-limonene, a small quantity of cymene, myrcene, α -terpinene, and unidentified dien terpenes.—JEAN SFIRAS. *Recherches*, March 1938, p. 17; through *Parfums de France*, 16 (1938), 165. (A. P.-C.)

Oil of Flowers of Violet—Absolute. Steam distillation of a commercial absolute oil, d_4^{13} 0.956, $[\alpha]_D +8.7^\circ$, containing a phthalic ester, $C_{18}H_{18}O_4$, not found in two specially prepared samples; the oil from a genuine absolute oil of Victoria violets had d_4^{20} 0.896, $[\alpha]_D +7.6^\circ$. Oil steam-distilled from leaves had d_4^{21} 0.904 and, in samples, $[\alpha]_D$ about $+2^\circ$ to -2° ; it is not possible to account for the constants of Soden (d_4^{15} 0.920, $[\alpha]_D +104$) for oil from the flowers. Flower oil contains more hydroxytoluene, about the same amount of nonadienol, and ten times less nonadienol than the leaf oil with similar alcohols (probably *n*- C_6H_{13} .OH, a heptenol, and an octadienol). A ketone, parmone, $C_{13}H_{20}O$ (phenylsemicarbazone, melting point $166-168^\circ$; *p*-bromophenylhydrazone, melting point $132-133^\circ$), with an odor closer to that of the violet flowers themselves than the ionones, methylionones and irone, occurs only in the flower oil and distinguishes it from the leaf oil, which takes its odor from the nonadienal.—L. RUZICKA. *Compt. rend. XVII Cong. Chim. Ind.*, (1937), 915-918; through *J. Soc. Chem. Ind.*, 57 (1938), 980. (E. G. V.)

Oil of Peppermint—Japanese. VII. Freezing Study of Japanese Oil of Peppermint. The freezing point technic was employed in determining the free menthol content of the Japanese oil of peppermint. This method gives slightly lower figures than that of the chemical method.—E. SHINOZAKI and M. ODAHARA. *Repts. Imp. Ind. Research Inst., Osaka, Japan*, 18, No. 10 (1938), 50; through *Chem. Abstr.*, 32 (1938), 8075. (F. J. S.)

Oil of *Pinus Pumila* Regel. Pour point of the oil was -120° , soluble in alcohol, ether and C_6H_6 , most part b. p. $170-180^\circ$, has d_4^{26} 0.8600, n_D^{20} 1.4847, $[\alpha]_D$ 5.43° , acid number 0.34 and ester number 14.36 (after acetylation 28.88). The oil is mostly terpene.—N. TAKASUGI. *J. Chem. Soc. Japan*, 59 (1938), 941-944; through *Chem. Abstr.*, 32 (1938), 8697. (F. J. S.)

Palmarosa Oil—Java. The ethereal oil distilled from *Andropogon martini* Roxb. variety *motia* in Java consists mainly of geraniol (82-94%) free and combined with acetic and capronic acids, aldehydes, dipentene and traces of methylheptenone. The aldehyde content (as $C_{10}H_{18}O$) is maximum 10.2, minimum 1.3, average 7.0 and consists of citral with occasionally some citronellal; the presence of isovaleraldehyde and traces of formaldehyde is demonstrated.—C. J. van HULSEN, D. R. KOOLHAUS and P. A. ROWAAN. *Indische Mercur*, 61 (1938), 492-493; through *Chem. Abstr.*, 32 (1938), 8077. (F. J. S.)

Sandalwood—Volatile Oil in. Report is made of studies on oil from sandalwood imported in New York. Figures tabulated include yield, moisture content, specific gravity, optical rotation, refractive index and percentage of santalol. The yield varies considerably. Specific gravity was found to fall outside U. S. P. limits as does the optical rotation. Refractive index lies between 1.500 and 1.509. Specific gravity and refractive index are of little value in detection of non-official varieties of sandalwood but optical rotation is important.—J. F. CLEVENGER. *J. Am. Pharm. Assoc.*, 27 (1938), 580. (Z. M. C.)

Sassafras Randaiense (Hay) Rehder—Essential Oil of. Preliminary Report. Yield of oil was only 0.0009-0.0023%; it consisted of sesquiterpene and sesquiterpene alcohol but no

safrole.—Y. FUJITA. *J. Chem. Soc. Japan*, 59 (1938), 935-936; through *Chem. Abstr.*, 32 (1938), 8697. (F. J. S.)

Volatile Oil of *Illicium Parviflorum* Michx.—Note on the. The leaves of this plant which grows in Florida and Georgia, contain an oil which yields more than 90% of safrol, a higher percentage than that reported from any other oil yielding it. Details of experimental work are reported.—P. A. FOOTE. *J. Am. Pharm. Assoc.*, 27 (1938), 573. (Z. M. C.)

Glycosides, Ferments and Carbohydrates

Asperuloside—Extraction and Localization of, in *Crucianella Maritima* L. Asperuloside was isolated from *C. maritima* and identified by physical and chemical constants. It was found in the aerial and underground portions of the plant. The various tissues and cells showing the presence of asperuloside are given. *C. maritima* is another member of the *Rubiaceae* showing the presence of this glucoside.—A. JUILLET, J. SUSPLUGAS and V. MASSA. *J. pharm. chim.*, 27 (1938), 56-62. (S. W. G.)

Coccarboxylase—Preparation of. A dehydrated mixture of 0.5 Gm. sodium pyrophosphate and one cc. *o*-phosphoric acid is heated with 0.5 Gm. thiamine chloride to 155° for 3 minutes, then dissolved in 10-cc. water. The excess of phosphoric acid is removed with barium hydroxide, the excess of barium by acidification with sulfuric acid. The solution is concentrated *in vacuo* and the coccarboxylase is precipitated with a mixture of one part alcohol and two parts ether. The product is as active as the natural coccarboxylase.—HENRY TAUBÉR. *Proc. soc. exptl. biol. med.*, 38 (1938), 888. (A. E. M.)

Cyanogenesis in *Lotus Arabicus*. A re-investigation of this poisonous plant has resulted so far in the isolation of two constituents not hitherto recorded for the species: (a) the new cyanogenic glucoside lotaustralin; (b) a well defined, crystalline pigment glucoside, C₂₂H₂₄O₁₁. Only about one sixteenth of the hydrocyanic yielding capacity of this sample of the plant is accounted for by the lotaustralin so far obtained and it is hoped to isolate the source, or sources, of the remainder in due course.—T. A. HENRY. *J. Soc. Chem. Ind.*, 57 (1938), 248-249. (E. G. V.)

Diastase—Liquefying Power of. The liquefying power is maximum at p_H 4.6.—H. VAN LAER and R. LESTARQUIS. *Ann. Zymol.*, 4 (1938), 168-170. (A. P.-C.)

Ferments—Assay of Soluble, Official in the French Codex. Samples of normalized pepsin, pancreatin and diastase, and of starch and fibrin, were kept in sealed tubes in a cryostat at 2° C. for 3 years, re-examined periodically and the results tabulated. No loss of activity took place in 3 years, except that the acidity of pancreatic tryptase (Sørensen method) gradually diminished; the amino acid content after addition of formaldehyde remained constant. The values for pancreatic lipase, although constant, should be revised by applying the recent method for the determination of its activity (PÉNAU and GILBERT, *J. Pharm. Chim.*, 25 (1937), 5-17). Papain, soon to become official, can also be tested by normalized fibrin.—H. PÉNAU and R. AUDIC. *J. Pharm. Chim.*, 25 (1937), 107-110; through *Chimie & Industrie*, 39 (1938), 254. (A. P.-C.)

Glycosidal Principles in the Organs of *Lonicera Xylosteum* L.—Biochemical Researches on Variations in, during the Course of Vegetation. The variations in the glycosides during the period of vegetation are studied in the present paper. The parts were collected in the afternoon on the 16th of April, 5th of May, 28th of May, 19th of June and the 21st of August to extend over the full period of growth. The results of the determinations of glycosides and reducing sugars in the extracts prepared individually from the leaves, bark, flowers, fruits and young twigs are compiled in 4 tables. In the leaves, the reducing sugars and holosides follow parallel curves: a decrease during the expansion of the leaves and the opening of the bud and then an increase between the time when the leaf is open and the appearance of the flower bud and then again in the fall after flowering. In the bark, the holosides decrease during the period of active vegetation while the heterosides and reducing sugars vary only slightly. In the young twigs, the elongation appears to utilize all forms of glycosides while the lignification does not lower the amount of reducing sugar or holosides, the heterosides increasing during this period. The flowers are very rich in reducing sugar and poor in holosides. In the fruits, the maturation is characterized by a great increase of reducing sugar and a noticeable decrease in heterosides.—C. BÉGUIN. *Pharm. Acta Helv.*, 13 (1938), 77-82. (M. F. W. D.)

Glycosides Having an Action on the Heart—Manufacture of. An aqueous or aqueous ethyl alcohol extract of oleander leaves is extracted with an organic solvent, for example, a chlorinated

aliphatic hydrocarbon, and the active material is precipitated from the extract by addition of a saturated hydrocarbon, for example, cyclohexane. The product is purified by redissolving it in an aromatic hydrocarbon and then precipitating with a saturated hydrocarbon.—I. G. FARBENIND. A.-G. Brit. pat. 478,000; through *J. Soc. Chem. Ind.*, 57 (1938), 982. (E. G. V.)

Squill Glucosides—Clinical Efficacy of. M. reviews the literature on the pharmacology of the squill glucosides, and cites 6 cases in which administration of scillaren (I) orally in tablet form led to good results in patients with cardiac decompensation previously refractory to digitalis (II). One patient showing hypersensitivity to II responded well to I. The chronic constipation existing in all 6 patients was relieved by the I therapy. The dosage uniformity of I preparations is their chief advantage over II.—WALLACE MARSHALL. *Med. Times*, 66 (1938) 276; through *Squibb Abstr. Bull.*, 11 (1938), A-1200. (F. J. S.)

Other Plant Principles

Calotropin, African Arrow Poison. Calotropin, a strongly cardio-toxic substance is extracted from *Calotropis procera* with dilute alcohol. The solution is clarified with lead acetate, concentrated and extracted with chloroform; petroleic ether precipitates crude calotropin, which can be recrystallized from water or organic solvents, a molecule of the solvent remaining combined with the purified substance. It has a melting point of 221° C., and an optical rotation of +55.7°. The empirical formula is $C_{29}H_{40}O_9$. It is very hygroscopic. When heated in vacuum to 230° C. it splits up into two compounds: (1) methylreductinic acid, $C_8H_8O_3$, very unstable in air, oxidized under definite conditions by silver oxide to pyrotartaric acid; (2) a lactone, calotropagenin, $C_{23}H_{32}O_6$, with properties and physiological activity very similar to, but not identical with, those of strophanthidin, and broken down by strong alkalis into pseudocalotropic acid and pseudocalotropagenin. Calotropin can be split into its constituents by the action of an alkali, which also converts the genin into the pseudo-genin; but in acid medium this does not occur and an anhydrocalotropin is obtained.—G. HESSE and F. REICHENEDER. *Liebig's Ann. Chem.*, 526 (1936), 252-276; through *Chimie & Industrie*, 39 (1938), 718. (A. P.-C.)

Camphor from the Italian Colonies. *Meriandra benghalensis* Benth. or *M. dianthera* Briq., a sage-like shrub growing in the highlands of Eritrea, yields an essential oil containing 70-72% of a camphor which closely resembles Formosan camphor except that it has a lower melting point and $[\alpha]$. The purest specimen prepared melted at 171° and had $[\alpha]_D^{20}$ 7.2°.—A. BORIANI. *Ann. chim. farm.*, 1 (1938), 47-52; through *Chem. Abstr.*, 32 (1938), 7209. (F. J. S.)

Carotene in Palm Oil. Activated earths from Surrey were effective bleaching agents for palm oil; entrained oil can be removed from the used earth by washing with light petroleum, which does not extract the adsorbed carotene; the carotene is easily recovered in concentrated form by suspending the washed earth in acetone and evaporating the solution. Ether and ethyl acetate remove only a portion of the carotene in the washed earth, the balance being extractable by acetone.—T. A. BUCKLEY. *Malay. Agric. J.*, 26 (1938), 258; through *J. Soc. Chem. Ind.*, 57 (1938), 1067. (E. G. V.)

Isopulegol—Preparation of. Citronellal is agitated and heated (suitably to about 130° to 140° C.) with a diatomaceous earth catalyst containing metallic impurities (such as silica, alumina, ferric oxide, titanium dioxide, lime, magnesia and sodium oxide) up to 8%.—CHARLES O. TERWILLIGER, assignor to THEODORE SWANN. U. S. pat. 2,117,463, May 17, 1938. (A. P.-C.)

Lactucarium. When the latex of several *Lactuca virosa* plants is collected rapidly in a suitable container and protected against evaporation, there is obtained, after coagulation, a liquid containing all the bitter principles of the plant, which can easily be separated from the insoluble constituents such as lactucerin and rubber. By evaporation there is obtained a brownish yellow powder which keeps well and contains all the pharmacologically active principles of *Lactuca virosa*.—G. SCHENCK and H. GRAF. *Arch. Pharmazie*, (1936), 537-542; through *Chimie & Industrie*, 39 (1938), 723. (A. P.-C.)

Lecithin—Concentration of, in Oil Sediments. The sediment forming in vegetable oils contains considerably more lecithin than does the supernatant layer.—I. PETRAEV. *Maslob. Zhir. Delo*, No. 3 (1938), 12-13; through *J. Soc. Chem. Ind.*, 57 (1938), 1066. (E. G. V.)

Oak Moss—Concrete of. The characteristic odor of the concrete of oak moss is due entirely to the volatile constituents, the nonvolatile portion apparently being practically odorless

and acting as an excellent fixative. In the volatile fraction, the following compounds were identified and doubtless play an important part in the production of the odor: orcin, monomethylester, thuyone, naphthalene, borneol, camphor, cineole, citronellol, geraniol, vanillin, methyl nonyl ketone and stearic aldehyde.—M. STOLL and W. SCHEFFER. *Compt. Rend. 17me Congr. Chim. Ind., Paris* (Sept.-Oct. 1938), 205-212. (A. P.-C.)

α -Phellandrene—Detection and Determination of, in Essential Oils. Phellandrene (I), in oil mixtures, reacts with maleic anhydride (II) in acetone at room temperature to form an additive compound (III), hydrolyzed only slowly with steam. Unchanged oil is measured by distilling with steam or by dissolving II and III in hot aqueous sodium hydroxide. The method cannot be used when the oil contains other compounds, e. g., β -phellandrene, which react with II, but consistent results were achieved with synthetic mixtures. Commercial I contains much *p*-cymene. The formation of the inactive, melting point approximately 95°, from equal weights of the active, additive compounds from *d*-, melting point 126°, and *l*-I affords a means of determining the rotation of a trace of I and also of indicating *dl*-I in an optically active specimen.—A. J. BIRCH. *J. Proc. Roy. Soc. New South Wales*, 71 (1938), 54-59; through *J. Soc. Chem. Ind.*, 57 (1938), 981. (E. G. V.)

Salicin and Populin—Quantitative Determination of, in the Salicaceæ. The method reported for the quantitative estimation of salicin is: 50 Gm. of the cortex of the plant is boiled for two hours in 500-cc. water containing 1 Gm. calcium carbonate. The liquid is decanted and the residue is further boiled with 250-cc. water for thirty minutes. The liquid portion is expressed and the combined extracts are filtrated and concentrated to about 200 cc. Five gram lead acetate is added, the mixture warmed up and then filtered. The filtrate is then saturated with hydrogen sulfide and the precipitated lead sulfide is filtered off. The acetic acid is removed by treating with calcium carbonate and the precipitate formed is removed by filtration. The filtrate is then evaporated at 40-50° to about 40 cc. The concentrated filtrate is rinsed into a 100 cc. volumetric flask, neutralized, 10 cc. of an acetate buffer (p_H 4.4) and sufficient water are added to make 100 cc. The degree of rotation of the solution is then determined. After polarization, 0.2 Gm. emulsin and a few drops toluene are added; the mixture is thoroughly shaken and then allowed to stand for twenty-four hours at 37°. Sufficient sodium hydroxide is added to neutralize, a few drops of ammonia are added, the mixture filtered clear and its degree of rotation determined. The per cent of salicin is determined on the basis that on hydrolysis, one mole of glycoside yields one mole of glucose. The present salicin can then be calculated by the formula,

$$2 \left(\frac{100X}{l \cdot \alpha_D^{20} \cdot d_4^{20}} \right) \left(\frac{286}{180} \right)$$

in which X is the sum of the degree of rotations before and after enzymic hydrolysis, *l* is the length of the tube in mm., α_D^{20} is the specific rotation of glucose (52.5°), α_4^{20} is the density, 286 is the molecular weight of salicin and 180 the molecular weight of glucose. Populin is determined by a similar procedure as described under salicin except that 0.3 Gm. invertase is used instead of emulsin.—A. KUHN and G. SCHÄFER. *Pharm. Ztg.*, 82 (1937), 949-951. (N. L.)

Vanillin and Other Hydroxyaldehydes—Synthesis of. Vanillin is obtained in 76% yield from guaiacol 5, 40% formaldehyde solution 3.6, ethyl alcohol 20, 30% hydrochloric acid 25, para dimethyl nitro aniline 6 and aluminum powder 0.9 Gm. (4 hours at 38-40°).—N. I. VOLINKIN. *J. Appl. Chem. Russ.*, 11 (1938), 423-425; through *J. Soc. Chem. Ind.*, 57 (1938), 885. (E. G. V.)

Fixed Oils, Fats and Waxes

Arachis Oil—Hardened. During the early stages linoleic acid is selectively hydrogenated at the 9:10 double linking so that *iso*-oleic acid accumulates. Oleic acid is at the same time partly converted into elaidic acid. After 2 $\frac{3}{4}$ hours hardening, when only 20% of the linoleic acid remains, the less unsaturated components are also attacked, with the formation of saturated acids. The presence of *iso*-oleic acid in a fat indicates that it has been hardened.—R. VIOLLIER and E. ISELIN. *Mitt. Lebensm. Hyg.*, 29 (1938), 1-10; through *J. Soc. Chem. Ind.*, 57 (1938), 1067. (E. G. V.)

Cacao Butter—Extractions of, and Their Application in Cosmetics. Fat extracted from cacao seed by means of trichlorethylene (A) is a deep yellow liquid, melting at 8°C., has a higher

acid number (20-30) than cacao butter, a higher unsaponifiable content (8-15%), much more unsaturated fatty acids, especially linolic acid; the amount of palmitic and stearic acids is only about 40%. The fat obtained in the same way from the hulls is solid, melting at 28-30° C., very yellow, possesses a higher acid number (13-45%) than cacao butter, more unsaponifiable matter (7-14%), more unsaturated acids, especially oleic acid; solid fatty acid content is 54%. A table is offered showing the melting points, acid values, unsaponifiable matter (%), glycerides, % solid and liquid fatty acids for the extract of cacao refuse with A, extracts with A of the husks and powder from cacao, extracted fat mixed with cacao obtained by pressure, refined extracted fat, fat from cacao residues and for the pure butter.—A. M. BURGER. *Riechstoff-Ind. u. Kosmetik*, 13 (1938), 126-127. (H. M. B.)

Coconut Oil—Edible. The refining and uses of the oil are described and analyses recorded.—R. CHILD. *Trop. Agric.*, 89 (1937), 270-280; through *J. Soc. Chem. Ind.*, 57 (1938), 1067. (E. G. V.)

Cod Liver Oil—Seasonal Relation for the Composition of Fat Acids in. The cod liver oil having higher vitamin A potency prepared in the spawning season and immediately thereafter contained a smaller amount of highly unsaturated acids than that prior to the spawning. There was no definite difference in the saturated acid content. In the cod liver oil of *Stereolepis ishinagi* Hilgendorf the similar relation was also observed. Highly unsaturated acids deposited in the body of rats decreased rapidly during fasting.—M. YOSHIDA. *J. Agr. Chem. Soc. Japan*, 14 (1938), 277-283; through *Chem. Abstr.*, 32 (1938), 7211. (F. J. S.)

Coffee Bean Oil. Existing data for this oil are fully summarized and the characteristics of the oils extracted by light petroleum from the raw and the roasted Santos coffee beans and from the coffee grounds have been determined [saponification values 175.5-178.5, iodine values 90.5-93.5, unsaponifiable matter (ether extracted) 6.5-9.6%, hydroxyl value 10.2-15.5]. Roasting the beans slightly increases the iodine and sulfo-cyanide values of the oil, probably because it causes a small loss of volatile (saturated) acids, while the oil from the grounds has a slightly lower iodine value and higher hydroxyl value (15.5). The fatty acids of the oil from raw beans consist of saturated acids 43.6, oleic acid 31.0 and linoleic acid 25.4%; the unsaponifiable matter contains a sterol, melting point 138-139°, kahweol, melting point 143-143.5° and a hitherto unreported substance.—K. H. BAUER and R. NEU. *Fette u. Seifen*, 45 (1938), 229-232; through *J. Soc. Chem. Ind.*, 57 (1938), 936. (E. G. V.)

Deutsche Gesellschaft Fettforschung—Collaborate Studies of. X. Report of Ninth Congress of the International Commission for the Studies of Fats. Rome, 1938. The methods for determination of unsaponifiable matter adopted in 1937 are retained; when difficultly volatile unsaponifiable matters are present, it is suggested that 2 Gm. of non-volatile oil shall be added before drying in order to avoid the loss of these. For the determination of impurities in oils more solvent than was originally specified may be used in special cases. Better concordance in collaborate tests for the determination of polybromide valence has led to standardization of this test (details to appear later); saturation of the ether with hexabromide, precipitation in the presence of a known amount of hexabromide and filtration of the precipitate are advocated. The D. G. F. pyridine method with a modification due to Shepherd is adopted for the determination of hydroxyl valence. More concordant and accurate results for rosin acids in soaps were obtained by the McNicoll method than by the Twitchell or gravimetric method. Notes on tentative methods for the determination of hydroxy acids, chloride and free fatty acids in soaps, etc., are given.—H. P. KAUFMANN. *Fette u. Seifen*, 45 (1938), 312-318; through *J. Soc. Chem. Ind.*, 57 (1938), 1065. (E. G. V.)

Fats—Alleged Biological Synthesis of. The apparent increase in the fat content of seeds which have been macerated with carbohydrate solutions according to the Ludecke patent is due, not to the synthesis of fat, but to the "opening up" (solubilization) of the seed constituent and the liberation (exosmosis) in the free state of substances which are soluble in light petroleum but differ considerably in composition from the true fat originally present in the seed.—F. FIEDLER. *Fette u. Seifen*, 45 (1938), 183-185; through *J. Soc. Chem. Ind.*, 57 (1938), 809. (E. G. V.)

Fats and Oils—Structure and Chemical Composition of. A general review of progress made during the past ten years in the chemistry of glycerides and of the fatty acids of oils and fats.—J. B. BROWN. *Oil and Soap*, 15 (1938), 102-106; through *J. Soc. Chem. Ind.*, 57 (1938), 937. (E. G. V.)

Fats—Glycerides of. XV. Glycerides of Babassu Fat. The kernel contained water 4.43, portein 7.63, nitrogen-free extractives 13.11, crude fiber 4.41, ash 1.56 and fat 68.86%, of melting point 25°, saponification value 251.1, iodine value 15.6, acid value 2.0, Reichert-Meissl value 5.9, Polenske value 11.6, butyric acid value 0.4, refraction at 30°, 40.5, at 40°, 35.0 and unsaponifiable matter 0.3%. By distillation in high vacuum, as for coconut oil, three fractions were obtained (up to 150°, 150–295° and a residue) which were further examined by fractional precipitation with acetone. Contrary to Kraft's statement, oleic acid was present in the glycerides of the distillates so obtained. The bulk of these consisted of myristodilaurin (melting point 34.9°) with some laurodimyristin (melting point 36.1°) and a little palmitodimyristin (melting point 45.7°). The more soluble glycerides of the residue contained oleic, stearic, myristic, lauric and oitic acids, while the least soluble was stearodipalmitin (melting point 55.9°). The content of this in the fat is, however, low.—A. BOMER and H. HÜTTIG. *Z. Unters. Lebensm.*, 75 (1938), 1–33; through *J. Soc. Chem. Ind.*, 57 (1938), 809. (E. G. V.)

Fats—Saponification Value of. Determination of stearic, palmitic or oleic acid, depending on boiling with 0.5 *N* potassium hydroxide in ethyl alcohol and titrating excess of potassium hydroxide with 0.5 *N* hydrochloric acid (phenolphthalein), do not give consistent results, the maximum differences being of the order of 1–3%. Greater accuracy is not obtained by adding ethyl alcohol, propyl alcohol, butyl alcohol, *iso*-amyl, glycol or glycerol to the solutions. The results of titration with potassium hydroxide in ethyl alcohol are not affected by presence of pure potassium soaps.—K. IHNATOWICZ. *Przemysł Chem.*, 22(1938), 179–186; through *J. Soc. Chem. Ind.*, 57 (1938), 1066. (E. G. V.)

Fatty Acids—Total Saturated, Determination of. Tests on maize, sesame and liquid cotton oil fatty acids, and of synthetic mixtures, show that a modification of Bertram's method is best. Oxidation with aqueous ethyl alcohol-potassium hydroxide-potassium permanganate at minus 15° leaves the saturated portion unchanged (iodine value correction).—K. A. PELICAN and J. D. VON MIKUSCH. *Oil and Soap*, 15 (1938), 149–150; through *J. Soc. Chem. Ind.*, 57 (1938), 935. (E. G. V.)

Fatty Oils—Effect of Washing with Aqueous Calcium Chloride. Sunflower seed oil washed with aqueous calcium chloride contains appreciable amounts of calcium soaps—M. ABRAMOV. *Maslob. Zhir. Delo*, No. 3 (1938), 17; through *J. Soc. Chem. Ind.*, 57 (1938), 1067. (E. G. V.)

Fatty Oils—Relation between Densities and Iodine Values of. Values for these constants for specified vegetable oils are given; when plotted they lie within two close parallel lines which can be expressed by $I = 5950(d - 0.9033)$ and $I = 5950(d - 0.8978)$, where I is the iodine value and d the density. Many vegetable and animal oils have been examined, using the constants as found in the literature, in the light of these conclusions. Agreement is found with oils containing the common fatty acids, while the cases of non-agreement can be classified as: (1) when d is too high compared with I . These oils contained either special groupings in their molecules (hydroxyl groups), or else glycerides of low molecular weight fatty acids; and (2) when d is too low compared with I . These oils contained either hydrocarbons of low density or free fatty acids or esters of monohydric alcohols.—K. YOKOTA and M. TATIMORI. *J. Soc. Chem. Ind. Japan*, 40 (1937), 426–429b; through *J. Soc. Chem. Ind.*, 57 (1938), 1067. (E. G. V.)

Groundnut and Sesame Oils—Progressive Hydrogenation of. It has been shown in the cases of olive, teaseed and cottonseed oils that their content of completely unsaturated (or, more strictly speaking, tri-C₁₈) glycerides is near to the minimum possible from their respective fatty acid compositions, and that therefore these oils conform with the rule of "even distribution" in the structure of their component glycerides. The method employed to determine the content of tri-C₁₈ glycerides in these cases consisted of detailed analysis of the fully-saturated glycerides produced by hydrogenation to successive stages. This procedure has now been applied to two other technically important seed oils, groundnut and sesame oils. Using the "agitation" process in presence of a small proportion of nickel-kieselguhr catalyst, each oil was hydrogenated, first to the stage at which almost all linoleic glycerides had been selectively reduced to oleic and *iso*-oleic glycerides and then to several other degrees of increasing saturation. The data obtained by each detailed analysis of hydrogenated product showed that both oils again conformed with the rule of "even distribution," the amount of tri-C₁₈ glycerides being in each case near to the minimum possible. Since it has been shown in the case of cottonseed oil that hydrogenation by the "drip"

continuous process over a stationary catalyst leads to a different mixture of mixed glycerides (at corresponding degrees of mean unsaturation) from that produced by the "agitation" process, samples of groundnut and sesame oils were also hydrogenated by the "drip" method, and it was found that similar alterations in the glyceride structure of the hydrogenated oils to those observed with cottonseed oil were displayed. The data recorded indicate in some detail the component glycerides to be expected in groundnut or sesame oils which have been partly hydrogenated by either of the processes mentioned.—T. P. HILDITCH, M. B. ICHAPORIA and H. JASPERSON. *J. Soc. Chem. Ind.*, 57 (1938), 363-368. (E. G. V.)

Horse Chestnut Seeds with Special Reference to the Oil thereof—Evaluation of. Unpublished results obtained in 1916 are now reported. The oil (8% on the dry seeds) extracted from fresh horse chestnuts had acid value 3.3, saponification value 196, iodine value 84.7. Extraction of the seeds with 45% ethyl alcohol removed saponins and sugar (the evaporated extract can be used as a detergent), leaving an edible meal containing 6-7% of oil (saponification value 187, iodine value 106.7) and about 66% of starch. The saponin free meal and the sugars obtained by hydrolyzing the saponins can be fermented to yield ethyl alcohol. The refined oil appears to be edible.—T. SABALITSCHKA. *Fette u. Seifen*, 45 (1938), 228-229; through *J. Soc. Chem. Ind.*, 936. (E. G. V.)

Inguandaramé and Karasumi Oils—Distillation of, under Reduced Pressure. Inguandaramé oil (yellow liquid; derived fatty acids, brownish yellow-orange liquid not readily solidified at 0°) has neutralization value 193.5, iodine value 93.6, ether-insoluble bromide content 3.74%. The unsaponifiable matter was a mixture of pale yellow liquid and solids at 28°, which became clear liquid at 33-33.5° having iodine value 55.8 and acetyl value 193.6. One hundred twenty grams of the oil were fractionally distilled under reduced pressure (2 mm.) and five fractions and a residue were obtained. The oil contained approximately 5% of glycerides, part of which was distilled over. The fractions boiling below 290° had the higher density and neutralization value, but the cause is not clear. Squalene could not be detected. The chief fraction seemed to consist of cetyl and oleyl oleates. The ether-extracted karasumi oil was treated with acetone to remove phosphatides. The oil was a yellowish red liquid in the summer, and the derived fatty acids were brownish yellow-red and liquid in summer (melting point 25-26°, neutralization value 197, iodine value 179.5, ether-insoluble bromides 48.5%). The unsaponifiable matter was a yellow crystalline mass (melting point 40-41°, iodine value 43.9, acetyl value 190.6). One hundred grams of the oil were fractionally distilled under reduced pressure (3 mm.) three fractions and a residue being obtained. The oil contained approximately 11% of glycerides. The chief fraction consisted mainly of cetyl and octadecenyl oleates, together with wax esters of an acid or of acids more unsaturated than oleic acid, but not ordinary highly unsaturated acids. A small amount of cetyl clupanodonate appears to be present in the highest-boiling fraction.—M. TSUJIMOTO and H. KOYANAGI. *J. Soc. Chem. Ind. Japan*, 40 (1937), 403-405b; through *J. Soc. Chem. Ind.*, 57 (1938), 1068. (E. G. V.)

Oils from the Hair Seal and the Sea Lion. Some physical and chemical characteristics have been determined on blubber oils from the hair seal and the sea lion; that from the latter contained much more vitamin A.—L. I. PUGSLEY and K. F. HARDING. *Progr. Rep. Fish. Res. Bd. Canad.*, No. 36 (1938), 10-11; through *J. Soc. Chem. Ind.*, 57 (1938), 1068. (E. G. V.)

Oils of Groundnut—Comparison of, from the Local and Spanish Varieties. Comparison of the following factors of the two varieties has been made: amount of oil, shell and kernel; ratio of seed to shell; analysis of kernel; physical and chemical constants of oil; and analysis of fatty acids in the oil. The chief differences are the higher acetyl and iodine values of the local oil.—W. V. KOTASTHANE and N. NARAYANA. *J. Univ. Bombay*, 6, Part II (1937), 143-147; through *J. Soc. Chem. Ind.*, 57 (1938), 1066. (E. G. V.)

Palm Oils—Difficultly Bleachable. The difference in behavior of palm oils during air bleaching is explained by differences in composition of the oils. Oil rich in linoleic acid (I) is more liable to overoxidation (resulting in discolored oil and soap) than oil of low I content; e. g., Congo palm oil, containing 21.8% of I, is difficult to bleach, whereas Drewin palm oil (14.4% of I) is easily bleached. Neutral oils are difficult to bleach. Maximum bleachability is shown at 15% of free fatty acid content. In oils which contain greater than 30% of free fatty acids the action of catalytically active intermediate compounds from unsaturated acids is so great that oxidation of coloring matter is slower than that of fatty acids, and color of oxidized fatty acids appears

before coloring matter is decomposed.—F. WITKA. *Allgem. Oel-u. Fett-Ztg.*, 35 (1938), 187-193; through *J. Soc. Chem. Ind.*, 57 (1938), 936. (E. G. V.)

Quince Seed Oil. The physical and chemical properties of two samples of quince seed oil are given.—J. PRITZKER and R. JUNGKUNZ. *Z. Untersuch. Lebensm.*, 76 (1938), 40-41; through *Chem. Abstr.*, 32 (1938), 9391. (F. J. S.)

Sardine Liver Oil. Four different samples were examined. With the first sample the oil was extracted with ether followed by light petroleum. In other cases the oil was extracted with light petroleum and washed with 50% ethyl alcohol. Each of the oils was a dark orange-yellow, and seemed to contain phosphatides. The characteristics of the oils are given. The iodine values of the liver oils are close to those of sardine oil, but slightly higher. The unsaponifiable matter was investigated and cholesterol isolated in pure state. Each of the livers was examined and the cod liver oil values were determined, using a Lovibond tintometer. Values found were 3.7, 9.0, 6.2 and 7.0, respectively.—Y. TOYAMA. *J. Soc. Chem. Ind. Japan*, 40 (1937), 402-403b; through *J. Soc. Chem. Ind.*, 57 (1938), 1068. (E. G. V.)

Shark Liver Oil—Vitamin A and D Potency of a British Columbia. 63.7% of oil was obtained from "mud shark" livers having unsaponifiable matter 14.8%, iodine value (Wijs) 123.1, n_D^{25} 1.474, d_4^{25} 0.9119, blue units vitamin A per Gm. 5400 and international units vitamin D per Gm. 20.—L. I. PUGSLEY. *Progr. Rept. Fish. Res. Bd. Canad.*, No. 35, (1938), 12-13; through *J. Soc. Chem. Ind.*, 57 (1938), 937. (E. G. V.)

Vegetable and Mineral Oils—Value of Certain Yugoslavian Clays for Refining. The bleaching activity of the clays is related to their hydrated silicon dioxide and aluminum oxide plus ferric oxide content. The type of clay (bentonite or voridin) cannot be determined from composition or velocity of dehydration data.—J. ZALJESOV and M. KRAJCIHOVIC. *Arh. Hemiju*, 12 (1938), 2-8; through *J. Soc. Chem. Ind.*, 57 (1938), 1007. (E. G. V.)

Visceral Oils from British Columbia Halibut and Cods—Vitamin Content of. The vitamin A potency of halibut stomach is negligible, but the remaining viscera (excluding the liver) yielded 2-8% of oil having 45,000-420,000 blue units and 100-500 international units of vitamin D per Gm. Oil from black cod viscera had 135,000-213,000 blue units and (one sample) 100 units of vitamin D per Gm.—L. I. PUGSLEY. *Progr. Rept. Fish. Res. Bd. Canad.*, No. 35, (1938), 13; through *J. Soc. Chem. Ind.*, 57 (1938), 937. (E. G. V.)

Whale Oils—Quantity of Saturated Fatty Acids in. Humpback whale oil contained 18-20% of saturated acids; the blubber, bone and flesh oils of blue whales showed 18.0-19.4, 21.6-23.9 and 21.6-22.6% of saturated acids, respectively, while for fin-whale oils the corresponding figures were 16.5-19.3, 20.4-22.3 and 19.5-22.0%. Neither the condition of the whale nor the locality of its capture seems to have any appreciable effect on the content of saturated acids.—J. LUND. *Fette u. Seifen*, 45 (1938), 290-292; through *J. Soc. Chem. Ind.*, 57 (1938), 1068. (E. G. V.)

White Oils—Medicinal, Process of Refining. A viscous mineral oil is mixed with 3 to 20% by volume of fuming sulfuric acid under sulfonating conditions adapted to form a sludge and a remainder of hydrocarbon oil containing mahogany-colored and green sulfonic acids. The hydrocarbon oil is separated from the sludge and, without prior neutralization, it is heated from 290° F. to just below the decomposition point of the oil for a period of time sufficient to effect the decomposition of the mahogany-colored and green sulfonic acids. The carbonaceous material formed by this decomposition precipitates, and after removal thereof there remains a white oil of high stability.—MANUEL BLUMER and LEO SALZMANN, assignors to L. SONNEBORN SONS, INC. U. S. pat. 2,118,805, May 31, 1938. (A. P.-C.)

Unclassified

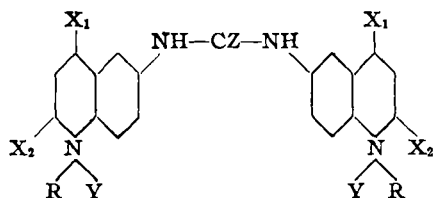
Acetylene—Syntheses Based on. A review of modern industrial developments.—P. NYLEN. *Tids. Kjemi*, 18 (1938), 92-96; through *J. Soc. Chem. Ind.*, 57 (1938), 1012. (E. G. V.)

Amino Acid Esters—Phosphates of. Equimolecular amounts of phosphoric acid and amino acid esters or their derivatives are caused to interact in the presence of a solvent. Thus, phosphoric acid in ice-cold alcohol is treated with an equimolecular amount of glycooll ester in alcohol. The resulting phosphate melts at 134° to 135° C. The products have therapeutic properties.—WALTER SCHOELLER and ERICH BORGWARDT, assignors to SCHERING-KAHLBAUM A. G. U. S. pat. 2,103,558, Dec. 28, 1937. (A. P.-C.)

Amino Acridine Derivatives—Basically Substituted. 9-Aminoacridines containing a basic substituent in the amino group and a halogen or alkyl in the 6-position, and which may also contain a halogen, alkyl or alkoxy group in the 2-position, are prepared by the methods of Brit. patents 267,169, 282,453 and 286,087. The basic substituents in the 9-amino group are residues containing at least one nitrogen atom, either as an amino group which may be substituted or in heterocyclic combination, the said nitrogen atom being linked by means of an aliphatic, carbocyclic or aliphatic-carbocyclic residue; the substituent may also contain ether or thioether linkages, as well as hydroxyl, etc., groups. The products possess therapeutic properties. Numerous examples are given.—FRITZ MIETZSCH and HANS MAUSS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,113,357, April 5, 1938. (A. P.-C.)

Amino-Alcohol Pharmaceuticals—Manufacture of Derivatives of. Esters having spasmolytic and only very slight toxic action are prepared by the action of *N*-disubstituted amino alcohols OH.CHR.(CH₂)_n.R'R'', where R equals H or alkyl, R', R'' equals alkyl and *n* is not greater than 1, on α phenyl-aliphatic acids (I) (or their chlorides or anhydrides) or by the action of an alkali salt of I on a monohalogenated tertiary amine, Hal.CHR.(CH₂)_n.NR'R'', or by esterification of I by an alkylene halogenohydrin OH.CHR.(CH₂)_n.Hal and treating the ester so obtained with a secondary amine. Specific claim is made to the interaction of CHPhPr⁸.COCl and OH.(CH₂)₂.NEt₂. The following are described: β' diethylaminoethyl α -phenylpropionate (hydrochloride, melting point 78–80°), *n*-butyrate, boiling point 151–153°/7 mm. (hydrochloride, melting point 90–92°), *n*-valerate, boiling point 140–144°/3 mm. (hydrochloride, melting point 109°), β -vinylpropionate (hydrochloride, melting point 93–94°), *n*-hexoate (hydrochloride, melting point 92°), -isoheptoate, boiling point 160–165°/8 mm., *n*-nonoate, boiling point 185–187°/6–7 mm.; γ -diethylamino-*n*-propyl α -phenyl-propionate, boiling point 140–142°/4 mm. (methiodide, melting point 80–82°), *n*-butyrate, boiling point 148–150°/4 mm. (methiodide, melting point 92–93°), *n*-valerate, boiling point 150–154°/2 mm. (methiodide, melting point 87–88°), β -vinylpropionate, boiling point 155–158°/3 mm. (methiodide, melting point 103–105°), *n*-hexoate, boiling point 151–155°/2 mm.; δ -diethylamino- α -methyl-*n*-butyl α -phenyl-propionate, boiling point 149–151°/3 mm., *n*-butyrate, boiling point 165–168°/6 mm., *n*-valerate, boiling point 173–175°/6 mm., β -vinylpropionate, boiling point 152–153°/2 mm., *n*-hexoate, boiling point 170–173°/2 mm.; γ -dibutylamino-*n*-propyl α -phenyl-*n*-butyrate (methoxide, melting point 85°).—L. S. E. ELLIS. Brit. pat. 483,704; through *J. Soc. Chem. Ind.*, 57 (1938), 981. (E. G. V.)

Bis(Amino-6-Quinoly)Ureas—Symmetrical. In the formula



X₁ stands for an amino or alkylamino group or for hydrogen, X₂ stands for an amino or alkylamino group, methyl or hydrogen, at least one X being amino or alkylamino, y stands for the anion of a strong inorganic acid, R stands for alkyl or aralkyl and Z stands for oxygen or sulfur. Such compounds have tissue disinfecting properties and may be prepared by causing the diaminoquinolines and their derivatives to act upon phosgene, thiophosgene or carbon disulfide and sulfur and by rendering quaternary the two nuclear nitrogen atoms of the quinoline rings. A number of examples are given.—HEINRICH JENSCH, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,118,244, May 24, 1938. (A. P.-C.)

Cis-Androsterone—Process for the Production of. Trans-androsterone is treated with a halogen compound capable of converting the 3-hydroxyl group of the trans-androsterone into a 3-halogeno group with simultaneous steric inversion, and the resulting α -halogeno androsterone is hydrolyzed to *cis*-androsterone.—RUSSELL E. MARKER, assignor to PARKE, DAVIS & Co. U. S. pat. 2,121,483, June 21, 1938. (A. P.-C.)

Anesthetic Salts, Organic Anesthetic Compounds, Alkaloid Salts—Manufacture of. *Anesthetic Salts:* The manufacture is claimed by standard methods of *n*- and iso-butyrate, crotonates, phenyl-acetates, -propionates, -butyrates and -butylacetates, cinnamates and hydratropates

of anesthetic bases of the aminoalkyl benzoate or alkyl *p*-aminobenzoate class; these have much greater anesthetic activity than have the common inorganic salts. In examples, a solution of the hydrochloride is mixed with the equivalent amount of acid or its magnesium salt and sterilized. **Organic anesthetic compounds:** Anesthetic bases of the alkyl or aminoalkyl *p*-aminobenzoate class are treated with the chloride or anhydride of phenyl-acetic, -propionic or -butyl-acetic acid; both the resulting free bases (in oils) and their salts are said to possess better anesthetic properties than the corresponding benzyl derivatives. The phenylacetyl derivative, melting point 73° (hydrochloride, melting point 145°), of β -diethylaminoethyl *p*-aminobenzoate is described. **Alkaloid Salts:** The α - and β -phenylpropionates, phenylbutyrate and phenylbutylacetate of morphine, pilocarpine, atropine, eserine and sparteine, prepared by heating together or mixing in water the appropriate acid and base or by metathesis, are claimed to have lower toxicities than the known salts.—J. L. REGNIER. Brit. pat. 477,822–823 and 477,882; through *J. Soc. Chem. Ind.*, 57 (1938), 456. (E. G. V.)

Aniline and Some Metallic Salts of Arsanilic Acid—Arsonation of. Arsanilic acid is prepared by modifying the procedure of Lewis and Cheetham (*Organic Syntheses*, Vol. 1, p. 63): Add 505 Gm. of 80% arsenic acid drop by drop into 620 cc. of aniline heated to 130° to 140° C., at the end of 1 hour heat the mixture to 160° to 170° C. for 5 hours. The mixed sodium arsonate and arsanilate is separated, redissolved in 500 cc. of water and neutralized with 6 times normal hydrochloric acid. Crystalline arsanilic acid separates in a yield of 105 to 110 Gm. Arsanilates of silver, magnesium, mercury, bismuth and antimony were prepared and tested for solubility in common solvents.—P. S. YANG and C. P. LO. *J. Chin. Chem. Soc.*, 4 (1936), 477–484; through *Chimie & Industrie*, 39 (1938), 716. (A. P.-C.)

Antineuritic Vitamin Recovery. A slightly acid aqueous extract prepared from a vitamin-containing material such as rice polishings, oat hulls or yeast, is neutralized (suitably with barium hydroxide) and filtered, and the liquid is then made slightly acid and is passed into contact with a solid base-exchanging material; the base-exchanging material is washed and the vitamin recovered in aqueous solution by use of a solution of a neutral salt of a strong acid such as ammonium nitrate.—LEOPOLD R. *Cerecedo*. U. S. pat. 2,114,775, April 19, 1938. (A. P.-C.)

Arsenic and Antimony Compounds—Aromatic, Manufacture of. Arsenic or antimony compounds are made of the constitution R.X.CHR'.CO.NR" R''', where X equals .NR' or O, R equals an aromatic radical containing arsenic or antimony, R' equals H or an organic radical, R" equals an aliphatic or alicyclic radical containing not more than two hydroxyl groups, and R''' equals H, and alkyl, aliphatic or alicyclic radical containing at least one hydroxyl group. In the examples, *p*-NH₂.C₆H₄.AsO₃H₂ interacts with chloroacetmethylglucamide forming phenylglycidemethylglucamide-*p*-arsinic acid, a white powder soluble in water, reduced to di-*p*-methylglucamidglycidarsenobenzene, a yellow powder soluble in water; phenylglycidemethylglucamid-estibnic acid, decomposing at 275°, is obtained similarly. Further, methylglucamine interacts with AsO₃H₂.C₆H₄.O.CH₂.CO₂Me (from *p*-OH.C₆H₄.AsO₃H₂ and CH₂Cl.CO₂H and esterification to form a compound, AsO₃H₂.C₆H₄.O.CH₂.CO.NMe.CH₂.(CH.OH)₄.CH₂.OH.—I. G. FARBENIND. Brit. pat. 484,101; through *J. Soc. Chem. Ind.*, 57 (1938), 982. (E. G. V.)

Arsenic Acids—Amino Azobenzene. Therapeutic compounds suitable for treatment of parasitic infections have the general formula 2-Y-4ZC₆H₃N:CC₆H₃(X)AsO₃H₂, where X represents hydrogen or hydroxyl, and Y and Z both represent amino or one of them represent amino and the other represents hydroxy; and may be prepared by diazotizing H₂O₃As(X)C₆H₃NH₂ and coupling with 1-Y-3-ZC₆H₄. Various details of procedure are described.—ALFRED E. JURIST, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,112,244, March 29, 1938. (A. P.-C.)

Azo Compounds—Bactericidal. From compounds such as diazotized 4-aminobenzenesulfonamide hydrochloride and aminophenol, etc., alkali-soluble azo compounds are formed which are bactericides and are soluble in alkali solutions and which have the general formula R'-N=N-R", in which R' stands for a *p*-sulfamide or disulfamide substituted radical or the benzene series and R" stands for a cyclic radical containing nitrogen in basic linkage and derived from hydroxyaminobenzenes or corresponding *N*-alkylated compounds.—FRITZ MIETZSCH and JOSEF KLARER, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,113,597, April 12, 1938. (A. P.-C.)

***p*-(Benzylamino)benzenesulfonamides.** *p*-Aralkylamino derivatives of benzenesulfonamide are prepared (1) by treating *p*-aminobenzenesulfonamide with an aralkyl halide, or (2) by reducing, *e. g.*, by catalytic hydrogenation, a Schiff's base obtained by condensing *p*-amino-

benzenesulfonamide with an aromatic aldehyde. A number of examples are given. The products are useful as bactericides.—PAUL E. C. GOISSEDET and ROBERT L. DESPOIS, assignors to SOCIÉTÉ DES USINES CHIMIQUES RHÔNE-POULENC. U. S. pat. 2,111,768, March 22, 1938.

(A. P.-C.)

Bornyl Chloride—Catalytic Oxidation of. Maximum yields of 42% of camphene were obtained by passing bornyl chloride-water-air mixtures over vanadium pentoxide-pumice catalyst at 150°; at higher temperatures the amount of hydrochloric acid eliminated rises but the yield of camphene falls. Under analogous conditions camphene is recovered unchanged.—B. N. RUTOVSKI, I. P. LOSEV and E. V. MËSCHETSCHKO. *J. Appl. Chem. Russ.*, 11 (1938), 311-315; through *J. Soc. Chem. Ind.*, 57 (1938), 885.

(E. G. V.)

Calcium Citrate—Manufacture of, from Citrus Fruits. After the major portion of the juice has been extracted by crushing, the pulpy residue is minced and calcium hydroxide equivalent to 25% of the acid content is added; the mass gelatinizes and syneresis takes place, yielding a limpid liquid and a spongy residue amenable to filtration and washing.—A. RICEVUTO and A. H. BENNETT. U. S. pat. 2,072,530; through *J. Soc. Chem. Ind.*, 57 (1938), 1035.

(E. G. V.)

Camphoric Acid Amides—N-Substituted. Analeptic compounds are prepared, e. g., by reaction of the dichloride of a camphoric acid with a dialkylamine, or by first preparing a monodialkylamide of camphoric acid, converting the latter to the acid chloride of the camphoric monodialkylamide and then treating the latter with a dialkylamine. Details are given on the production and properties of a number of such compounds.—PAUL E. C. GOISSEDET and ROBERT L. DESPOIS, assignors to SOCIÉTÉ DES USINES CHIMIQUES RHÔNE-POULENC. U. S. pat. 2,115,576, April 26, 1938.

(A. P.-C.)

Carbanilic Acid Derivatives. Local anesthetics are produced, including β -(amylethylamino)ethyl carbanilate hydrochloride, β -(methylphenethylamino)ethyl carbanilate hydrochloride and various other compounds of the general formula XNHCOORNYZ wherein X is phenyl, alkylphenyl, alkoxyphenyl or phenylphenyl, R is alkylene or alkylated alkylene, Y is methyl and ethyl and Z is butyl, amyl or phenethyl; and the inorganic salts thereof.—WM. A. LOTT and WM. BRAKER, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,109,492, March 1, 1938.

(A. P.-C.)

Carboxylic Acids—Isoxazole, Dialkyl Substituted Amides of. Analeptic compounds of the general formula $\text{O.N:CR}^2\text{:CR}^1$, where one of the radical R^1, R^2, R^3 represents the groups -CONXY, where X represents a lower aliphatic radical and Y is a lower alkyl or a lower dialkyl amino lower alkyl radical, the remaining R radicals being hydrogen or alkyl radicals, soluble in water and suitable for oral and parenteral administration, are produced from such initial materials as 3,5-dimethylisoxazole-4-carboxylic acid, as by reaction with thionyl chloride to form a new acid chloride and then treating the latter with a secondary amine.—MAX HOFFER, assignor to HOFFMANN-LA ROCHE, INC. U. S. pat. 2,115,681, April 26, 1938.

(A. P.-C.)

Chrysanthemum Carboxylic Acid—Separation of. Because of the destructive effect of steam distillation on the chrysanthemum monocarboxylic acid, the acid methods of pyrethrin iodine analysis are inaccurate and unreliable. It is possible to separate the two chrysanthemum acids by the selective extraction of the monocarboxylic acid with low-boiling petroleum ether, but this method requires further study before it can be applied to the estimation of the pyrethrin content of pyrethrum flowers and their commercial extracts.—A. A. PANTSIOS. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 386-387.

(E. G. V.)

Cyclohexene Derivatives Useful as Hypnotics and Intermediates. Details are given of the production of compounds such as 1,2-dibromo- Δ^2 -cyclohexene (boils at 110° to 111° C. under 7 mm. pressure), ethyl 2-bromo- Δ^2 -cyclohexenyl malonic ester (boils at about 142° C. under 1 mm. pressure), 5-ethyl 5-(2'-bromo- Δ^2 -cyclohexenyl) barbituric acid (melting-point 225° to 226° C.), its sodium salt, and related isopropyl, butyl, phenyl, methyl and benzyl compounds.—WALTER G. CHRISTIANSEN, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,117,299, May 17, 1938.

(A. P.-C.)

3,5-Diiodo-4-Hydroxyacetylphenone Compounds. *p*-Hydroxyacetophenone, when iodinated, as with iodine chloride, gives a good yield of 3,5-diiodo-4-hydroxyacetophenone (the reaction being suitably carried out in dilute hydrochloric acid solution), which melts at 172° to 173° C., is easily soluble in ether and chloroform and less soluble in benzene and alcohol. When it is

heated at the boiling point for 6 hours with methyl iodide in solution in absolute alcohol, it yields the 3,5-diiodo-4-methoxyacetophenone, which melts at 97° to 98° C. Ethyl iodide similarly forms the 4-ethoxy derivative, which melts at 93° to 94° C. Chloromethyl ether similarly forms 3,5-diiodo-4-methoxymethoxyacetophenone (melting point 96° to 97° C.); ethylene chlorohydrin forms 3,5-diiodo-4-hydroxyethoxyacetophenone (melting point 94° to 95° C.); chloroacetic acid ethyl ester yields 3,5-diiodo-1-aceto-4-phenoxyacetic acid (melting point 178.5° C.). The production of 3,5-diiodo-4-hydroxyl-1(γ -hydroxybutyro) phenone and some like derivatives also is described. The products may be used as intermediates for the manufacture of disinfecting agents, pharmaceutical products, X-ray contrast media, etc.—MAX DOHRN and PAUL DIEDRICH, assignors to SCHERING-KAHLBAUM A. G. U. S. pat. 2,116,104, May 3, 1938. (A. P.-C.)

Ethanolamines—Furane Substituted. The procedures for the preparation of 1-furyl-2-phenyl-2-hydroxy-1-aminoethane and 1-phenyl-2-furyl-2-hydroxy-1-aminoethane are given. The compounds were prepared in an effort to produce a strongly hypotensive combination. No report on the physiological action of the compounds is made.—A. LESPAGNOL and VAN THIENEN. *Bull. sci. pharmacol.*, 45 (1938), 49-59. (S. W. G.)

Ethers—Manufacture of. Halohydrins of di- or poly-ethylene glycols are condensed with phenols containing alkyl or cycloalkyl radicals (not less than 4 carbon atoms), preferably in alkaline media, to yield ethers suitable for use as emulsifiers, etc. The preparation of a mixture of ethers from tetraethylene glycol monochlorohydrin and mixed phenols obtained by treating *o*-cresol with olefines (C₈ to C₁₄) in presence of perchloric acid is described.—W. J. TENNANT. From Henkel & Co., G.m.b.H. Brit. pat. 485,633; through *J. Soc. Chem. Ind.*, 57 (1938), 1015. (E. G. V.)

Ethyl Chloride—Process for the Production of. A gaseous mixture of hydrogen and up to 20% of vinyl chloride is brought into contact with a hydrogenation catalyst at temperatures of about 50° to 200° C., the rate of flow being so chosen that at most about one half of the vinyl chloride is converted.—WALTER BAUMANN and JOSEPH HIRSCHBECK, assignors to I. G. FARBENINDUSTRIE A.-G. U. S. pat. 2,118,662, May 24, 1938. (A. P.-C.)

Glycerol—Derivatives of the Oxidation Products of. A method is described for the preparation of methylglyoxal from a solution of dihydroxyacetone prepared by the recipe of Fischer and Tafel. This method of preparation is preferred to the ozonization of mesitylene and fission of the ozonide, which also affords methylglyoxal. The latter could not be prepared by splitting methylglyoxal- α -phenylhydrazone with benzaldehyde. Various hydrazones and a number of osazones of methylglyoxal are also described.—H. P. DEN OTTER. *Rec. trav. chim.*, 57 (1938), 427. (A. C. DeD.)

Gold Compounds—Manufacture of Therapeutically Valuable. Very pure alkaline earth (calcium, magnesium) salts of gold keratinates are prepared by treating aqueous solutions of the sodium salts or the gold compounds obtained from the products of acid hydrolysis of keratins, if desired in presence of reducing agents, with calcium or magnesium oxide, hydroxide or carbonate and precipitating with ethyl alcohol or other water-miscible organic solvent.—SCHERING-KAHLBAUM A.-G. Brit. pat. 481,164; through *J. Soc. Chem. Ind.*, 57 (1938), 732. (E. G. V.)

Hydroxyarylalkylamino Organic Sulfonates. Products, the exact constitution of which is not determined, are obtained from phenols which are capable of forming methylol derivatives with formaldehyde by reaction in neutral or alkaline solution with formaldehyde and primary or secondary amino aromatic sulfonates, to form water-soluble condensation products which may be used as antiseptics. Numerous examples are given, and the reaction is applicable, in general, to monohydric and polyhydric phenols and their nuclear substituted derivatives.—HERMAN A. BRUSON, assignor to RÖHM AND HAAS Co. U. S. pat. 2,112,434, March 29, 1938. (A. P.-C.)

Indigo, Aromatic Iodides and Potassium Carbonate—Reaction between. When indigo is boiled with nitrobenzene, iodobenzene, potassium carbonate and copper bronze, is transformed into a sticky mass, from which a small quantity of two acids can be isolated, *viz.*: *N*-phenyl-anthranilic acid and bis-(1-phenyl-3-keto-indoliny-2)-hydroxy-acetic acid. The structure of the latter is proved and an explanation is offered for its formation. Analogous results are obtained with other aromatic iodides.—J. VAN ALPHEN. *Rec. trav. chim.*, 57 (1938), 915. (A. C. DeD.)

Indigo—Ozonization of. When indigo is suspended in dry chloroform and treated with ozone and ozonide is formed, which can be decomposed with water when it furnishes isatin. The

same result is obtained when dry ethyl acetate is used but when indigo is ozonized in wet ethyl acetate a quantitative yield of isatinic anhydride is obtained.—J. Van Alphen. *Rec. trav. chim.*, 57 (1938), 911. (A. C. DeD.)

Indigo—Nitration of. When indigo was nitrated with absolute nitric acid, either directly or dissolved in sulfuric acid or acetic acid only decomposition products, containing nitrated isatins, could be obtained, but when indigo was nitrated in acetic anhydride, well defined products could be prepared. These were derivatives of 2-acetoxy-3:3'-diketo-diindolyl-2:2' into which one, two or three nitro groups were introduced, depending on the amount of nitric acid used. On heating, these compounds split off a molecule of acetic acid and mono-, di- or tri-nitroindigos remained behind. An analogous result was obtained, when indigo was nitrated in butyric anhydride. Indigo could also be nitrated in acetyl chloride but 5-chloroisatin was then obtained.—J. VAN ALPHEN. *Rec. trav. chim.*, 57 (1938), 837. (A. C. DeD.)

Insecticide and Method of Making Same. Calcium arsenate containing excess lime is heated in a dry granular state at 1100° to 2200° F. until its injurious effect on living plant organisms is substantially reduced. This stage is reached when the amount of soluble arsenic (determined by a specified method) lies between 0.5% and 2%.—JOHN F. LES VEAUX, assignor to NIAGARA SPRAYER & CHEMICAL CO., INC. U. S. Pats. 2,123,190 and 2,123,191, July 12, 1938. (A. P.-C.)

Insecticide—Method of Making. Pulverized calcium arsenite is heated in an atmosphere containing oxygen to a temperature sufficient to form calcium arsenate, and heating is continued at 1100° to 2200° F. until the amount of soluble arsenic (determined by a specified method) lies between 0.5% and 2%.—JOHN F. LES VEAUX, assignor to NIAGARA SPRAYER & CHEMICAL CO., INC. U. S. pat. 2,123,192, July 12, 1938. (A. P.-C.)

Isopulegol—Preparation of. Citronellal is heated with finely divided commercial silica gel (suitably containing ferric oxide and at 130° to 140° C.).—HUGH B. GLASS, assignor to THEODORE SWANN. U. S. pat. 2,117,414, May 17, 1938. (A. P.-C.)

Menthol—Crystalline, Process of Making. A mixture of crude synthetic menthols is esterified by heating with from 1100% to 130% of the theoretical amount of benzoic acid required to form menthyl benzoate. The water vaporized during esterification is condensed and collected, and is cooled to crystallize out the fraction having a melting point of 51° to 53° C. This fraction is saponified by heating with sodium hydroxide in aqueous solution at a temperature of 180° to 220° C. and under a pressure of 120 to 300 lb. per sq. in., and the liberated menthol is recrystallized to obtain a U. S. P. product.—MORTON HARRIS, assignor to THEODORE SWANN. U. S. pat. 2,120,131, June 7, 1938. (A. P.-C.)

Mercury Compounds—Diuretic. Suppositories having a diuretic effect contain a vehicle such as cacao butter and an allylamide of camphoric acid containing mercury bound to a carbon atom of the allyl group in mixture with a larger proportion of a sodium salt of the same mercurated amide. Details of production of the compounds used are given.—EMIL WOLF, assignor to CHINOIN GYOGYZER-ÉS VEGETSZETI TERMÉKEK GYARA R. T. (KERESZTY ÉS WOLF). U. S. pat. 2,116,872, May 10, 1938. (A. P.-C.)

Mercury Compounds—Germicidal Organic. Compounds suitable for use as germicides, in aqueous or other solutions, or dentifrices, ointments, soaps, etc., are produced by reaction of phenylmercury hydroxide with substituted pyrazoles such as 1,3-dimethyl pyrazole, 1,3,5-triphenyl pyrazoline, 1-phenyl-2-methyl-pyrazolidine, 1,2,3-phenyldimethyl pyrazolidone, 1-phenyl-2,3-dimethyl 4-dimethylamino-5-pyrazolone, 1-phenyl-3-methyl-5-pyrazolone, 1-phenyl-3-methyl-4-nitro-5-pyrazolone, 1-phenyl-2-3-dimethyl-5-pyrazolone or tartrazine (the reaction suitably being effected in an aqueous medium or a medium containing both water and alcohol).—CARL N. ANDERSEN, assignor to LEVER BROS. CO. U. S. pat. 2,107,321, Feb. 8, 1938. (A. P.-C.)

Mercury Compounds—Organic. 2,113,565. Germicidal and therapeutic compounds such as phenylmercury glyoxylate, levulinate and pyruvate are produced by reaction of phenylmercury hydroxide with the corresponding acids. 2,113,566. Details are given regarding the preparation of compounds such as phenylmercury acetone dicarboxylate, opianate, benzoyl benzoate, glycuronate, β -benzoyl acrylate, β -benzoyl propionate and 1-chloroanthraquinone-2-carboxylate and acetoacetate. 2,113,567. This patent refers to the production of compounds such as phenylmercury arsanilate, a phenylmercury alcoholate of sodium 3,3'-diamino-4,4'-dihydroxy-arsenobenzene-*n*-monomethanal-sulfoxylate, a phenylmercury alcoholate of bismuth lactate, a phenylmercury alcoholate of antimony potassium tartrate, triphenyl-mercury bismuthate, a phenylmercury

alcoholate of bismuth ammonium citrate, triphenyl-mercury alcoholate of bismuth salicylate, tetraphenyl-mercury pyroantimonate, a phenylmercury alcoholate of bismuth tannate, a phenylmercury alcoholate of bismuth tartrate, etc.—CARL N. ANDERSEN, assignor to LEVER BROS. Co. U. S. pats. 2,113,565 to 2,113,567, April 12, 1938. (A. P.-C.)

Mercury Compounds—Organic. 2,114,011. By reactions of phenylmercury hydroxide with the corresponding organic acids, germicidal and therapeutic compounds are formed such as phenylmercury cinnamate (melting point 178° C.), phenylmercury atropate (melting point 68° to 69° C.), phenylmercury *o*-coumarate (melting point 195° to 200° C.), phenylmercury β -benzoyl acrylate (melting point 139° to 141° C.), and phenylmercury acrylate (melting point 118° to 120° C.), which may be used in mouth washes, tooth pastes, soaps, ointments, etc. 2,114,012. Phenylmercury hydroxide is made to react with sodium salicylate, etc., for the production of products, suitable for like uses, such as phenylmercury alcoholate of sodium salicylate (melting point 162° to 168° C.), that of potassium lactate (melting point 208° to 210° C.), that of sodium citrate (melting point 217° to 218° C.), that of bismuth salicylate (melting point 153° to 154° C.), that of bismuth lactate (melting point 230° to 235° C.), that of potassium antimony tartrate (decomposes below 280° C. without melting), that of sodium gallate (which melts at 116° to 117° C. with decomposition), that of dihydroxy sodium stearate (melting point 139° to 139.5° C.). Details are given of the production of all of these.—CARL N. ANDERSEN assignor to LEVER BROS. Co. U. S. pat. 2,114,011 and 2,114,012, April 12, 1938. (A. P.-C.)

Nicotinic Acid Esters. For the synthesis of the benzyl, cyclohexyl, β -naphthyl, phenyl and furfuryl esters of nicotinic acid, the chloride of nicotinic acid is made to react with the corresponding alcohol or phenol in presence of phosphorus oxychloride.—I. L. GOLDFARB. *J. Prikl. Khim.*, 10 (1937), 515–520; through *Chimie & Industrie*, 39 (1938), 324. (A. P.-C.)

Organic Esters—Manufacture of. Esters are prepared by interaction of carbon monoxide with an additive compound of a boron halide (boron trifluoride) and an ether, preferably in presence of water at 150–240° and high pressure, liberating the ester from the resulting complex by adding more ether, distilling the ester, and again using the reformed boron trifluoride-ether complex. The use of dimethyl ketone is claimed.—E. I. DUPONT DE NEMOURS & Co. Brit. pat. 486,560; through *J. Soc. Chem. Ind.*, 57 (1938), 1015. (E. G. V.)

Organic Isomers—Simple, Refraction of. The theory developed previously for the calculation of the refraction of halogenated methane derivatives is extended to similar ethane and ethene derivatives. In this way we can predict the differences of the refractions of isomers of these compounds. It turns out that the old conception that accumulation of hydrogen gives rise to higher refraction is not general. The exceptions can easily be understood under the new method of calculation.—J. M. STEVELS. *Rec. trav. chim.*, 57 (1938), 921. (A. C. DeD.)

Petrolatum—Process of Purifying. Petrolatum is filtered at about 250° F. through activated bauxite under at least 50 lbs. pressure.—FERDINAND W. BRETH and ANTHONY KINSEL, assignors to L. SONNEBORN SONS, INC. U. S. pat. 2,121,518, June 21, 1938. (A. P.-C.)

***p*-Phenanthroline—Derivatives of.** Anodyne and intermediate derivatives of *p*-phenanthroline are obtained by the reaction upon 4,4'-dihalo-*p*-phenanthroline (the halogen standing in *p*-position to the ring nitrogen atom) with thiourea or selenium-urea. Instead of thiourea or selenium-urea also hydrogen sulfide or hydrogen selenide may be brought into reaction in the presence of acid binding agents or hyposulfuric or hyposelenic acid salts, for instance, alkali or alkaline-earth metal salts. The reaction proceeds preferably while heating in the presence of solvents or diluents which are inert to the starting materials, *e. g.*, water or alcohols. Thereby with the splitting off of the two halogen atoms the 4- and 4'-positions of the *p*-phenanthroline are connected by sulfur or selenium with ring formation. Production of various such derivatives is described.—HANS HENECKA, assignor to WINTHROP CHEMICAL Co. U. S. pat. 2,112,961, April 5, 1938. (A. P.-C.)

(1-Phenyl-2,3-Dimethyl-5-Pyrazolonoyl)-Isopentoyl Ketone. This compound, which melts at 132° C., is produced by reaction of 1-phenyl-2,3-dimethyl-5-pyrazolone with diethylacetyl chloride in the presence of an agent splitting off acid, such as aluminum chloride or zinc chloride, and treatment of the resulting mixture with cool water to effect separation of the product.—HANS KAUFMANN. U. S. pat. 2,109,445, Feb. 22, 1938. (A. P.-C.)

Phenylquinolein Carbonic Acid—Several Derivatives of. Procedures for the preparation of phenylcinchoninyl chloride, phenylcinchoninic ester of *o*-creosotic acid and piperazine phenyl-

cinchoninate are described—A. LESPAGNOL and N. BAR. *Bull. sci. pharmacol.*, 45 (1938), 200–203. (S. W. G.)

2-Phenylquinolein-4-Carboxylic Acid—Preparation of. A study of the preparation of atophan from isatin, acetophenone and potassium hydroxide. Substitution of sodium for potassium hydroxide in the condensation reduces the yield by nearly 50%. On the other hand, the proportion of potassium hydroxide can be reduced about 20 to 30% below that indicated by Pfizinger provided the concentration is not reduced. The presence of alcohol in the medium, the excess of acetophenone and the time allowed for condensation (4 to 8 hours) have no appreciable influence on the yield of atophan. When the excess of acetophenone is 30%, about 60% of it can be regenerated by steam distillation.—I. ZILBERG. *Prom. Organ. Khim.*, 2 (1936), 479–481; through *Chimie & Industrie*, 39 (1938), 722. (A. P.-C.)

Pyridine Derivatives—Halogenated. By causing halogens to react on 2,4-dioxo-3,3-dialkyltetrahydropyridines of the general formula $R''N.CO.CRR'.CO.CH:CR''$ where R and R' represent the same or different saturated alkyl groups, R''H or methyl, the hydrogen in the position 5 can be smoothly substituted by halogen. The reaction proceeds in the same manner with the 1- or 6-methyl-, or 1,6-dimethyl compounds, and results in the formation of compounds of the same type. Several new compounds of 2,4-dioxotetrahydropyridine thus formed exert a soporific action and can be used as intermediates for the manufacture of other compounds having medicinal action.—OTTO SCHNIDER, assignor to HOFFMANN-LA ROCHE, INC. U. S. pat. 2,112,223, March 22, 1938. (A. P.-C.)

α -Salicylo Aliphatic Acid Esters. By the reaction of an α -bromo aliphatic acid ester such as ethyl α -bromopropionate with an alkali metal salicylate at temperatures of about 125° to 200° C., products are obtained such as ethyl α -salicylopropionate (boils at 142° to 149° C. under 5 mm. pressure), ethyl α -salicylobutyrate (boils at 147° to 155° C. under 4 mm. pressure), methyl α -salicyloisocaproate, butyl α -salicyloanthate, ethyl α -salicylocaprylate, etc., various of which may be used, among other purposes, in pharmaceutical preparations.—ERNEST F. GREYER and RUSSELL B. DU VALL, assignors to DOW CHEMICAL CO. U. S. pat. 2,116,347, May 3, 1938. (A. P.-C.)

Soap Dispersions—Antiseptic Aqueous. Aqueous soap dispersions are formed containing a hardwood oil such as the caustic-soluble portion of "settled tar," an antiseptic such as *o*-phenylphenol, 2,4,5-trichlorophenol, monochloro-*o*-phenylphenol, 3-chloro-4-hydroxydiphenyl, 3-bromo-4-hydroxydiphenyl or their sodium salts (the hardwood oil serving as a dispersing agent for the antiseptic phenol compound) and a sufficient proportion (suitably about 0.25%) of potassium bromide or iodide to keep the dispersion from darkening in the light and air.—LOUIS J. FIGG, JR., assignor to EASTMAN KODAK CO. U. S. pat. 2,117,796, May 17, 1938. (A. P.-C.)

Sulfanilic Acid Amides—Manufacture of, Which Exert a Strong Bactericidal Action. The amides, salts of which are neutral in aqueous solution and suitable for use as internal disinfectants, are made as follows: (a) *p*-NHR·C₆H₄·SO₂H (R = acyl) (I) is treated with an aromatic diamine, or with a monoacylated diamine with subsequent hydrolysis, or with a nitro-amine with reduction of the nitro compound formed; (b) I or its anilide is nitrated, then reduced, and if necessary acyl groups are removed; (c) *p*-NHR·C₆H₄·SO₂·NH₂ (R = acyl) (II) is treated with nuclear halogenated acid anilides and acyl groups are removed; (d) II is treated with C₆H₄R·NO₂ (R = halogen) and nitro-groups are reduced; (e) *p*-C₆H₄R'·SO₂·NH·C₆H₄·NHR (R = H or acyl, R' = halogen) is treated with ammonia and acyl groups are removed; (f) *p*-C₆H₄R·SO₂·NH·C₆H₄·NO₂ (R = halogen) is treated with ammonia and the NO₂ reduced. Reactions (c) to (f) are carried out in presence of copper. The preparation of sulfanil-4-nitroanilide, -4-acetamidoanilide, -4-aminoanilide, -3-nitroanilide, -3-aminoanilide, -2-aminoanilide, -2-nitroanilide and N-methylsulfanil-4-aminoanilide, is described.—M. J. W. FRANCE. From F. HOFFMANN-LAROCHE AND CO. A.-G. Brit. pat. 480,486; through *J. Soc. Chem. Ind.*, 57 (1938), 589. (E. G. V.)

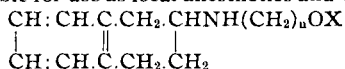
Sulfonamides—Substituted *p*-Aminobenzene. By treating *p*-aminobenzenesulfonamide (suitably in chloroform or benzene solution) with acetylmandelyl chloride, *p*-acetylmandelylamino benzenesulfonamide (melting point 187.5° to 189.5° C.) is produced, which on deacetylation yields *p*-mandelylamino benzenesulfonamide (melting point about 232° C.), both of which products are suitable for use in treating various infections.—ELMER H. STUART, assignor to ELI LILLY AND CO. U. S. pat. 2,117,260, May 10, 1938. (A. P.-C.)

Sulfonic Acids of the Naphthalene Series—Manufacture of. The amino group in 1-amino- β -naphtholsulfonic acids (I) is replaced by SO_3H by heating an aqueous solution or suspension of the diazo-compound of I with sodium sulfite, preferably in the presence of a metal (copper, zinc or aluminum) and/or its salt thereof; the SO_3H so introduced may be replaced by hydrogen by heating with water or acids. The preparation of the alkali salts of β -naphthol-1:4-disulfonic acid and its 6-nitro- and 6-bromo-derivatives, and 6-bromo- β -naphthol-4-sulfonic acid is described.—J. R. GEIGY A.-G. Brit. pat. 485,971; through *J. Soc. Chem. Ind.*, 57 (1938), 1017.

(E. G. V.)

Surgical Plaster Casts. An organic acid such as salicylic or benzoic acid is used with magnesium carbonate or an oxide or hydroxide of aluminum or magnesium, the mixture being capable of hardening to a rigid mass by reaction of the ingredients when moistened with water.—JEAN PICCARD. U. S. pat. 2,116,910, May 10, 1938. (A. P.-C.)

ac-Tetrahydro- β -Naphthylamine—Derivatives of. β -Naphthylamine derivatives are produced, some of which are suitable for use as local anesthetics and which have the general formula



wherein X represents hydrogen or acyl and $(\text{CH}_2)_n$ represents a lower member of the alkylene series; and their acid-addition salts. The alkanols may be prepared by interacting an alkylene halohydrin such as ethylene chlorohydrin and ac-tetrahydro- β -naphthylamine, preferably in the presence of an inert solvent such as benzene, xylene or cymene and while passing dry nitrogen through the solution and heating at about 100° to 150° C. for a reaction time of about 2 to 3 hours. The esters may be prepared by treating the appropriate alkanol with an acyl (*e. g.*, benzoyl, nitrobenzoyl, cinnamyl, methylbenzoyl, chlorobenzoyl, caproyl or phthalyl) chloride or acid (*e. g.*, benzoic anhydride or a suitable derivative, or by interacting the appropriate halogen alkyl ester (*e. g.*, β -chloroethyl benzoate) and tetrahydro- β -naphthylamine. Details are given of the preparation and properties of a number of such compounds.—WM. A. LOTT and HAROLD W. COLES, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,112,899, April 5, 1938. (A. P.-C.)

Thermophoric Composition. The product claimed has essentially the following composition: manganous chloride tetrahydrate 3.3, sodium acetate trihydrate 94.0, ethylene glycol 2.7%.—JOHN A. C. BOWLES and RONALD L. MCFARLAN, assignors to UNITED DRUG CO. U. S. pat. 2,118,586, May 24, 1938. (A. P.-C.)

4-Toluenesulfonylamino-1-Acetylhydroxy-2-Benzoic Acids and Their Methyl Esters. Analgesic and antiphlogistic agents such as 4-*p*-toluenesulfonylamino-1-acetylhydroxy-2-benzoic acid (melting point about 234° to 235° C.) and its methyl ester (melting point about 96° to 97° C.) are produced by treating 1-hydroxy-4-amino-2-benzoic acid, or its methyl ester, with a toluenesulfonyl halide, in the presence of an alkali, and causing the resulting compound to react with acetic anhydride in an inert organic solvent such as benzene.—JOSEPH EBERT, assignor to FARASTAN CO. U. S. pat. 2,103,522, Dec. 28, 1937. (A. P.-C.)

Triphenylmethane—Polyhydroxy Leuco Derivatives of. Polyhydroxy leuco derivatives of the general formula $\text{HC} \left(\text{C}_6\text{X}_2 \begin{array}{c} \text{O} \\ \diagdown \quad \diagup \\ \text{O} \end{array} \right)_3$ in which formula X represents hydrogen, alkyl or a sulfo group, the phenolic oxygen atoms being in mutual ortho position on the benzene rings and linked to hydrogen or an aliphatic radical (at least one of the phenolic oxygen atoms being linked to a hydrogen atom) are prepared by condensing by methods commonly used for the preparation of triphenylmethanes, starting with materials which contain in the benzene rings in mutual ortho position only two phenolic oxygen atoms linked either to a hydrogen or an aliphatic radical (at least one of the six phenolic oxygen atoms present in the three benzene rings to be condensed being linked to hydrogen), the benzene rings containing further members of the group: hydrogen, alkyl, sulfo group, radicals apt to supply the methane carbon atom of the triphenylmethane derivative. The products may be used as dye intermediates, as antiseptics, or in the preparation of pharmaceutical products. Numerous examples with details are given.—ZOLTAN FÖLDI. U. S. pat. 2,116,827, May 10, 1938. (A. P.-C.)

BIOCHEMISTRY

Adrenaline—Enzyme Method for the Estimation of, in Suprarenal Glands. The glands are ground with sand and extracted with 0.1 *N* hydrochloric acid, 6 cc. per 0.5 Gm. of gland;

the extract is heated to boiling, 2 cc. of 10% sodium acetate solution added, the mixture again boiled, then cooled, filtered and made to a volume of 25 cc. To 5 cc. of this extract are added 2 cc. of 0.5 M phosphate buffer (Sorensen's $p_H = 6.0$), 3 drops of 1% hydrogen peroxide and 2 cc. of enzyme solution. After 5 minutes the color produced is compared with that of a standard prepared from 1:20 dilution of 0.1% adrenaline chloride solution. The enzyme is prepared by extraction of 100 Gm. of *Dolichos lablab* meal with 1 liter of 5% sodium chloride solution for 24 hours at 0°. The extract is filtered and dialyzed until free from salt, and preserved in the cold under toluene. Estimations of adrenaline by the enzyme and biological methods were in good agreement. The chemical method (C. A., 7, 2047) gave variable results.—K. BHAGVAT. *Indian J. Med. Research*, 25 (1938), 911-916; through *Chem. Abstr.*, 32 (1938), 9138. (F. J. S.)

Alcohol—Determination of, in Saliva, Importance in Legal and Industrial Medicine. The following procedure was used: Add saturated solution of picric acid to the sample, distil the mixture into a small special apparatus (Nicloux, *Bull. soc. chim. biol.*, 13 (1931), 857), add a known amount of potassium dichromate in sulfuric acid medium, heat to 85°, then titrate the excess reagent with ferrous sulfate and permanganate. Samples containing about 50-500 micrograms (50 cc. of saliva) were used. The following conclusions are given: Normal saliva contains no volatile reducing substances. The total alcohol in the saliva is practically the same as in the blood. Smoking tobacco does not alter the amount of volatile reducing substances in saliva. After drinking a strong alcoholic beverage the alcohol in the mouth in addition to that in the saliva disappears almost completely in 10 minutes and completely in 20 minutes. The curve for the disappearance of alcohol from the saliva parallels that for the blood. Putrefaction causes a rapid and sharp reduction of the alcoholic content of saliva; this may be prevented by adding a crystal of picric acid. Applications to legal and industrial medicine are discussed.—R. FABRE and E. KAHANE. *J. pharm. chim.*, 27 (1938), 426-437. (S. W. G.)

Ammonia and Ammonium Salts—Colorimetric Determination of, with a Phenol Reagent and Its Applicability to the Carcinoma Reaction of Fuchs. The extinction coefficient of a mixture of ammonia, phenol and sodium hypochlorite was studied and the most suitable proportions for the highest extinction value determined. This color reaction depends on the p_H . Although this phenol reaction is much more sensitive than the Nessler reaction, nevertheless the application of this determination to the Fuch's carcinoma reaction is associated with great difficulties.—K. HINSBERG and K. MUCKE. *Biochem. Z.*, 297 (1938), 332-335; through *Chem. Abstr.*, 32 (1938), 9135. (F. J. S.)

Arsenic Compounds—Fixation "In Vitro" of, by Red Blood Corpuscles. The following conclusions are given: 1. *Trivalent Arsenic.* (a) The blood corpuscles fix the trivalent arsenical by an adsorption phenomenon; the quantities of arsenic retained by the corpuscles is not in simple proportion with the quantities of arsenic placed in contact with the blood; there is a progressive saturation of the globules by the arsenic as the quantity of arsenic in the blood increases. (b) This fixation is reversible: the arsenic may be liberated on addition of plasma free from arsenic, with the subsequent transition to a new equilibrium. (c) The phenomenon occurs instantly and does not vary with time. 2. *Pentavalent Arsenic.* The pentavalent arsenic compounds are not adsorbed by the corpuscles no matter how long the period of contact.—J. THURET. *J. pharm. chim.*, 28 (1938), 22-30. (S. W. G.)

Ascorbic Acid—Determination of, in Blood. Determination of ascorbic acid in blood by Tillmans' method involves considerable loss by oxidation, which can be prevented by addition of potassium cyanide. The technic is as follows: collect 6 to 7 cc. of blood in a centrifuge tube containing 5 mg. of potassium cyanide and 10 mg. of potassium oxalate, centrifuge, to 2 cc. of the plasma add 2 cc. of distilled water and 6 cc. of a 10% solution of metaphosphoric acid; shake, let stand 3 minutes, remove proteins by filtration or centrifuging, and titrate 2 cc. of the clear liquid with thousandth-normal dichlorophenol-indophenol in the usual manner. Cc. of dye solution $\times 44 =$ mg. ascorbic acid per 100 cc. of plasma.—M. PIJOAN and F. KLEMPERER. *J. Clin. Investigation*, 16 (1937), 443-445; through *Chimie & Industrie*, 39 (1938), 658. (A. P.-C.)

Ascorbic Acid—Determination of, in Blood and in Urine. Tillmans' method is inapplicable to the analysis of blood and of urine, as they contain constituents other than ascorbic acid which reduce dichlorophenol-indophenol. The difficulty can be overcome by treating the sample with mercuric acetate in presence of calcium salts (which protect ascorbic acid against oxidation), and subsequently reducing with hydrogen sulfide.—V. A. DEVJATNIN and V. M. ISOIKOVA.

Compt. Rend. Acad. Sci. U. R. S. S., 15 (1937), 85-88; through *Chimie & Industrie*, 39 (1938), 659. (A. P.-C.)

Ascorbic Acid—New Method for Determining, in Tissues. The method is based on the use of the author's electrophotometer for following the decoloration of dichlorophenol-indophenol. A graphic method for correcting the results for other reducing substances present is described.—P. MEUNIER. *Ann. Fermentations*, 3 (1937), 156-179; through *Chimie & Industrie*, 39 (1938), 660. (A. P.-C.)

Barbiturates—Rapid Procedure for Determination of, in Urine. Place 20 cc. of urine in a 500-cc. mortar, add diluted acetic acid (1:10) until just acid to litmus, then add in small portions, with constant trituration, 35 Gm. of anhydrous sodium sulfate. The powdery dry mixture obtained is transferred to an extraction tube 250 mm. long with an interior diameter of 30 mm., having a small tightly fitting pledget of absorbent cotton in the lower orifice, and above the cotton a layer of activated vegetable charcoal (about 0.2 Gm.), a layer of magnesia (about 0.2 Gm.), and a third layer of anhydrous sodium sulfate (2.0 Gm.). Thirty cc. of ether are added to the extraction tube and the drops of solvent which soon pass through are received and vaporized as they reach the bottom of the receiving tube (100 x 10 mm.) placed in the proper position about 5 cm. below the extraction tube (see figure). When the ether above the sodium sulfate has disappeared and the drops come very slowly, remove the extraction tube and allow the receiving tube to remain above the boiling water for 15-30 seconds for drying. Place a little of the residue in the receiving tube in a porcelain dish, add 0.5 cc. of 0.3% solution of cobalt nitrate in absolute alcohol. If barbiturates are present a definite violet color, appears instantly.—H. GRIFFON and R. LE BRETON. *J. pharm. chim.*, 28 (1938), 49-60. (S. W. G.)

Bayer 205 and Antrypol. In an attempt to throw light upon their prolonged prophylactic action against trypanosomiasis, a reliable method of estimating small quantities of Bayer 205 and antrypol in plasma has been developed and applied to a study of the retention of these drugs in various animals. The method of Lang, in which the aromatic amines liberated by the acid hydrolysis of the drug are diazotized and coupled, in acetic acid solution, with α -naphthol, has been modified by the substitution of methyl- α -naphthylamine for α -naphthol (whereby a magenta color is produced instead of an orange-yellow), and rigorous conditions laid down for its successful application. The magenta color produced is compared with that obtained from a similarly treated standard solution of Bayer 205 or antrypol. In aqueous solutions, 0.2 mg. per 100 cc. can be detected, and 0.6 mg. per 100 cc. accurately determined; in blood plasma, where an allowance for the blank value must be made, these figures are 0.4 mg. and 0.6 mg. per 100 cc., respectively. Owing to a high and variable blank value, it has not yet been possible to adapt this method for the determination of the drugs in urine. In the animal experiments, rabbits and in one case a dog, were injected intravenously with the arsenical, and estimations of the amount of drug present were made on samples of blood withdrawn at various intervals after the injection. The results show that the concentration of the drug in the blood plasma falls rapidly during the first two or three days, but thereafter the diminution is less rapid. Accepting the view of various other authors that relatively small concentrations of Bayer 205 (or antrypol) destroy the infective power of trypanosomes, it is suggested that the amount of the drug found in the plasma of an animal several months after a course of injections, may be sufficient to account for its marked prophylactic action. The results also indicate that the drug is better retained following a series of small doses spaced over a few weeks than after a single dose of the same total amount.—W. G. DANGERFIELD, W. E. GAUNT and A. WORMALL. *Biochem. J.*, 32 (1938), 59; through *Quart J. Pharm. Pharmacol.*, 11 (1938), 782. (F. J. S.)

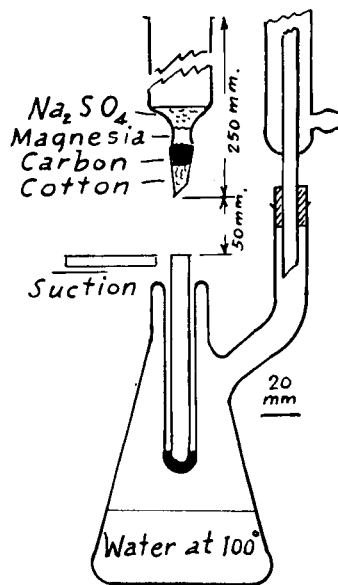


Fig. 1.—Apparatus for the rapid extraction of barbiturate derivatives in urine.

Bence-Jones Proteinuria—Case of. Free protein and Bence-Jones protein were separated by heating slowly to boiling, immediately adding acetic or trichloroacetic acid, and filtering the boiling solution rapidly through a wet filter. The dissolved protein precipitates on cooling, and the precipitation is aided by the addition of trichloroacetic acid. Results of analysis of the blood are also given and the relationship to the urine analysis is discussed.—L. SERVANTIE and F. GUYOT. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 132-137. (S. W. G.)

Bile Acids—Determination of, in Duodenal Juice, Feces and Organs. Mix 0.2 cc. duodenal juice with 9.3 cc. alcohol and 0.5 cc. saturated baryta containing 0.4% barium acetate. Heat and, after cooling, dilute to 10 cc. with alcohol and filter. For analysis of feces, mix 1 Gm. of substance with 5 cc. of the baryta solution and 20 cc. alcohol, extract by boiling three minutes, make up the volume to 25 cc. with alcohol and filter. A 0.5-cc. sample of the filtrate is evaporated to dryness in a large centrifuge tube. With organs, 1 Gm. of substance is finely ground up with sand and 5 cc. water and boiled. After cooling, add enough alcohol to bring the volume to 45 cc. and filter. Mix 9 cc. filtrate with 1 cc. baryta solution, bring to a boil and, when cool, dilute to 10 cc. with alcohol. Evaporate 4 cc. of the filtrate as before. The actual determinations are then carried out by the same procedure as has been used for determining the bile acids in serum.—H. MINIBECK. *Biochem. Z.*, 297 (1938), 214-220; through *Chem. Abstr.*, 32 (1938), 9135. (F. J. S.)

Biological Chemistry—Report of the Progress in. Vitamin D. A detailed report is made of the work on the isolation and identification of vitamin D₂, D₃ and D₄ and their provitamins. The provitamins of these vitamins are ergosterol, 7-dehydrocholesterol and dihydroergosterol. In a determination of the physiological activity in rats, 1 mg. of the D₂, D₃ and D₄ was found to equal 40,000 I. U., 40,000 I. U. and 20,000-30,000 I. U., respectively, and the limiting antirachitic dose of these vitamins in chickens was 12.8γ, 0.2γ and Iγ. A study of the constitution of these compounds is also reported.—U. WESTPHAL. *Naturwissenschaften*, 26 (1938), 376; through *Squibb Abstr. Bull.*, 11 (1938), A-1206. (F. J. S.)

Blood—Cancerous, Study of. The speed of sedimentation, cholesterinemia and proteinemia, which are frequently abnormal in cancerous conditions, are only rarely modified by radio-surgical treatment alone. They are more often modified by additional germicidal medical treatment. This statement appears to indicate that medical treatment exercises an influence on cancerous susceptibility in the patient.—H. VASSILIADIS and J. STRENHOUT. *Rev. Belge Sci. Med.*, 9 (1937), 633-640. (S. W. G.)

Blood Cholesterol—Determination of, in the Precipitate Obtained in the Defecation of Serum by Paget and Dupont's Zinc Ferrocyanide Method. The serum is defecated with a zinc salt and potassium ferrocyanide as for the determination of glucose. The precipitate, which contains all the cholesterol, is treated with a little concentrated sodium hydroxide solution and extracted with a mixture of alcohol and ether (proportions not stated) and the cholesterol in the extract is determined by any suitable method.—M. PAGET and G. GUYADER. *Bull. Biol. Pharmaciens*, (1937), No. 37, 176; through *Chimie & Industrie*, 39 (1938), 659. (A. P.-C.)

Blood-Serum Proteins—Rapid and Accurate Microdetermination of. A description of a slight modification of the method to Wu, using the Folin-Denis phosphomolybdotungstic acid reagent for phenols.—P. MOUNIER. *Bull. Biol. Pharmaciens*, (1937), No. 27, 167-175; through *Chimie & Industrie*, 39 (1938), 659. (A. P.-C.)

Blood, Yeast, Bacteria, Etc.—Separating Biologically Valuable Constituents from. Separations such as those of polysaccharides from pneumococci, catalase, blood pigment and lipoids from the blood of sheep or rabbits, protein-free carbohydrates from egg white or from bacterium *Proteus*, for obtaining a substantially protein-free product from protein-containing material, are effected by agitating the initial material with a mixture of water and an organic water-immiscible liquid such as chloroform, which is capable of forming a gel with the proteins in the presence of water, to cause separation of the materials into layers, one of which contains the desired substantially protein-free material and another of which contains a gel of the protein, which is stable to centrifuging. Details are given of the treatment of pneumococci, blood of sheep and rabbits, egg white and bacterium *Proteus*.—MANASSEH G. SEVAG. U. S. pat. 2,118,117, May 24, 1938. (A. P.-C.)

Carbohydrate Metabolism—Cyclic Reaction Scheme Illustrating. The scheme is worked out to illustrate graphically the reactions involved in muscle contraction. Oxidative reactions

and the possible path of glycogen synthesis are included.—V. R. POTTER and C. A. ELVEHJEM. *J. Chem. Educ.*, 15 (1938), 89–91. (E. G. V.)

Casein—Tryptophan Content of, Rapid Procedure for Estimating. Color development with the Holm and Greenbank (*C. A.* 17, 3519) modification of the May and Rose (*C. A.*, 17, 116) procedure for the determination of tryptophan may be accelerated by a high temperature (85°) and use of dilute hydrogen peroxide. When determined by either the short method or the Holm and Greenbank modification, the tryptophan content of various caseins has been found to be 2.4%. The maximum color develops within 30 minutes and with casein gives the same value as the 7–8 day color development in the May and Rose procedure.—M. X. SULLIVAN, H. S. MILONE and E. L. EVERITT. *J. Biol. Chem.*, 125 (1938), 471–474; through *Chem. Abstr.*, 32 (1938), 9131. (F. J. S.)

Chemist at Work. VI. Medical Technologist. A description of routine work.—E. BREITWIESER. *J. Chem. Educ.*, 15 (1938), 222. (E. G. V.)

Cod Liver Oil and an Emulsion of Percomorph-Liver—Comparative Value of, in the Prevention of Rickets. A malt emulsion of highly potent fish liver oil fed to 66 infants at a level of 450 U. S. P. units daily was found to be equally effective in the prevention of rickets as 450 U. S. P. units of cod liver oil fed to a group of 60 infants. The administration of 450 U. S. P. units of cod liver oil or of percomorph-liver oil in the form of a malt emulsion completely prevented rickets in 96% of the 126 infants (aged 1 day to 10 months) followed through the months of October to June. This level of vitamin D as cod liver oil did not prevent mild rickets in 4 infants of the oil-treated group. In these cases difficulty in administering was encountered. Only one case of mild rickets was observed in the malt emulsion group. When this 450 U. S. P. unit level of vitamin D in the form of the emulsion was dispersed in milk or orange juice, it was found to be just as effective as when given by the mouth. The malt emulsion on the basis of palatability, ease of administering and ready digestibility was judged to be superior to cod liver oil as an antirachitic supplement.—MARGARET R. REYNOLDS. *J. Pediat.*, 12 (1938), 789; through *Squibb Abstr. Bull.*, 11 (1938), A-1205. (F. J. S.)

4:4'-Diaminodiphenylsulfone—Action of Substances Allied to, in Mice Infections. A number of substances allied to 4:4'-diaminodiphenylsulfone have been investigated with the object of finding a drug similar in action but possessing less toxicity. A number of Schiff's bases and acyl derivatives are described, as are derivatives of 4-aminodiphenylsulfone and certain sulfonamides. 4-Aminobenzenesulfonamidophenyl-4'-sulfondimethylamide is as active as sulfanilamide in the treatment of streptococcal infections in mice, but is not so good for staphylococcal infections. Clinically, 4-benzylideneamino-4'-aminodiphenylsulfone is valuable in pneumococcal infections, and 4:4'-diacetaminodiphenylsulfone is of use in cases where low toxicity is of primary importance, and the water-soluble glucose derivative is valuable for parenteral administration where treatment by the mouth is impossible.—G. A. H. BUTTLE, T. DEWING, G. E. FOSTER, W. H. GRAY, S. SMITH and D. STEPHENSON. *Biochem. J.*, 32 (1938), 1101; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 794. (F. J. S.)

Diazo Color Reactions. Ehrlich's diazo reaction which has been used for the detection of bile pigments in blood or in urine, for ureoresin and urochromogen, and for an unknown compound found in urine in cases of typhoid and measles also gives positive tests when alcohol has been administered, with phenols, opium bases and some other drugs. Since its use may lead to a wrong conclusion some investigative work was carried out. Silk was used to fix colors and because it could be kept as a permanent record, more accurate results are obtained.—KIRBY E. JACKSON and WILLIAM M. DEHM. *J. Am. Pharm. Assoc.*, 27 (1938), 576. (Z. M. C.)

Erythræa Centaurium Pers.—Biochemical Assay of. The sugar and glycosides in sweet drugs may be determined as follows: Prepare the sample by refluxing 200 Gm. of drug in 1000 cc. of 80% alcohol, after addition of several Gm. of calcium carbonate. After 30 minutes, cool, decant and repeat the extraction. Press the marc, combine the alcoholic solutions and concentrate; then add enough distilled water to make each cc. correspond to 0.25 Gm. of the drug. Filter and treat the filtrate with toluene immediately. The sugar content of the prepared sample is determined before and after treatment with invertin and after further treatment with emulsin. The polarimetric deviations and amounts of reducing substances are tabulated. The results indicate the presence in *E. centaurium* of a levorotatory principle which is not hydrolyzed by invertin or emulsin.—K. KALINOWSKI. *J. pharm. chim.*, 27 (1938), 369–373. (S. W. G.)

Glutathione—Estimation of. Opalescent solutions encountered with extracts from liver tissue render accurate titration with ferricyanide impossible. By determining the extinction coefficient of the colored compound (Prussian blue) and reference to a calibration chart, the actual concentration of glutathione is found.—A. B. CORKILL and J. F. NELSON. *Australian J. Exptl. Biol. Med. Sci.*, 16 (1938), 133-135; through *Chem. Abstr.*, 32 (1938), 9128. (F. J. S.)

Grey Cod-, Ling Cod- and Red Cod-Liver and Visceral Oils—Vitamin A Potency of. Carr-Price vitamin A values have been determined for the liver and visceral oils of a number of fish. The vitamin A content of visceral oil is much higher in the grey cod than that of the liver oil, whereas the reverse is the case in the ling and red cod.—L. I. PUGSLEY. *Progr. Rep. Fish. Res. Bd. Canad.*, No. 36 (1938), 22-24; through *J. Soc. Chem. Ind.*, 57 (1938), 1068. (E. G. V.)

Human and Animal Foods—Table of the Vitamin Content of. Seven tables and a bibliography of 257 references are given.—M. A. B. FIXSEN and M. H. ROSCOE. *Nutr. Abs. Rev.*, 7 (1938), 823-867; through *J. Soc. Chem. Ind.*, 57 (1938), 724. (E. G. V.)

Indian Foodstuffs—Vitamin C Content of. Four varieties of capsicum contained 0.042 mg. of ascorbic acid per Gm. Much reversibly oxidized ascorbic acid was present, 0.23-0.661 mg. of acid per Gm. being found after reduction by hydrogen sulfide. Ripe chillies contain more than unripe ones. Tillmans' dichlorophenol-indophenol method of determination is slightly modified.—C. A. ROTHENHEIM, H. S. S. MAHAMUD, and S. S. COWLAGI. *J. Indian Chem. Soc.*, 15 (1938), 15-19; through *J. Soc. Chem. Ind.*, 57 (1938), 724. (E. G. V.)

Insulin—Hypoglycemic Activity of Organic Sulfur Compounds and the Rôle of Sulfur in Relation to the Activity of. No organic sulfur compound of known structure investigated to date exhibits or even approximates the physiological behavior of insulin. It appears significant that of the numerous sulfur compounds selected from many diversified chemical classes only a very small number even possessed any hypoglycemic activity. These observations most certainly cannot be interpreted as implying that the dithio linkages in the insulin molecule ether are devoid of influence or play only a minor rôle in the physiological activity of the hormone. Entirely too much verified experimental evidence based upon work with crystalline insulin itself has been accumulated to permit the formulation of such a conclusion. The work to date on synthetic organic sulfur compounds clearly shows that the mere presence of sulfur (even as disulfide sulfur) or of cystinyl or cysteinyl residues in any compound cannot be taken as a basis for assuming that the compound will approximate in any way the physiological behavior of insulin. From the mass of data thus far produced from the synthetic attack on the discovery of a possible prosthetic group in the insulin molecule, one encouraging observation might be singled out, namely, that certain of the synthetic sulfur compounds were relatively nontoxic, a fundamental consideration, if a synthetic substitute for insulin is ever to be realized. This point alone would seem to justify continuation and extension of investigations of this type with special attention being given to derivatives, peptides and other types of cystine and cysteine.—C. E. BRAUN, M. B. MASON and C. L. BROWN. *J. Chem. Educ.*, 15 (1938), 261-267. (E. G. V.)

Iodine—Determination of, in Sheep Thyroid. The previous paper showed that the human thyroid taken from Icelanders was small and had a large iodine content, indicating a high iodine intake. A study of sheep thyroids was undertaken to determine if the soil was the source of iodine. The iodine content in mg. per Gm. of dry thyroid for sheep and lambs raised in Iceland was 4.023 and 3.910, respectively. These figures were similar to those found for sheep raised in England and significantly higher than for those raised in Ohio.—J. SIGURJONSSON. *Biochem. J.*, 32 (1938), 945-948; through *Chem. Abstr.*, 32 (1938), 9139. (F. J. S.)

Lactate—Simplified Estimation of, in Normal Human Blood. In the estimation of lactate in normal human blood certain customary steps have no effect on the estimated lactate and may be omitted. Use of $\text{CuSO}_4\text{-Ca(OH)}_2$, preliminary aeration and cleaning of the apparatus between runs are unnecessary. A modified form of Wendel's apparatus (*C. A.*, 27, 5358) is described which takes up small space and is less liable to break. The glass joints are all interchangeable and rubber stoppers are used at points where quick strains occur. The blood does not need to be analyzed quickly after it is drawn provided it is hemolyzed promptly.—H. T. EDWARDS. *J. Biol. Chem.*, 125 (1938), 571-583; through *Chem. Abstr.*, 32 (1938), 9131. (F. J. S.)

Lactic Bacteriotherapy. Lactic Ferments and Fermented Milk. A. NEUKOMM. *Lait*, 18 (1938), 353-371; through *J. Soc. Chem. Ind.*, 57 (1938), 719. (E. G. V.)

May Apple Root (*Podophyllum Peltatum*)—Biochemistry of. I. A study which aims at isolation of every ingredient and determination of the physical, chemical and physiological properties of each has been undertaken. The present paper covers podophyllin, podophyllotoxin, hydrolysis products—picropodophyllin and podophyllic acid, and the pigment quercetin. Picropodophyllin is a mixture of physiologically active and inactive substances, probably a substance that is predominantly toxic and a markedly laxative substance. Podophyllotoxin is the only active crystallizable substance found; its polymorphism is marked. The commercial product is impure, exhibiting both toxic and laxative properties; the pure crystals are predominantly toxic. Picropodophyllin crystallizes in colorless needles physiologically very irritating to mucous membrane. Podophyllic acid is characterized by colorless needles, also is mildly toxic and an uncertain laxative. No tannin was found. Quercetin reacts with iron chloride. Chloroform extracts toxic, podophyllotoxin leaving a laxative less toxic residue.—ARNO VIEHOENER. *J. Am. Pharm. Assoc.*, 27 (1938), 632. (Z. M. C.)

Morphine—Determination of, in the Urine of Opium and Morphine Addicts. By extraction of urine in a continuous extractor with chloroform, and titration of morphine with Gordin's iodine-potassium iodide solution 91–93% of 10 mg. added, and 95–99% of 20 mg. of added morphine were recovered. From the urines of 11 opium addicts taking 40 to 300 mg. of morphine-hydrochloric acid daily orally, an average of 27% was recovered; from 10 users of 75 to 750 mg. of powdered opium, 29%; from 11 smokers using 5 to 26 Gm. daily, an average of 3.45%; from 3 morphine addicts injecting 21 to 50 mg. daily, between 50 and 60%. One addict on a cure was given daily doses decreasing from 260 mg. to 10 mg.; urinary excretion averaged 28% of the dose administered, and paralleled decreases in dosage.—S. To and C. Ri. *Japan. J. Med. Sci. IV Pharmacol.*, 11 (1938), 47–66; through *Chem. Abstr.*, 32 (1938), 9137. (F. J. S.)

Nitrobenzene—Determination of Traces of, in the Blood. A polarographic method of determining was developed, by use of 1–2 cc. of serum, which was sensitive to 0.002 mg. %. Exposure to light at wave-length 600 mv. gave a characteristic spectrum which was photographed and served as a standard of reference quantity. 0.12 Gm. nitrobenzene was applied cutaneously to the skin of a rabbit weighing 2800 Gm. and 4.5 cc. of blood was removed by heart puncture after 5 hours, 1 cc. of serum was tested and found to contain 0.18 mg. %. The method can be used for other organic nitro compounds.—J. TEISINGER. *Cas. lek. cesk.*, (1937), 325–330; through *Chem. Abstr.*, 32 (1938), 9136. (F. J. S.)

α -Oestradiol—Mono-Esters of. The effect of esterifying α -oestradiol in the 3- and 17-positions with a series of aliphatic acids has been investigated with regard to the threshold value and the duration of effect by subcutaneous injection in the oestrus test. The 3- monoesters show threshold values similar to that of free α -oestradiol (0.4 γ) up to the octanoate. With higher acids the values increase rapidly to 7 γ for the palmitate and stearate. The threshold values of the 17- esters are slightly higher than for the corresponding 3- esters. A prolonged effect is obtained with higher esters, the 17- esters being superior to the 3- esters and the 17- octanoate exhibiting the most intense effect. In the uterus growth test again the 17- esters proved the better, particularly with the lower esters. In the method of testing used, no malignant tumors were observed and a return to normal followed when the effect of the hormone ceased.—K. MIESCHER, C. SCHOLY and E. TSCHOPP. *Biochem. J.*, 32 (1938), 1273; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 776. (F. J. S.)

Saccharoids—Determination of, and the Relationship of the Saccharoid Content of the Blood to Diet and Drugs. The direct yeast procedure is the method of choice in the determination of the non-reducing saccharoid substances in blood with the Shaffer-Hartmann blood-sugar reagent. Differential filtrate analysis gives less reliable results. Factors in the protein-precipitating solution influence the reduction of various blood sugar reagents, particularly at high blood-sugar levels so that the results obtained by the method of differential analysis of filtrates will depend not only on the saccharoid content but on the presence of constituents in the filtrate which may affect the particular blood sugar reagent employed. The saccharoid content of the blood is independent of changes in the diet and of diurnal fluctuations and is relatively constant over long periods of time. A moderate reduction, possibly to a basal level for the animal in question, is produced by fasting. The saccharoid level is not affected by injection of insulin or adrenaline. An approximate similar quantity of saccharoids is present in the blood of dogs, cats,

rats and man.—L. S. SMELO, F. M. KERN and D. L. DRABKIN. *J. Biol. Chem.*, 125 (1938), 461-470; through *Chem. Abstr.*, 32 (1938), 9131. (F. J. S.)

Soya Phosphatides. Soya beans contain about 40% protein, 20% fat, and from 1.6 to 3.0% of the phosphatides, mainly lecithin and cephalin. The extraction of the phosphatides is described. The phosphatides are used for soaps, cosmetics, insecticides, etc.—A. A. HORVATH. *J. Chem. Educ.*, 14 (1937), 424-426. (E. G. V.)

Sulfate—Inorganic, New Micromethod for Determining in Human Milk. Milk is deproteinized by Yoshimatsu's uranium acetate method. Inorganic sulfate is precipitated as barium sulfate in acid acetate solution using a known amount of barium chloride. The excess barium chloride is precipitated as barium chromate by the addition of potassium chromate. The precipitated barium chromate is dissolved in hydrochloric acid and benzidine hydrochloride is added. A deep red color develops and this is compared with a standard potassium chromate solution.—K. Yoshino. *Tohoku J. Exp. Med.*, 30 (1937), 501-505; through *Chimie & Industrie*, 39 (1938), 660. (A. P.-C.)

Thiamin—Chemistry and Biological Significance of. W. reviews, without bibliography, the history of research on beriberi and on the isolation, identification, synthesis and biological properties of vitamin B (thiamin). In conclusion, he emphasizes the facts that every living cell requires the vitamin for carbohydrate metabolism, that the total supply of thiamin in nature is scarce (owing to chemical instability and to universal consumption), and that man often lacks an ample supply (owing to the scarcity of thiamin in nature, and to the practice of refining and cooking food). He suggests that in constitutional disease, the weakest organ may often show a benefit from an artificial supply of vitamin B, whether the weakness be due to heredity, to past damage or to present severe strain upon the body economy, as in maternity, hard physical labor or infectious fever.—ROBERT R. WILLIAMS. *Science*, 87 (1938), 559; through *Squibb Abstr. Bull.*, 11 (1938), A-1205. (F. J. S.)

Urea—Microdetermination of, in Blood Without Distillation and Without Nesslerization. Introduce 1 cc. of a 2% solution of boric acid, freshly heated for one minute, into the inner chamber of a specially designed double dish. Add one drop of a special indicator (methyl red-methylene blue), which should give a definite bright red color. Measure 0.2 cc. blood into the outside chamber of the dish, then introduce some urease solution, cover quickly and mix. Let stand for 15-20 minutes, then introduce into the outside chamber about 1 cc. saturated potassium carbonate and again close the dish quickly. Mix the contents of the outside chamber and let stand 90 minutes. Make a blank experiment simultaneously with 0.2 cc. water instead of blood. In the latter the color should remain red. The boric acid solution which has turned green through the absorption of ammonia is titrated back to the red color with 0.01 N sulfuric acid or hydrochloric acid, and the titration value multiplied by 150.15 gives the blood urea in mg. %.—I. ABELIN. *Biochem. Z.*, 297 (1938), 203-208; through *Chem. Abstr.*, 32 (1938), 9135. (F. J. S.)

Urine Analysis—Application of the Method of Destroying Electric Resistance to. The mineral elements in the urine are expressed as sodium chloride according to the procedure of Delfour (*Bordeaux, Delmas*, p. 39 (1937)), and represented by "R. E. C." The extract dried with the aid of density is obtained by the method of Labat (*Study of Normal and Pathologic Urines*, Doin, 1 (1914), 729). The proportion R. E. C./Extract dried by density is practically equivalent to the proportion Ash/Extract dried at 100°. The recommended procedure gives duplicate results in much less time than methods now used.—H. DELFOUR and P. ACCOVER. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 137-143. (S. W. G.)