PHARMACEUTICAL ABSTRACTS

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NEW REMEDIES

SPECIALTIES (*Continued*)

Basocor Ampuls, Strong (Eggochemia, Vienna, 19th dist.) contain 0.0003 Gm. *g*-strophanthin, 0.20 Gm. purified theophylline, 0.15 Gm. hexahydro-*p*-diazine in 10 cc. of 20% glucose solution. The packages contain 3 ampuls (cf. *Pharm. Abstr.*, 1 (1935), 431).—*Pharm. Presse*, 42 (1937), 128. (M. F. W. D.)

Fe-Arsol (Carroll Dunham Smith Pharmacal Co.), ampuls containing in each 5 cc., sodium cacaodylate 0.16 Gm., sodium glycerophosphate 0.13 Gm. and ferric chloride 0.07 Gm. in Ringer's solution. The combination will be very effective in the treatment of convalescence and neurasthenia. The dose is 5 to 10 cc. intravenously every 2 or 3 days. Fe-Arsol ampuls are supplied in 5 and 10 cc. (boxes of 6).—*Drug. Circ.*, 81, No. 5 (1937), 37. (E. V. S.)

Ferro 66 (Chem. Fabrik Promonta, G.m.b.H., Hamburg) is a biological ferrous iron preparation stabilized with vitamin C (ascorbinic acid). It is marketed in pastille form (1 pastille = 70 mg. iron) and as drops (20 drops = 100 mg. iron). It is used for all secondary anemias of growing children, for essential hypochromic anemia, and in iron therapy.—*Pharm. Zentralh.*, 78 (1937), 243. (E. V. S.)

Ferrosate-"W" (P. Morse Lab., Inc., New York) is a colloidal iron-sodium dimethylarsenate preparation combined with Ringer's solution. The Ringer's solution is prepared by a special process devised by Morse with the view of rigidly maintaining a p_H matching that of the blood. It is used by intravenous administration in febrile and respiratory conditions as well as in the various anemias. It is supplied in packages of six 10-cc. ampuls.—*Am. Drug.*, 95, No. 5 (1937), 72. (E. V. S.)

Glycerite Mag. Sulf. "Upsher Smith" is a hypertonic solution of 40% magnesium sulfate, with glycerin and ethylene glycol, suspended in a lubricating base containing 0.1% chlorothymol. It is indicated as a local application in inflammation, as in boils, ulcers, orchitis, spididymitis, lymphangitis, cellulitis, poison ivy, etc. Also as a useful application to local injuries for relief of pain, swelling, contusion or abrasion. The glycerite is supplied in bottles of 8 ounces.—*Drug. Circ.*, 81, No. 5 (1937), 37. (E. V. S.)

Guttural (Labor. Faust, H. Gutwirth, Berlin-Grunewald), an expectorant, are gum drops containing as active ingredients extracts of thyme and primrose, ephedrine, anise, fennel and peppermint oils and eucalyptol.—*Pharm. Zentralh.*, 78 (1937), 243. (E. V. S.)

Hæmarrhesin Ampuls (Staatl. Serotherapeutisches Institute, Vienna, 9th dist.) contain 50 cc. of a blood substitute and 5 cc. of serum.—*Pharm. Presse*, 42 (1937), 130. (M. F. W. D.)

Iocapral (Winthrop Chemical Co., Inc.) are tablets containing in each theobromine 5 gr. Mebaral (methylethylphenylbarbituric acid) $^2/_3$ gr. and calcium iodide di-triethanolamine 2 gr. It is a vasodilator, sedative and antispasmodic used in hypertension, angina pectoris, arteriosclerosis and vascular disorders of the climacteric. Iocapral tablets are supplied in bottles of 25 and 100.—*Drug. Circ.*, 81, No. 5 (1937), 36. (E. V. S.)

Iodbismol Ampuls (Chem. Fabrik Astra, Södertalje, Sweden), in packages of 10 x 2-cc. ampuls, contain sodium iodobismuthate, sodium iodate, benzylcarbinol and ethylene glycol.—*Pharm. Post.*, 70 (1937), 97. (H. M. B.)

Kaosyl (Columbus Pharmacal Co., Columbus, Ohio) is a palatable, impalpable powder containing "Electro" colloidal kaolin, "Blonde" psyllium, bismuth subcarbonate, magnesium oxide, precipitated calcium carbonate and aromatics. It is an adsorbent powder having antifermentative, demulcent, neutralizing, corrective, protective, prophylactic, deodorizing, detoxicating and bacteriostatic powders and indicated in the treatment of hyperacidity, colitis, autointoxication, flatulence, gastric and duodenal ulcers, dysentery and intestinal fermentation. Kaosyl powder is supplied in jars of 6 oz.—*New Modern Drugs*, 10th Supp. (April 1937), 13. (E. V. S.)

Ludarin Tablets (M. Woelm A.-G.), for neuralgic conditions, contain aminophenazone, phenyldimethylpyrazalone salicylate, phenacetin and caffeine.—*Pharm. Zentralh.*, 78 (1937), 258. (E. V. S.)

Lykopect Drops (Hirsch-Apotheke Erich Wolff, Heidelberg) are prepared from an alcoholic extract of pimpinella and primrose with the addition of codeine and cariazol. It is used in the treatment of catarrh of the respiratory tract.—*Pharm. Zentralh.*, 78 (1937), 258. (E. V. S.)

Maraphos (Evans Sons, Lescher and Webb Ltd., London, E.C.) is a liquid tonic food for backward or convalescing children containing red bone marrow, cream of malt and phosphates.

The dose is one teaspoonful thrice daily for 1–3 year-old children and doubled for older children. It is marketed in bottles of 4, 8, 16 and 80 fl. oz.—*Australas. J. Pharm.*, 52 (1937), 325. (E. V. S.)

Medichin Grippe Tablets (Oxylax-Laboratorium, Halle (Saale), Kleinschmieden 6) contain in each a combination of pyrazolone phenyldimethyl salicylate 0.15, dimethylaminophenazone 0.1, caffeine 0.05 and quinine hydrochloride 0.05. The first dose is two tablets, then one tablet three times a day, children are given doses according to their age. They are packed in 10 and 20.—*Pharm. Ztg.*, 82 (1937), 185. (E. V. S.)

Metuvite Wound Oil (Chemosan Union, A. G., Vienna, 3rd dist.) is irradiated olive oil sold in 60-Gm. packages.—*Pharm. Presse*, 42 (1937), 128. (M. F. W. D.)

Nasal Vaccine. Prepared from staphylococci 200 million, pneumococci 200 million, streptococci 200 million, *M. catarrhalis* 200 million, *B. influenzæ* 100 million, *B. Friedlander* 100 million, *B. septus* 100 million, in 1.15-cc. normal saline with 0.5% phenol and 0.5% *p*-chlor-*m*-xylenol.—*Pharm. J.*, 138 (1937), 316. (W. B. B.)

Neo-Urosept Ampuls (Eggochemia, Vienna, 19th dist.) contain 2.80 Gm. sodium mandelate-methenamine, 2.80 Gm. methenamine and 0.10 Gm. theophylline in sufficient purified distilled water to make 10 cc. The packages contain 5 such ampuls.—*Pharm. Presse*, 42 (1937), 127. (M. F. W. D.)

Neurantin (Schué & Co., Frankfurt a.M.) is a liquid preparation containing strontium bromate 3%, alcoholic lecithin solution 2%, sodium chlorate 0.5%, odorless alcoholic valerian extract 25% and starch-sugar solution 69.65%. It is used for nervous conditions and climacteric disturbances.—*Pharm. Zentralh.*, 78 (1937), 214. (E. V. S.)

Neu-Sidonal (Erich Boehden & Co., G.m.b.H., Berlin), for gout afflictions, is a lactone of quinic acid. It is marketed as dragées and in powder form.—*Pharm. Zentralh.*, 78 (1937), 259. (E. V. S.)

Nitrovalon (E. Tosse & Co., Hamburg) is prepared from Aquilegia, adonis, belladonna, valerian, lobelia, carminative drugs and ethyl nitrite. It is used as a drop preparation for cardiovascular difficulties of the climacteric.—*Pharm. Zentralh.*, 78 (1937), 259. (E. V. S.)

Oecocard (Asepsia-Werke Bayer & Kitz, Frankfurt a.M.) is a drop preparation prepared from Cratægus, *Viscum album*, squill, Oecoiod and camphor. It is used as a heart tonic, splasmolytic and sedative.—*Pharm. Zentralh.*, 78 (1937), 259. (E. V. S.)

Olac (Mead Johnson & Co., Evansville, Ind.) is a spray-dried powder consisting of 40% skimmed milk and solids, 31.7% Dextri-Maltose, 17.5% olive oil, 10.1% calcium caseinate and 0.1% halibut liver oil. Olac is a dietary product which, when dissolved in the prescribed amount in warm water, is used as a milk formula for infants, especially for premature and newborn infants deprived of breast milk. It is supplied in pound tins.—*Drug. Circ.*, 81, No. 5 (1937), 36. (E. V. S.)

Opex Tablets (M. Woelm A.-G.), for neuralgic conditions, contain acetylsalicylic acid, phenacetin and codeine phosphate (0.01 Gm. per tablet).—*Pharm. Zentralh.*, 78 (1937), 259. (E. V. S.)

Oxitin (Chicago Pharmacal Co., Chicago, Ill.) is a finely powdered mixture of metallic tin $1^1/_4$ gr., and tin oxide $^1/_4$ gr. incorporated into a sugar-coated, friable pill. It causes a prompt and rapid regression of staphylococcic infections and is used in the treatment of all infectious processes caused by staphylococci, pustular acne, carbuncles, furunculosis, suppurative mastitis, hordeloa, osteomyelitis, etc. The dose is 4 to 8 pills daily, after meals, taken with a quantity of water. Oxitin is supplied in bottles of 100, 500 and 1,000.—*New Modern Drugs.*, 10th Supp. (April 1937), 14. (E. V. S.)

Pentetten (Labor. Faust, H. Gutwirth, Berlin-Grunewald), an antipyretic and analgesic, contain in each, dimethylaminophenazone 0.1 Gm., phenacetin 0.2 Gm., phenyldimethylpyrazolone 0.1 Gm., caffeine 0.05 Gm. and quinine hydrochloride 0.03 Gm.—*Pharm. Zentralh.*, 78 (1937), 259. (E. V. S.)

Psorinegat (Pharmacia, Jakob Ebel, Saarbrücken 1) is an oily solution of allyl isothiocyanate, terpenes, camphenes, pinenes, methyl salicylate, formyl chloride and an alkali iodide. It is used for psoriasis, prurigo, pruritus, urticaria, eczema, seborrhea, pityriasis and dermatitis herpetiformis. It is marketed in packages of 70 Gm.—*Pharm. Ztg.*, 82 (1937), 234. (E. V. S.)

Quinolor Lubricant (E. R. Squibb & Sons) is a lubricating jelly containing 0.025% of the antiseptic, Quinolor (chlorohydroxyquinoline). It is a valuable and effective bacteriostatic surgical jelly which is especially adaptable to the maintenance of aseptic conditions during instrumentation and digital examinations. It is marketed in collapsible tubes containing 69 or 135 Gm. —*Am. Drug.*, 95, No. 5 (1937), 72. (E. V. S.)

Reodoxon Ampuls (Hoffmann-LaRoche, Basle) contain in each cc. 0.05 Gm. *l*-ascorbic acid and 0.011 Gm. sodium hydrate. The packages contain 6 ampuls of 2.20 cc. **Reodoxon Tablets** are supplied in packages of 20 tablets containing in each 0.05 Gm. *l*-ascorbic acid.—*Pharm. Presse*, 42 (1937), 128. (M. F. W. D.)

Salicyl-Diasporal Cream (Dandrucide) (Doak Co., Cleveland, O.) contains salicylic acid 2, colloidal sulfur 3, isopropyl alcohol 68 and Diasporal base to make 100. It is indicated in the treatment of dandruff, seborrhea and capitis. The cream is supplied in jars of 4 and 16 ounces.—*Drug. Circ.*, 81, No. 5 (1937), 37. (E. V. S.)

Sarheuma (Pharmacia, Jakob Ebel, Saarbrücken 1) is an ethereal oil combination containing saponin, easily absorbable sulfur compounds, organic iodine, some free and combined salicylic acid, camphor, allyl isothiocyanate, pinene, camphene and terpene. It is indicated for use in rheumatism, gout, ischias, neuralgia and other similar conditions. Sarheuma is supplied as a liquid (55-Gm. bottles), or as an ointment in tubes containing 33 Gm.—*Pharm. Ztg.*, 82 (1937), 234. (E. V. S.)

Syngasept Ampuls (Syngala, Vienna, 16th dist.) contain 1% syngasept, cod liver oil, ointment base, etc.; packaged in 5-Gm. containers (cf. *Pharm. Abstr.*, 3 (1937), 52).—*Pharm. Presse*, 42 (1937), 130. (M. F. W. D.)

Targophagin Tablets (Fa. Goedeke and Co., Chem. Fab. A.-G., Berlin) contain 0.05 Gm. targesin and 0.01 Gm. ethylaminobenzoate and is marketed in packages containing 20 tablets.—*Pharm. Post.*, 70 (1937), 98. (H. M. B.)

Thio-Sol (Vincent Christina, Inc.) is a neutral organic solution of colloidal sulfur, each cc. liberating 10 mg. of nascent elemental colloidal sulfur. It is a syrupy, uncrystallizable liquid miscible in all proportions with water without decomposition or oxidation. It is used intravenously or intramuscularly in the treatment of atrophic, specific and hypertrophic arthritis. Thio-Sol is supplied in ampuls (1- or 2-cc., boxes of 12, 24 and 100) or vials of 30 and 100 cc.—*New Modern Drugs*, 10th Supp. (April 1937), 24. (E. V. S.)

Thymus-Simon (Simons Apotheke, Berlin C 2), a cough remedy for children, contains fluidextract thyme, compound fluidextract thyme, potassium bromide, ephedrine and simple syrup. It is supplied in bottles containing 150 cc.—*Pharm. Ztg.*, 82 (1937), 234. (E. V. S.)

Tonocard-Ephedrine Ampuls (Fabrik Astra, Södertälje, Sweden) contain 0.25 Gm. pyridine-β-carbonate-diethylamide, 0.015 Gm. ephedrine hydrochloride and sufficient distilled water to make 1 cc. They are supplied in packages of 3 and 6 ampuls of 2.20 cc. or one ampul of 50 cc. **Tonocard-Ephedrine Solution** is supplied in 15-cc. bottles of the same strength as the ampuls. **Tonocard-Quinine Ampuls** contain 0.25 Gm. pyridine-β-carbonate-diethylamide, 0.25 Gm. quinine lactate and redistilled water to make 2.00 cc. They are supplied in packages of 3 and 6 ampuls of 2.20 cc. or one ampul of 50 cc.—*Pharm. Presse*, 42 (1937), 218. (M. F. W. D.)

Tranquillitum Dragées (Dr. Hoffmann & Köhler, Altona), an antineuralgic, contain in each, a mixture of aconite, belladonna, gelsemium and hyoscyamus extracts 0.036 Gm., iodine 0.00297 Gm., codeine 0.00703 Gm., potassium quaiacolsulfonate 0.03 Gm., dimethylaminophenazone 0,05 Gm. and phenacetin 0.13 Gm.—*Pharm. Zentralh.*, 78 (1937), 259. (E. V. S.)

Trifenil (Italian Drugs Importing Co., New York) is a polyvalent non-specific antibacterial agent, containing nuclein, sulfophenol and adrenaline. It is indicated in all infectious conditions as it stimulates the natural defense mechanisms of the body without untoward local or systemic reaction. It is administered intramuscularly, 1 to 6 cc. every 6 to 24 hours; increased as indicated in acute conditions; in rapid infections 0.5 cc. may be administered intravenously every 6 hours. Trifenil is supplied in 2-cc. ampuls, boxes of 2.—*New Modern Drugs*, 10th Supp. (April 1937), 25. (E. V. S.)

Vasobroman (Walter Haupt & Co., pharm. Präparate, Berlin) is a combination of theobromine calcium, calcium salicylate, bromoisovalerianylcarbamide and papaverine hydrochloride. It is indicated for use in the treatment of angina pectoris, asthma cordiale, migraine, emphysemia and hypertonia.—*Pharm. Zentralh.*, 78 (1937), 260. (E. V. S.)

Ventricosal Tablets (Sagitta-Werk G.m.b.H., München), for hyperacidity, contain magnesium peroxide, magnesium carbonate, sodium bicarbonate and calcium carbonate. **Ventricosal Tablets with Belladonna** contain in addition extract belladonna and are for use in spasm conditions.—*Pharm. Zentralh.*, 78 (1937), 260. (E. V. S.)

Yatrobar (Röhm & Haas A.-G., Darmstadt) is a combination of purified barium sulfate, vegetable colloids, sucrose, pancreatin and peppermint oil. It has an increasing adsorption action for mucous catarrh and is indicated for use in catarrhal and inflammatory conditions of the naso-pharnyx, in throat catarrh, coryza, coughs, stomatitis, etc. The dose is 1–2 heaping teaspoonfuls in one-half glass water as a gargle or taken internally; it may also be used as a snuff. —*Pharm. Ztg.*, 82 (1937), 158. (E. V. S.)

BACTERIOLOGY

Bacteriological Medicaments—Notes on. Notes concerning various vaccines, toxins, antitoxins and antitoxic sera based on visits to the Pasteur Institute, to its annex at Garches, and to the State Serum Institute in Copenhagen. Methods of preparation and of testing are discussed, as well as the definitions of such units as the M. L. D. of toxins, the antitoxic units of antitoxins, the L+, the flocculation unit, the *dosis reagens minima simplex* and the hemolytic test dose.—T. Ojde. *Farm. Revy*, 36 (1937), 169, 185, 201. (C. S. L.)

B. Influenzæ—Comparison of Meningeal and Other Strains of. Of forty-three meningeal strains tested for the production of indol, only five were negative. Organisms freshly isolated from the blood of influenzal meningitis patients were invariably short, while the smears from the spinal fluid showed many long thread-like forms.—D. Wilkes-Weiss. *J. Infect. Diseases*, 60 (1937), 213. (A. H. B.)

Catheters—Sterilization of. All modern catheters can be sterilized by boiling. The metal instruments require no special attention; rubber catheters can be boiled indefinitely, but should be tested before use, as in time they tend to rot and may break in the bladder. Modern gum-elastic catheters may also be boiled, but they should neither lie on an instrument tray within the sterilizer, or be wrapped in a towel or gauze before immersion. If they rest at the bottom of the sterilizer the polish may be destroyed by too close proximity with the gas or electric heater. To protect the surface polish, gum-elastic instruments must be lifted carefully from the boiling water with broad-nosed forceps. They are then too pliable, but resume their rigidity on cooling. Sharp instruments need boiling for the same reasons as all other instruments, but they can be protected by wrapping them in gauze and by separating them from other instruments during sterilization.—W. I. de C. Wheeler. *Practitioner*, 3 (1937), 285; through *Pharm. J.*, 138 (1937), 346. (W. B. B.)

Formol Toxoid in Staphylococcal Infections. The author states that selected strains of staphylococci grown on a suitable medium produce a true exotoxin which hemolyzes the red cells and causes necrotic lesions in the skin, while intravenous injections of small doses are fatal to rabbits. This toxin, however, can be transformed into a harmless "anatoxin" possessing antigenic properties. It has been in use for the last two years at the Hospital Pasteur, Paris, where it has proved of great value in the treatment of boils, pyodermia, sycosis, ecthyma and whitlows. Its action on acne is usually less definite, although some cures have been recorded. It is also of some value in staphylococcal osteomyelitis and septicemia, but further evidence is required before a definite conclusion can be reached on this point. The reactions due to its use are rare and slight. The injections give rise to the appearance of an antitoxin in the serum, which rapidly cures the patient when the antitoxin content of the serum is high. Antitoxic immunity develops very rapidly, often as soon as the second day after injection of formol toxoid. It is only in a very small number of cases, such as diabetes and endocrine disorders, that antitoxic immunization is contraindicated.—P. Mercier. *Thèse Paris*, No. 43 (1937); through *Brit. Med. J.*, No. 3980 (1937), 846B. (W. H. H.)

Gas Masks—Behavior of, toward Ammonia during Disinfection by the Draeger Process. When masks that have been disinfected by formalin are treated with ammonia in amounts sufficient to neutralize the irritating vapors of the disinfectant, it is noted that part of the latter has resisted its action. It is shown that a 30 to 45% excess of ammonia is required to ensure complete neutralization of the formalin vapors. At this concentration the concentration of ammonia gas produced by evaporation of the commercial 25% solution does not attack the metal of the masks

or of the oxygen apparatus, and is equally efficient whether the formalin was used wet or dry.—HETZEL. *Draeger-Hefte*, No. 183 (1936), 3133–3135; through *Chimie & Industrie*, 37 (1937), 263. (A. P.-C.)

Oil Sprays—Germicidal Power of. At present there is no official method for testing oil sprays. However, the directions for use of these materials sometimes state that they act as disinfectants when sprayed in a heavy film over the objects to be treated. There were 5 series of tests made, including a check. A piece of sterile filter paper about 0.5 cm. square was impregnated with *Staph. aureus* or other test organisms and the wet inoculated squares were placed in the liquid or solid substance in such a way as to be completely covered and in intimate contact. After a desired interval the papers were removed, rinsed through a tube of sterile broth, retransferred to a fresh tube of sterile broth and incubated. The oil spray in question (Vapo-Spray) killed *Staph. aureus* in 5 min. A similar dry filter paper test gave opposite results. In other words the oil spray was apparently unable to effect a disinfecting power against a dried culture of *Staph. aureus*. It is suggested that the moisture carries the active principle of the spray to the germ cells. Large nutrient agar plates were smeared with a *Staph. aureus* culture and sprayed lightly but thoroughly from a distance of 2 feet with the oil, part of the plate being covered to make a control area. The disinfecting action was obvious. A similar test using a dry surface rather than the nutrient agar plate gave a similar result. A control test on a dry surface using a sterile neutral oil spray composed of 50% water-white kerosene and 50% 100/100 viscosity paraffin, showed that the disinfecting action is not inherent in any oil.—JACK C. VARLEY. *Soap*, 13 (1937), 90; through *Squibb Abstr. Bull.*, 10 (1937), 795. (E. V. S.)

Phenol Coefficient as a Measure of the Practical Value of Disinfectants. Tests show that coal tar and cresol compound types of disinfectants when diluted to 20 times their respective phenol coefficients are equally efficient in killing representative pathogenic microörganisms under practical conditions of use.—J. C. VARLEY. *Soap*, 12 (1936), 101, 103, 121; through *J. Soc. Chem. Ind.*, 55 (1936), B., 254. (E. G. V.)

Sterilizing Process. The articles or materials are placed in an enclosure, the pressure is reduced and ethylene oxide gas is introduced. A predetermined amount of moisture, sufficient to react with the ethylene oxide to produce ethylene glycol, is added, and the articles or materials are allowed to remain for the necessary length of time to ensure sterilization.—PAUL M. GROSS and LAWRENCE F. DIXON, assignors to LIGGETT AND MYERS TOBACCO CO. U. S. pat. 2,075,845, April 6, 1937. (A. P.-C.)

Tetanus—Active Immunization against. There seems to be no doubt that by the injection of toxoid or of alum-toxoid, which seems to give even better results, it is possible to confer complete and permanent immunity on the vast majority of those inoculated. The immunity thus produced depends not only upon the presence of antitoxin in their blood but to a still greater extent upon the sensitization of the reticulo-endothelial cells to tetanus toxin, and results in a much greater and more active response to the antigenic stimulus, so that infection by tetanus bacilli at any later date will be countered by a rapid and increased output of antitoxin sufficient to afford complete protection. Such protection might be afforded to the British Army by the injection of two doses of alum-toxoid at an interval of three months, with the additional protection of a third inoculation before being called upon for foreign service or in the event of war. This last inoculation might be combined with anti-typhoid immunization, since it was found by Ramon and Zoeller (1927) that the efficacy of tetanus toxoid in immunization was actually increased if a bacterial vaccine such as T. A. B. was injected at the same time.—H. H. BROWN. *Brit. Med. J.*, No. 3974 (1937), 494. (W. H. H.)

Vitamin B_1 and Diphtheria. It is obvious from the experimental and clinical results that the stage of glycolysis in which vitamin B_1 is concerned is not affected by the diphtheria toxin and no benefit arises in this condition from its administration.—B. A. PETERS and R. N. CUNNINGHAM. *Lancet*, 232 (1937), 563. (W. H. H.)

BOTANY

Botanical Discoveries—Interesting, on the Peninsula Pelješac (Sabbioncello). The flora of this region is discussed and eleven new species and varieties of plants described.—FRANZ BERGER. *Pharm. Monatsh.*, 18 (1937), 44. (H. M. B.)

Chloroplasts—Extraction of. For extracting chloroplasts from starch-containing vegetable material such as comminuted clover or spinach leaves, etc., the material is mixed with water at approximately blood temperature, amylaceous enzymes are added to convert the starch into sugar, soluble matter is washed out with water, the residue is macerated and treated with a chloroplast solvent such as ethyl acetate or acetone, the liquid is separated and the solvent is evaporated from it.—ROBERT H. VAN SANT, assignor to AMERICAN CHLOROPHYLL, INC. U. S. pat. 2,074,441, March 23, 1937. (A. P.-C.)

Cyclamen Perfumes. *Cyclamen Persicum odoratum* is the only cultivated variety possessing an odor.—H. M. DUMONT. *Soap, Perfumery, Cosmetics*, vol. 2 (October 1936), 691; through *Am. Perfumer*, 34 (1937), No. 4, 32. (G. W. F.)

Drug Culture in Bengal. *Crysanthemum cinerarefolium* has been grown very successfully; digitalis, hyoscyamus, squill and soybean are cultivated with some success.—N. B. DUTTA. *Indian Med. Record*, 56 (1936), 261; through *Chem. Abstr.*, 31 (1936), 2355. (E. V. S.)

Ergot—Effect of, on the Growth of Yeast Cells. The presence of ergot stimulates the activity of yeast cells, increasing the fermentative power toward sugar and the yield of alcohol. The time of fermentation is decreased (by about 24 hours). The optimum dose of ergot, corresponding to maximum fermentation of sugar and maximum yield of alcohol, is 1.2%; above this the yields decrease. High ergot concentrations exert an inhibiting effect on the growth of yeast cells and weaken their fermentative power; the degree to which this takes place varies with different strains of yeast.—I. GUTOROV. *Sovêt. Mukomol'e Khlébopechênie*, 10 (1935), No. 11, 18–20; through *Chimie & Industrie*, 37 (1937), 349–350. (A. P.-C.)

Ergot—Modification in the Chemical Composition of, Due to Prolonged Storage. The alkaloidal contents for 1932, 1933 and 1934 were, respectively, 0.08 to 0.23%, 0.06 to 0.10% and 0.041 to 0.055%, as determined by the Keller-Fromme method. The relation of alkaloidal content to weather conditions is not yet clear. Decomposition of the alkaloids in the grains takes place fairly slowly, *e. g.*, from Jan. 1, 1933 to May 5, 1935 it fell by 65.8%. In the ground state decomposition is more rapid. Decomposition is more rapid in a moist atmosphere even though the temperature is lower. The nitrogenous constituents of ergot undergo more decomposition than the alkaloids.—O. P. LYNOVSKI. *Voprosy Pitaniya*, 4 (1935), 107–111; through *Chimie & Industrie*, 37 (1937), 313–314. (A. P.-C.)

Loco Weeds of Mexico. In Mexico the following plants are designated as *Loco Weed*. (1) *Dioon edule Lindl.* or Chamal, (2) *Astragulus amphyoxis Gray* or Garbancillo and (3) *Oxytropus Lamberti Pursh.* or Chachaquila. Cases illustrating the toxic properties on cattle are described.—VICTOR A. REKO. *Phar. Monatsh.*, 18 (1937), 57–59. (H. M. B.)

Poisonous Plants—Cultivation of. Sixty species of poisonous plants have been cultivated in Russia and 30 developed for commercial use. Among these are *Pyrethrum cynerariæfolium, P. macrophyllium, Anabasis aphylla, A. brachiata, Veratrum album, V. nigrum, Peganum and Saponaria.*—N. V. KOVALEV and E. V. IKONEN. *Bull. Applied Botany, Genetics Plant Breeding* (U. S. S. R.) Ser. A, No. 9 (1934), 111–113; *Ber. ges. Physiol. exptl. Pharmakol.*, 83, 307–308; through *Chem. Abstr.*, 31 (1937), 4056. (F. J. S.)

Seleniferous Soil Vegetation—Selenium Distribution in and Seasonal Variation of. This report covers a continuation of a study on the occurrence of selenium in native range plants and gives experimental evidence on fluctuations with seasonal growth and development. Consideration is given to geological correlations, additional native seleniferous plants, factors involved in reporting selenium vegetation (geological formation, age of plant, green or air dried when analyzed, stage of growth, part of plant, plant thriftiness *vs.* selenium content), seleniferous farm crops, seleniferous native range plants as a source of selenium for farm crops, seleniferous farm crops as a source of selenium enrichment, influence of sulfur and soluble sulfates upon selenium absorption. Selenium as a cause of chlorotic vegetation is discussed. The natural occurrence of selenium availability of inorganic and organic selenium and the form of selenium compounds occurring in highly toxic areas is presented also.

The following conclusions were reached: (1) A quantitative selenium assignment for a seleniferous range plant requires not only a knowledge of range associations but specific information regarding the plant itself, (2) Selenium compounds in seleniferous range plants are dominantly organic, (3) Selenium in native seleniferous range plants is readily soluble in water at room temperatures. In this form it is available to and definitely absorbed by farm crops and forages.

Even when applied in relatively large amounts such crops are non-chlorotic, (4) Sulphur and soluble sulfates in the presence of organic selenium derived from native range plants and illustrated by *A. bisulcatus* have been found not to inhibit selenium absorption by type cereals and other farm crops, (5) In several type seleniferous farm crops the combined selenium was found to be partially soluble in water at room temperatures. In most cases more than fifty per cent could thus be isolated in hay, cereals, straw and vegetables, (6) Aqueous extracts from seleniferous hay were, when added to a non-seleniferous soil, capable of supplying growing wheat plants with available selenium, (7) Cattle and sheep excrete appreciable quantities of selenium in the feces when fed seleniferous hay, (8) Elemental selenium added to a non-seleniferous soil resulted in seedling *A. bisulcatus* and *A. pectinatus* plants becoming seleniferous (1150 p. p. m.) in three months' time, (9) The solubility of an inorganic selenite salt was found to be greatly altered when applied to a soil, (10) Soil samples from a soil profile in a critical seleniferous poison area where studied in detail and data submitted relative to the form and distribution of selenium *in situ*, (11) The roots of certain native range plants were found in some instances to carry more selenium than the corresponding above-ground portion, (12) The roots of seleniferous cereals and vegetables, in the cases examined, were found to be distinctly seleniferous.—O. A. BEATH, H. F. EPPSON and C. S. GILBERT. *J. Am. Pharm. Assoc.*, 26 (1937), 394. (Z. M. C.)

Soil Fungi—Control of, by Fumigation with Chloropicrin. Chloropicrin (400 pounds per acre foot) destroyed a number of plant pathogenic fungi in small-scale tests.—G. H. GODFREY. *Phytopath.*, 26 (1937), 246–256; through *J. Soc. Chem. Ind.*, 56 (1937), B., 73. (E. G. V.)

Vitamin C—Rôle of, in the Growth of Higher Plants. The formation of vitamin C in plants (peas, clover) is favored by adequate provision of nitrogen, either from nitrates or root nodule bacteria, and by optimal concentration of potassium (0.02 of 5% KCl) and of phosphates (0.025% of $Ca_3(PO_4)_2$). Addition of vitamin C to culture solutions, especially before formation of leaves, increases the dry weight, growth and the vitamin C content of the plants; the action is specific for vitamin C and does not occur with glucose. Pea seeds, germinated for seven days and then stripped of their cotyledons, produce leaves only after treatment with vitamin C.—S. VON HAUSEN. *Biochem. Z.*, 288 (1936), 378–392; through *Physiol. Abstr.*, 22 (1937), 173. (F. J. S.)

CHEMISTRY

GENERAL AND PHYSICAL

Adsorption from Solutions—Influence of p_H on. Investigations on the adsorption of dyes by SiO_2 gel, $Al(OH)_3$ and animal charcoal indicate that acid dyes are more strongly adsorbed by the acid adsorbents and basic dyes by $Al(OH)_3$. Addition of acid to basic dyes such as methylene blue or Bismarck brown decreases the adsorption, but additions of acid Wasserblau or picric acid has the reverse effect. The control of the p_H value is of great importance in dyeing processes and in staining bacteria and cells.—N. A. YAJNIK, D. N. GOYLE, I. DAS and J. R. JAIN. *Kolloidzschr.*, 77 (1936), 99–104; through *Physiol. Abstr.*, 22 (1937), 129. (F. J. S.)

Alkaloids, Hormones and Enzymes—Treating Dilute Solutions for the Isolation of. A filtering material having adsorptive properties, such as one containing asbestos and kaolin, cotton and asbestos, or asbestos and kieselguhr, is used for isolating from solution substances such as natural urine porphyrin, cinchonin sulfate, strychnine, adrenaline, metastannic acid hydrosol, etc., with suitable adjustment of the p_H of the solution to facilitate the separation.—HERMANN FINK. U. S. pat. 2,072,089, March 2, 1937. (A. P.-C.)

Crystal Ice. Crystal ice is manufactured by spraying water upon a cooled surface from which the ice film is removed by revolving cutters. The crystals are swept out by the water, separated and the latter is returned. It is more economical in use than crushed ice.—N. CLARKE-JONES. *Chem. and Ind.*, 37 (1937), 11–12; through *J. Soc. Chem. Ind.*, 56 (1937), B., 131. (E. G. V.)

Easily Pulverizable Anhydrous Borax—Process for the Manufacture of. The fused borax is delivered directly from the furnace between a pair of cooled rotating rolls.—CHEMISCHE FABRIK GRUNAU, LANDSHOFF & MEYER A. G. Belg. pat. 417, 882, Nov. 30, 1937. (A. P.-C.)

Hydratistable Colloids—Colloid-Chemical and Detergent Properties of, in Comparison with Those of Soap. II. Emulsifying Power of Colloid Solutions. Emulsions of tetrahydronaphthalene in water were prepared, using different hydrate-forming colloids as emulgators. On dilution,

the emulsions separate into a lowest layer, an upper (creamy) layer and often, also, a top layer of hydrocarbon. The amount of hydrocarbon separating, and the amounts of hydrocarbon in the creamy and lower emulsion layers, were determined. The diameter, number and surface area of the emulsion particles were either calculated or measured. Silicic acid and tragacanth were very poor emulgators, aluminum hydroxide and starch were somewhat better, gelatin, casein (2 fractions), hæmoglobin and sodium protobinate were very good, but sodium oleate was best of all. The diameters of the protective colloid films agreed with those obtained by diffusiometric method and thus support the theory of unimolecular layer adsorption. The ratio diameter of emulsified particle to thickness of protective skin on particle is in the order 1 : 2880 for soap and proteins, 1 : 149 for aluminum hydroxide and 1 : 112 for starch.—K. LINDNER. *Fette u. Seifen*, 43 (1936), 253–256; through *J. Soc. Chem. Ind.*, 56 (1937), B., 256. (E. G. V.)

Light Precipitated Chalk—Method of Producing. A fine mist of milk of lime is produced in an atmosphere rich in carbon dioxide and maintained at a temperature of 50° to 60° C. The rate of introduction of the carbon dioxide is varied so as to maintain a substantially uniform rate of carbonation at 5% per hour.—NOEL STATHAM and THOS. G. LEEK, assignors to WEST VIRGINIA PULP & PAPER CO. U. S. pat. 2,081,112, May 18, 1937. (A. P.-C.)

Magnesium Trisilicate—Notes on. Methods for the analysis and comparative evaluation of the so-called magnesium trisilicate are given and discussed. The results of tests on commercial samples are tabulated. The variation in composition depends upon the methods used in preparing the compound, as is indicated by the analyses of typical preparations.—NORMAN GLASS. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 445–454. (S. W. G.)

Methyl Alcohol and Acetone—Viscosity of, above Their Boiling Points. A description is given of a viscosimeter in which the liquid itself is used for the electrical conductance. The resistance between the contacts was measured with a Wheatstone bridge and an alternating current. The methyl alcohol contained 0.05% sodium bromine and the acetone 0.07% lithium bromide to make the liquids conducting. As the accuracy of the measurements was not greater than 1%, the solute had no perceptible influence on the viscosity. The results are tabulated. Up to 140° acetone is in good agreement with the formula of Batschinsky: $n = c/v - w$ (n = viscosity, v = specific volume, c and w are constants). Above 140° the viscosity of acetone and methyl alcohol becomes much greater than that given by this formula. For liquids and highly compressed gases the viscosity is chiefly defined by the mutual attraction of the molecules. The attraction decreases as the volume increases, with increase of temperature. At higher temperatures the number of collisions of the molecules for rarefied gases has the greatest influence on the viscosity. For gases the viscosity is directly proportional to the average velocity of the molecules, hence the square root of the absolute temperature. By this factor the viscosity of acetone and methyl alcohol becomes greater at higher temperatures than according to the formula of Batschinsky. At low temperatures the viscosity of methyl alcohol is extremely high as a result of the association. At high temperatures the association is low. At low temperatures the viscosity of methyl alcohol will decrease much faster with increase of temperature than the viscosity of acetone.—P. C. BLOKKER. *Rec. Trav. Chim.*, 55 (1936), 170. (A. C. DeD.)

Methyl Alcohol—Elimination of, from Potable Spirits. Data on the composition of fractions obtained in the distillation of mixtures of water with ethyl alcohol containing 1 or 2% of methyl alcohol show that when the vapor phase contains about 40% of ethyl alcohol, the methyl alcohol : ethyl alcohol ratio is the same in the vapor as in the liquid phase. In discontinous distillations for potable spirits, therefore, practically no elimination of methyl alcohol is possible.—A. ZAHARIA, E. ANGELESCU and D. MOTOC. *Bull Assoc. Chim. Sucr.*, 53 (1936), 243–248; through *J. Soc. Chem. Ind.*, 56 (1937), B., 77. (E. G. V.)

Mucilage of Tragacanth—Anomalous Viscosity of. The author's findings are summarized as follows: 1. Mucilage of tragacanth does not show thixotropy. Anomalies in viscosity determinations are ascribed to a new phenomenon to which the name of "stream orientation" is given. This is apparently due to orientation of long colloidal particles in the line of flow, and is manifested by an abnormally high reading for the time of fall of the first of a series of balls through the mucilage. 2. The effect of accurately defined conditions of heating has been investigated. These conditions cannot be attained by immersing a flask in boiling water. 3. Results showing the effect of dilution and temperature on the apparent viscosity are recorded. The curves relating dilution with the logarithms of the time of fall (falling sphere viscometer) for different grades of gum form approxi-

mately a series of parallel straight lines.—G. MIDDLETON. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 493–505 (S. W. G.)

Palmitic Acid Hydrosols—Electrochemical Properties of. Palmitic acid sols are prepared by dissolving the pure acid in absolute alcohol to obtain a saturated solution and the clear solution added drop by drop to boiling conductivity water; boil the solution for 2 hours to expel the alcohol and store while hot in a special Jena glass bottle in an atmosphere of hydrogen. Such a preparation remains unchanged for 10 days. p_H values of several sols so prepared tends to diminish with time and finally reaches a value of about 5.0. The irregular variations of the initial p_H is similar to those observed with silicic acid sols. Maximum difference between mean p_H values obtained with hydrogen and quinhydrone electrodes is 0.16 unit equivalent to a difference of 10 millivolts. Upon titration of the sols with bases it is found that the electrometric and conductometric titration curves and total acidities calculated therefrom vary with the base employed in the order: $Ba(OH)_2$>, $Ca(OH)_2$>, NaOH>, NH_4OH. The total acidity obtained from $Ba(OH)_2$ titration curves agrees with the analytical concentration of the acid in the sol. A sol titrated with KCl produces but slight change in p_H; with barium chloride larger changes are produced. The forms of titration curves differ from that of an acid in true solution whether the resulting salt is assumed to be soluble or insoluble. Calculated dissociation constants are of the order of 10^{-7} and are much lower than probable values for the acid in dissolved condition. The slopes of the titration curves with barium hydroxide at half neutralization are smaller then the theoretically calculated values for weak acids in true solution and these curves and the interactions with barium chloride are in agreement with the expected behavior if the sol is assumed to be a two-phase system. The mechanism of the interactions of colloidal particles of the acid with different electrolytes are discussed in detail with reference to the electrical double layer surrounding the particle (11 figures and 7 tables).—SUDHAMOY MUKHERJEE. *J. Indian Chem. Soc.*, 14 (1937), 17–36. (H. M. B.)

Solutions in Formamide—Cryoscopic Studies of. I. The results of this investigation are briefly summarized as follows: The surface tension of formamide has been measured by the capillary method between 4.2° and 78.4° and the association constant evaluated at intervening temperatures. It has been shown that the association factor at ordinary temperatures may be taken as $x = 6$. Possible structural formulas of the associated molecules of both formamide and water, conforming to their probable factors of association, have been discussed. A method by which greater accuracy in the determination of freezing points with the Beckmann apparatus may be secured has been described. The cryoscopic constant of formamide has been determined and found to be $k_f = 3.5$. The heat of fusion of formamide has been calculated from the preceding value of the cryoscopic constant and found to be $L_f = 43.1$ cal. The index of refraction of formamide has also been measured and found to be $N_D = 1.44682$ at 25°. The molecular weights of formamide and water, each dissolved in the other, have been determined and found to conform to the molecular weights of the simple non-associated molecules. The foregoing results have been shown to be consistent with similar recorded data for five pairs of associated liquids, *viz.*, water dissolved in acetic acid, water dissolved in formic acid, acetic acid dissolved in water, formic acid dissolved in water and formic acid dissolved in acetic acid, and thus to confirm the view that when two associated solvents are brought together each diminishes the association of the molecules of the other.—FREDERICK H. GETMAN. *Rec. Trav. Chim.*, 55 (1936), 231. (A. C. DeD.)

Tellurium Electrode. The suitability of tellurium as an electrode in potentiometric determinations of acidity and alkalinity has been established. An apparatus for the purpose consists of the usual saturated calomel electrode connected with the solution under examination by a "bridge" filled with saturated potassium chloride solution, and this is connected on the other side with the tellurium electrode, immersed in the solution, the strength of which is desired. The tellurium used is in the form of rods 7.9 mm. in diameter joined to the glass with wax and to the copper conducting wires with Wood's metal. Starting on the basis that the reaction in acid media is most conveniently expressed: $H_2TeO_3 + 4H \rightleftharpoons Te \ldots + 3H_2O$, a logarithmic equation of hydrogen-ion concentration is obtained which indicates that a tenfold change of concentration (one p_H unit) should change the potential of the tellurium electrode by 58 millivolts. In alkaline media, on the other hand: $TeO_3'' + 6H \rightleftharpoons Te \ldots + 3H_2O$, so that a change of one p_H unit should produce a change in potential of 87 millivolts in alkaline solutions. The tellurium electrode can also be used in non-aqueous liquids.—O. TOMIČEK and F. POUPÉ. *Collection Czechoslov. Chem. Commun.*, 8 (1936), 520–531; through *Pharm. J.*, 138 (1937), 346. (W. B. B.)

Tragacanth—Standardization of. The following limit test is recommended for the determination of the strength of powdered tragacanth: Add 6 Gm. of the gum to 444 Gm. of water in a bottle of about 1 liter capacity and allow to stand for 2 hours or until completely softened. With the aid of suction pass the mixture repeatedly, until uniform, through a strainer of metal gauze, of approximately $^3/_8$ in. diameter and mesh equivalent to the standard B. P. sieve No. 25. Allow to stand over night, adjust the temperature to 20° C. and remove air bubbles by evacuating the air from the bottle, then shaking violently and allowing to stand for 5 minutes. Admit air to the bottle, and fill the viscometer tube with the mucilage by pouring it down the side of the tube in such a way that no bubbles of air are entrapped. Insert the centralizing tube axially, and adjust the apparatus to be exactly vertical. Drop down the centralizing tube a steel ball of $^1/_8$ in. diameter and 0.129 to 0.130 Gm. in weight. When, or after, the ball has reached the lowest mark, allow another ball to fall in a similar manner and time its fall between the highest and lowest marks on the tube, repeating the operation until two successive balls do not show more than 2% difference in their times of fall. Calculate the mean time of fall per 5 cm. for these two balls. This must not be less than 40 seconds. For whole gum, the concentration employed for the limit test should be 1 + 89, the time of 40 seconds being unchanged. It is proposed that the relative strength of a sample of tragacanth should be defined as that dilution which will give a test of 40 seconds under the conditions described above.—G. MIDDLETON. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 506–509. (S. W. G.)

INORGANIC

Bromides—Production of, by Action of Bromine on Bases in Presence of Formates. Bromine is passed into aqueous sodium carbonate and the sodium bromate (I) formed is separated by fractional crystallization. The (I) in the mother-liquor is converted into sodium bromide by iron filings. Ferric hydroxide is filtered off and the solution evaporated to recover sodium bromide. The (I) is treated with sodium bromide and sulfuric acid and the liberated bromine returned to the process. Alternatively, bromine is allowed to react at 90° with a solution containing equivalent amounts of sodium hydroxide and sodium formate. With a slight excess of the formate present no (I) is formed.—V. P. ILINSKI, A. I. TSCHERTOK and S. L. RAHMILEVITSCH. *Kaliĭ* (1934), No. 4, 29–36; through *J. Soc. Chem. Ind.*, 56 (1937), B., 33. (E. G. V.)

Nitrates—Reduction of, by the Sun. The nitrates of sodium, potassium, ammonium, calcium magnesium, manganese, aluminum and iron in aqueous solution were reduced to nitrites by exposure to sunlight. Reduction was greater in the more dilute solutions, was increased by rise in temperature and was facilitated by the presence of reduced nickel, sucrose, fructose, glucose, maltose and starch. Reduction of potassium nitrate was not affected by the presence of soil. Photo-reduction in soils, irrespective of manuring or compactness, was very small except, possibly, under water-logged conditions.—FAZIL-UD-DIN. *Indian J. Agric. Sci.*, 6 (1936), 844–854; through *J. Soc. Chem. Ind.*, 56 (1937), B., 269. (E. G. V.)

Perborate and Borate—Practical and Sensitive Reaction for Differentiating between. The reaction indicated in the Spanish Pharmacopœia is based on the formation of perchromic acid and presents several drawbacks. A better reaction is that of perborates on copper salts. There is first a formation of copper peroxide, which is easily decomposed in presence of water to give a hydrated copper oxide; the latter reacts with perborate and borate to give colored copper salts; the color varies from greenish yellow to olive green and depends on operating conditions. To 3 cc. of distilled water and 0.1 Gm. of the perborate sample add 2 cc. of copper sulfate solution and shake gently; a gelatinous precipitate forms and gradually rises to the surface. If the perborate sample contains less than 50% of borate the precipitate is olive green; if borate predominates the precipitate is blue and rises more slowly to the surface; with 80% borate the precipitate no longer rises.—F. BELLOT RODRIGUEZ. *Farm. Mod.*, 47 (1937), 797–798; through *Chimie & Industrie*, 37 (1937), 117. (A. P.-C.)

Sodium Hypobromite Reagent. In order to avoid the manipulation of bromine, sodium hyprobromite solution is prepared by mixing potassium bromide, potassium bromate and sulfuric acid in such proportions as to avoid presence of an excess. Prepare solution (A) containing 36 Gm. of potassium bromide per 100 cc. and solution (B) containing 20 cc. of sulfuric acid and 10 Gm. of pulverized potassium bromate per 100 cc. Add 4 cc. of solution (A) and then gradu-

ally add 4 cc. of solution (B) with shaking and cooling. Add 4 cc. of caustic soda solution, shake and decant from the bulk of the potassium sulfate.—G. VERGEZ. *Bull. Trav. Soc. Pharm. Bordeaux*, 73 (1935), 200–201; through *Chimie & Industrie*, 37 (1937), 659. (A. P.-C.)

Spirits—Influence of Calcium Salts on. Inorganic salts causing turbidity in spirits are derived not only from hard water; calcium and magnesium salts may be derived from the sugar.—E. WALTER. *Destillateur u. Likorfabr.*, 48 (1935), 308–309; through *J. Soc. Chem. Ind.*, 56 (1937), B., 177. (E. G. V.)

ORGANIC

Alkaloids

Alkaloids—Attempts to Detect, in Hops. All attempts to prove the presence of an alkaloid in hops (cones and/or seeds) failed. The methods employed were based on alkaloid solubility in dilute acids, extraction from alkaline solutions with organic solvents, precipitation and turbidity tests and the stability of alkaloids during the methods of extraction employed. The physiological effects of hops and hop extracts cannot therefore be referred to the presence of alkaloids.—H. FINK and F. JUST. *Woch. Brau.*, 53 (1936), 417–421; through *J. Soc. Chem. Ind.*, 56 (1937), B., 175. (E. G. V.)

Alkaloids—Inhibiting Action of, on the Fluorescent Power of Uranine Solutions in Relation to the Antioxidant Properties of These Substances. Inhibiting action on the fluorescence of aqueous uranine solutions was shown by the nitrates of pilocarpine and the aconitine; the sulfates of quinine, atropine and of strychnine; the hydrochlorides of morphine, ethylmorphine, cocaine and acetylmorphine; homatropine hydrobromide; caffeine and therobromine. Belladonna, colchinine, digitalin, nicotine, veratrine and codeine showed similar inhibiting action on alcoholic solutions of uranine. This action is paralleled by the antioxidant action of these alkaloids. Of the genalkaloids, genoscopolamine hydrobromide, genostrychnine benzoate, genhyoscyamine hydrochloride, genatropine hydrochloride, genosomorphine and geneserine salicylate, the latter showed inhibiting power, which may be attributed to the salicylate radical. All the corresponding alkaloids showed inhibiting action. The genalkaloids do not have the antioxidant action of the alkaloids, nor their toxicity. It is suggested that, since toxicity, antioxidant action and inhibiting action on fluorescence all disappear with the oxidation of the amine groups of the alkaloid to form the genalkaloid, these properties are related.—A. BOUTARIC and J. BOUCHARD. *Ann. Soc. Sci. Bruxelles*, 56 (1936), 35–40; through *Chimie & Industrie*, 37 (1937), 940. (A. P.-C.)

Anhydromethylene Citrates of Various Alkaloids. The author prepared salts of alkaloids by dissolving a known quantity of the acid in hot water (60° to 70° C.) or in alcohol and adding the alkaloid, little by little, until no more dissolved. The solution was filtered, cooled and allowed to stand; the separated crystals collected and recrystallized from alcohol. The composition of the salts was determined by dissolving in acidulated water, adding sodium hydroxide, shaking out the alkaloid with ether or chloroform, drying and weighing and also by combustion. Quinine gave salts with equal molecules of alkaloid and acid, and with two molecules of quinine to one of acid; quinidine with two molecules of alkaloid to one of acid; cinchonine with one molecule of alkaloid to one of acid; strychnine with two molecules of alkaloid to one of acid with three molecules of water of crystallization; brucine with two molecules of alkaloid to one of acid with eight molecules of water of crystallization.—S. ANSELMI. *Ann. Chim. Appl. Roma*, 26 (1936), 221; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 693. (S. W. G.)

Brucine—Iodine Compounds of. By mixing solutions of 1 Gm.-mol. of brucine and 2 Gm.-mol. of iodine in alcohol, heating under a reflux condenser and setting aside to cool, a mixture of crystals is obtained. By fractional crystallization from strong alcohol the author obtained a compound which, from the proportion of iodine it contained, he identified as $C_{23}H_{26}N_2O_4.HI.I_2$ which melted at 239° to 241° C., the compound of the same composition obtained by Buraczennski and Kornienski melted at 22.5° C. He also separated another compound $C_{23}H_{26}N_2O_4.HI.I_3$ in dark brown silky needles; Pellettier described a substance of this composition as being in long violet needles with a metallic lustre. By mixing cold solutions of brucine and iodine and using only gentle heat in crystallizing, the author obtained $C_{23}H_{26}N_2O_4.HI.I$, $3H_2O$ which has not been previously described. It decomposed at 140° to 145° C. without melting.—G. SOLLAZZO. *Boll. chim.-farm.*, 75 (1936), 231; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 693. (S. W. G.)

Cinchona Alkaloids—Characteristic Reaction for. The Grahe test (producing crimson-

colored oily droplets on heating in a small tube) is specific for cinchona bark and its alkaloids if certain sensitizing substances are added. The author recommends the addition of a drop of lactic acid; or lactose, citric or salicylic acids, potassium bisulfate, etc., may be used.—R. MONNET. *J. pharm. chim.*, 23 (1936), 454–459; through *Chimie & Industrie*, 37 (1937), 733–734. (A. P.-C.)

Curare—Alkaloids of. The occurrence of curare, its physical properties, chemical reactions and bibliography are given together with brief accounts of the alkaloids curarine, protocurarine, tubocurarine, curine, protocurine and protocuridine. The physiological effects are discussed and a correction is made.—K. BORTHWICK TAYLOR. *Ann. chim. anal. chim. appl.*, 19 (1937), 5–11, 33–34; through *Chem. Abstr.*, 31 (1937), 2747. (E. V. S.)

Ephedrine Camphorsulfonate. The alkaloid ephedrine in the form of its salts is being extensively used in the treatment of asthma. But the drug has a depressant action on the cardiac muscle and often gives rise to toxic symptoms such as nervous excitement, palpitation and insomnia. Consequently a salt of this alkaloid with camphorsulfonic acid, the sodium salt of which is now being used as a vasomotor stimulant, has been prepared in the expectation of ensuring a prompt response in emergencies of circulation and respiration. The compound is prepared by adding a molecular equivalent of camphorsulfonic acid (Reychler, *Bull. soc. chim.*, 111 (1898), 120) to an anhydrous $CHCl_3$ solution of ephedrine, then evaporating the solvent and adding a few cc. of petroleum ether and agitating the syrupy residue. It melts at 173–174° (crystallized from ethyl acetate) and analyzes for $C_{11}H_{15}ON.C_{10}H_{16}O_4S$. The salt is readily soluble in water, ethyl alcohol, chloroform, insoluble in ether, ligroin. A 6.4% solution of the salt has a p_H of about 5.4. —U. BASU. *Science and Culture*, 2 (1937), 466; through *Chem. Abstr.*, 31 (1937), 4051. (F. J. S.)

Equisetaceæ—New Alkaloid from the Family of. The poisonous principle designated as Equisetin in *Equisetum palustre* was purified by distillation at 205–210° (0.1 mm.) or 212–215° (0.2 mm.) to give a substance which reacts with the usual alkaloidal reagents, soluble in water, easily in chloroform and ethyl acetate, less soluble in ether and only slightly in benzene and petroleum ether. The hydrochloride crystallizes in the form of colorless long needles or cubes, melting at 181°; aqueous solution optically inactive; formula $C_{12}H_{24}N_2O_2$ and is designated as *Palustrin*.—E. GLET and I. GUTSCHMIDT. *Apoth. Ztg.*, 52 (1937), 265–266. (H. M. B.)

Ergot Alkaloid. A physiologically active ergot alkaloid, soluble in and crystallizable from benzene, chloroform, dioxan and dichlorethylene, having a specific rotation at 30° C. (in chloroform solution) of +125° and a melting point of 180° to 184° C., is obtained by a process which involves treatment of degreased ergot with magnesium hydroxide and a solvent.—EMIL WOLF, assignor to PARKE, DAVIS & Co. U. S. pat. 2,073,954, March 16, 1937. (A. P.-C.)

Ergot Alkaloids. VIII. The Synthesis of 4-Carboline-carbonic Acids. The dissimilarity of parallel oxidation experiments with 4-carboline-carboxylic acids and with lysergic acid has led to the discarding of the carboline formula for lysergic acid. **IX. The Structure of Lysergic Acid.** A tetracyclic ring-system is now advanced as the possible structure of lysergic acid. No obscure ring changes or rearrangements take place on alkaline hydrolysis.—W. A. JACOBS and L. C. CRAIG. *J. Biol. Chem.*, 113 (1936), 759–765, 767–778; through *Physiol. Abstr.*, 22 (1937), 9. (E. V. S.)

Ergot—New Results in the Use of. An address reviewing the progress in the isolation of the alkaloids from ergot and their use through the year of 1935.—W. KÜSSNER. *Angewandte Chemie*, 50 (1937), 34. (M. F. W. D.)

Lupinus Albus—Alkaloidal Content of Infusions and Decoctions of. The amount of alkaloid extractable by simple infusion or decoction of the seeds of *Lupinus albus* is greater from the roasted seeds than from the raw because of the greater absorptive power of the latter. The alkaloidal content of 100 Gm. of raw or slightly roasted seeds is about 1 Gm. while after intense roasting it is only about 0.90 Gm. The prolonged intense heat destroys a small portion of the alkaloid.—D. TORRISI. *Arch. Ital. Sci. Farmacol.*, 5 (1936), 23–25; through *Chimie & Industrie*, 37 (1937), 523. (A. P.-C.)

Quinine Hydrates. Quinine hydrates prepared in several ways were examined to determine the nature of the bond to the water. All the hydrates lose water readily. The trihydrate certainly does not exist above 15° C. The water is lost by stages, but it was not possible to show any defi-

nite succession of hydrates. All hydrates show a marked change at 50° to 60° C. with elimination of water, such dehydration being irreversible.—G. MALQUORI and M. COVELLO. *Ann. chim. applicata*, 25 (1935), 647–654; through *Chimie & Industrie*, 37 (1937), 733. (A. P.-C.)

Rare Earths—Color Reactions of, with Alkaloids. III. Tri- and quadrivalent cerium react with morphine hydrochloride (A) in ammoniacal solution forming a light or dark chocolate-colored precipitate. No color effects are obtained with trivalent lanthanum and quadrivalent thorium in ammoniacal solution or with cerium lanthanum and thorium in acid and neutral solutions. The color reaction may be used to detect quadrivalent cerium as well as morphine and is performed in any of the following three ways: (1) *Precipitation Method.*—(*a*) To a solution of tri- or quadrivalent cerium in a test-tube add a few grains of A and NH_4OH solution. (*b*) Mix a 1.0–0.1% solution of A with a 0.01–0.00001 *M* solution of cerium sulfate or cerium nitrate and add a 25% solution of NH_4OH drop by drop. A chocolate-colored precipitate results in both cases. (2) *Brown Ring Method.*—To a mixture of solutions of morphine and cerium salts in a 200-mm. high cylinder of 8-mm. inside diameter add carefully a layer of NH_4OH so as to ensure the formation of a sharply defined boundary between the layers. When the NH_4OH begins to diffuse into the mixture the resulting precipitate forms a clearly marked brown ring at the boundary which is visible at as low a concentration as 0.02–0.002 mg. cerium per cc. Sometimes several diffused layers (Liesegang rings in the aqueous solution) result because of additional diffusion. In one experiment as many as nine irregularly shaped layers were formed in two hours. (3) *Drop Reaction Method.*—Place one drop of 0.00001 *M* cerium sulfate on filter paper impregnated with a 0.1–1% morphine salt solution or containing a grain of A and either expose to NH_3 vapors or add a drop of a 25% solution of NH_4OH. The brown stain formed on the paper is very distinct at a concentration of 0.04 mg. Ce/cc. and is still detectable at 0.01–0.001 mg./cc. If KOH is used in place of NH_3 the stain is much weaker with trivalent than with quadrivalent cerium and appears much more slowly. The colored precipitate is quite stable for many days in the test-tube as well as on the paper. This color reaction is recommended as a test for cerium in analyses of ores and rocks. No color tests were obtained between cocaine or cinchonine and cerium, lanthanum and thorium in acid, neutral and alkaline media and between brucine (B) and lanthanum, thorium and trivalent cerium. Quadrivalent cerium reacts with B in acetic acid solution giving a stable pink color in a weakly acid solution and an orange-red color at a higher concentration. The pink color is already visible at a concentration of 0.011 mg. Ce/cc. In an alkaline medium B yields a dark brown precipitate with tetravalent thorium and colorless jelly-like precipitate with trivalent cerium, thorium and lanthanum. The drop reaction method is not applicable as the pink color can hardly be detected in thin layers. The filter paper method is more sensitive than the drop method for the B test for cerium. The reaction of morphine with cerium is explained as being due to the fact that the morphine molecule contains hydroxy groups analogous in properties to those present in polyphenols while the reaction of quadrivalent cerium with B is said to be due to the oxidizing properties of the metal. The B reaction is recommended for the colorimetric determination of cerium.—F. M. SHEMYAKIN. *Compt. rend. acad. sci. U. R. S. S.*, 14 (1937), 115–117 (in English); cf. *C. A.*, 29, 7216; through *Chem. Abstr.*, 31 (1937), 3813. (F. J. S.)

Scoparine—Scoparoside of Sarothamnus Scoparius. Difference in opinion as to the structure of this substance has caused the reinvestigation of its chemical nature. The formula was determined as $C_{22}H_{22}O_{11}.2H_2O$. Scoparine melts at 230°. Neither the melting point nor the presence of a definite percentage of water has previously been reported. Scoparine should be considered as a difficultly hydrolyzable heteroside formed by the union of a methylpentose and a flavonic residue. Scoparine should thus be designated as scoparoside. It is slightly hypotensive. The pure product is devoid of diuretic properties generally attributed to it.—MARCEL MASCRE and RENE PARIS. *Compt. rend.*, 204 (1937), 1270. (G. W. H.)

Essential Oils and Related Products

Black Gooseberry Buds—Essential Oil of. Steam distillation according to Wahlbaum and Rosenthal of the benzene extract of the buds of *Ribes nigrum* L. gave 6% of oil having the following characteristics: specific gravity at 15° C. 0.8994, optical rotation at 20° C. 3°20′, refractive index at 20° C. 1.4930, acid number 1.96, ester number 11.20, ester number after cold formylation 72.95, clears in more than 8 volumes of 90% alcohol, soluble without tubidity in 20 volumes of

90% alcohol, miscible in all proportions with 95% alcohol.—Établissements Antoine Chiris. *Parfums de France*, 15 (1937), 33. (A. P.-C.)

Commercial Oils of Sabine—Oils of Juniperus sabina L. and of Juniperus phoenicea L. The wide variations in the constants of pure oils of sabine render their identification difficult, and in certain cases it can be effected with certainty only by fractional distillation. Both oils had the same toxicity toward guinea pigs.—P. Manceau, L. Revol and Miss A. M. Vernet. *Bull. sci. pharmacol.*, 43 (1936), 14–24; through *Chimie & Industrie*, 37 (1937), 118. (A. P.-C.)

Essential Oils. I. Oil of Skimmia Laureola. This oil from Kashmir and Jammu contains terpene hydrocarbons (13%; *d*-β-phellandrene and some *d*-α-pinene), *l*-linalool (18%) and its acetate (63%), azulene, bergapten, a little acetic acid and traces of other alcohols, aldehydes or ketones.—H. Wienhaus and T. C. Rajdhan. *J. prakt. Chem.* (ii), 147 (1936), 113–123; through *J. Soc. Chem. Ind.*, 56 (1937), B., 87. (E. G. V.)

Eucalyptus Rostrata—Oil of. Fractional distillation of *Eucalyptus rostrata* flowers showed the presence of pinene, *l*-limonene, cuminaldehyde, phellandral, isoamyl alcohol, isovaleric alcohol, cryptal, piperitone, linalool and geraniol, caproic aldehyde, hexyl alcohol and formic, acetic and butyric acids. The leaf oil has a composition similar to that of the flower oil, but the former has a higher free alcohol and acid content, and lower ester and hydrocarbon contents. The hydrocarbon content increases in the oil obtained from leaves of the second harvest (after blossoming).—A. Gandini. *Ann. chim. applicata.*, 26 (1936), 344–351; through *Chimie & Industrie*, 37 (1937), 531. (A. P.-C.)

Perfume Oils—Extraction of, with Volatile Solvents. The third of a series of discussions dealing with apparatus and procedures especially the apparatus of Garnier and Bondon.—Y. R. Naves. *Riechstoff-Ind. u. Kosmetik*, 11 (1936), 176. (H. M. B.)

Perfume Oils of French Upper Oubangui. Extraction with petroleum ether of the powdered, sun-dried, pseudo-bulbs of *Cyperus articulatus* L. gave 2.27% of concrete; subsequent extraction of the residual powder with benzine yielded a further 0.97% of concrete. The combined concrete (3.24%) is difficultly soluble in alcohol and petroleum ether, somewhat more in benzine; it can nevertheless yield fairly odorous alcoholic tinctures possessing a considerable fixative power. A concrete obtained in 9.43% yield by extraction with benzene had a very slightly aromatic resinous and terebenthene odor; on distillation it yielded 18 to 19% of an oil having a specific gravity at 15° C. of 0.9702, an optical rotation of −13°32′, a refractive index at 20° C. of 1.5064, an acid number of 3.92 and an ester content of 2.94%; fractionation and deterpenation did not give any product of any interest from an olfactive standpoint. Direct steam distillation of the rhizomes did not give any satisfactory results. Oil of *Ischæmum brachyatherum* Fenzl has an odor similar to that of vetyver, and the following characteristics: specific gravity at 15° C. 1.0158, optical rotation at 26° C. 101°20′, refractive index at 20° C. 1.5216, acid number 5.04, ester number 4.55, ester number after acetylation 112.7, alcohols (as $C_{15}H_{26}O$) 48.8%, soluble in 2.8 volume of 70% alcohol and in 1.5 volume or more of 75% alcohol. The yield and composition of oil obtained from lemongrass (*Cymbopogon citratus* Stapf) varies according to the distillation method (with or without cohobation) and the age of the grass. The optimum age is 18 to 24 months, giving an oil with a specific gravity of 0.8875 to 0.8960 (average 0.8889) and a citral content of 71 to 75.5% (average 73.2%). Under exceptionally favorable conditions the aldehyde content may rise to 78 to 90%, while plants that are too young or too old give an oil with a citral content which may fall as low as 44%. Vetyver (*Vetyveria zizanoides*) yields 0.2 to 0.25% of oil that is comparable to Bourbon vetyver oil. A sample of oil of *Acacia verugera* Schwft. had a specific gravity at 15° C. of 0.9724, an optical rotation of 19°35′, a refractive index at 20° C. of 1.5148, an acid number of 2.94, an ester number of 17.85 and was soluble in 1.5 volume of 85% alcohol with turbidity on dilution, and in 0.5 volume of 90% alcohol; its odor is unlike that of any other known essential oil. Another sample was entirely different, and seemed almost identical with oil of calayo (*Hexalobus crispiflorus*), possessing a high methyl salicylate content and an odor of wintergreen. It had a specific gravity at 15° C. of 1.1672, no optical rotation, an ester content (as methyl salicylate) of 92.34%, and was soluble in 2 vol. of 80% alcohol. The difference between the two oils may be attributable to error in the identification of the plants. No appreciable amount of essential oil was obtained either by extraction or by distillation of the pulp of fruit of *Tetrapleura tetraptera* Bth. The liquid obtained from the heart of this tree is used as a varnish; it dries very slowly, and shows

poor resistance to moisture; on evaporation in vacuum (with addition of 50% alcohol to prevent frothing) it gives 58.66% of hard, vitreous, red resinous material, slightly soluble in alcohol, the alcohol-insoluble portion probably consisting of resinic acids possessing tanning properties. Oil of *Ageratum conyzoides* L. had a specific gravity at 15° C. of 1.0442, an optical rotation at 24° C. of −2°, an acidity of 0.84, a true saponification number of 4.9, a phenol content (eugenol) of 5%, and was soluble without turbidity in 0.4 volume of 90% alcohol; it contains a trace of free eugenol. It consists almost entirely of a phenol ester (colorless liquid with a powerful and agreeable odor); it is similar to ethyleugenol, and on oxidation gives an oil having an intense vanillin odor (ethylvanillin).—L. JOLY. *Parfumerie Moderne*, 31 (1937), 25–33. (A. P.-C.)

Phyllocladus alpinus—Essential Oil of. Leaves of the plant collected in September 1934, upon steam distillation, yields a volatile oil (0.17%) which solidifies completely upon cooling to a crystalline solid, melting at 65–75°. Upon recrystallization from methyl alcohol or ethyl alcohol a product was obtained melting at 96.5°, $[\alpha]_D^{25}$ + 15.8° in $CHCl_3$ solution, C 88.1%, H 11.7% corresponding to $C_{20}H_{32}$. Color reactions for the diterpene, *phyllocladene* (A) are given. *Isophyllocladene* is prepared by heating (A) in 10% sulfuric acid in absolute alcohol at 100°, melting at 108–109°. (A) dissolved in glacial acetic acid was hydrogenated in the presence of palladised norite; after removal of the catalyst, water was added and a crystalline product, α-dihydrophyllocladene was obtained which upon recrystallization twice from alcohol yielded thin plates, melting at 73–74°. From the mother liquors β-dihydrophyllocladene, melting at 55° was obtained.—LINDSAY H. BRIGGS. *J. Soc. Chem. Ind.*, 56 (1937), 137–138T. (H. M. B.)

Vetiver oil from Jamaica. A sample of vetiver oil prepared by a planter in Jamaica had constants agreeing with those of commercial Réunion (Bourbon) vetiver oil.—ANON. *Bull. Imp. Inst.*, 35 (1937), 24. (A. P.-C.)

Volatile Oils—Little Known. The wood oils of *Cedrus atlantica* (Lebanon-Atlas) and *C. deodora Loud.* and their applications in the cosmetic industry are discussed.—ANON. *Riechstoff-Ind. Kosmetik*, 12 (1937), 53. (H. M. B.)

Glycosides, Ferments and Carbohydrates

Agar—Structure of. By the simultaneous deacetylation and methylation of acetylated agar, an apparent homogeneous methylated agar was obtained $[\alpha]_D^{150} = -78°$ (in chloroform), $OCH_3 = 31\%$, the methoxy content of which remained constant despite repeated methylations. This derivative on hydrolysis yielded a mixture of methylated sugars together with an acid. The sugars on conversion to glucosides yielded trimethyl α-methylgalactoside, which on methylation and suitable treatment produced tetramethyl *d*-galactopyranose anilide, indicating the absence of substitution in position 5 of the trimethyl galactose molecule. This sugar gave dimethyl galactose phenylosazone indicting substitution in position 2, and bromine oxidation produced a trimethyl galactone which resembled an α-galactonolactone in behavior, and from which the galactopyranoside could be regenerated. In view of these facts and the strong negative rotations of acetylated and methylated agar, it is probable that the "main carbohydrate portion" of agar consists of β-galactopyranose units linked at positions 1 and 3, these units being present in the form of a 6-membered ring or as a zigzag chain terminated by residues as yet undetermined.—E. G. V. PERCIVAL, J. MUNRO and J. C. SOMERVILLE. *Nature*, 139 (1937), 512; through *Squibb Abstr. Bull.*, 10 (1937), 769. (E. V. S.)

Alkyl Glucosides—Enzymic Synthesis of. The β-glucosidation of the 8 simplest saturated alcohols by emulsin was investigated polarimetrically and the equilibrium constants and heats of reaction for each process were determined.—S. VEIBEL. *Enzymologia*, 1 (1936), 124; through *Physiol. Abstr.*, 22 (1937), 24. (E. V. S.)

Ascorbic Acid—Enzyme Actions of. Ascorbic acid appears to be identical with Schardingers' milk enzyme which decolorizes methylene blue in the presence of certain aldehydes and xanthine derivatives. A mechanism of the reaction is suggested. The diastatic action of ascorbic acid was shown by making a series of dilutions; 1–2, 1–4, 1–8, 1–16, 1–32, 1–64, 1–128, 1–256 and 1–512, from a concentrated ascorbic acid solution which was subjected to auto-oxidation by passing air through it for several hours, and mixing each dilution with an equal volume of 1% starch solution. While the control used immediately reacted with a pure blue coloring with just a drop of 0.0005*N* iodine solution, the highest dilution after standing several hours showed only a slight yellowish color which upon gradual addition of iodine from microburet changed into the violet

amylodextrin color and did not change over into the blue starch iodide color until a considerable amount of iodine was added. The detection of sugar by means of Fehling's solution presented some difficulty because of the characteristic reducing action of ascorbic acid.—G. WOKER and J. ANTENER. *Helv. Chim. Acta*, 20 (1937), 144. (G. W. H.)

Cardioactive Digitalis Glucosides—Therapeutic Glucose-Free Derivatives of. Cardioactive glucosides of digitalis containing glucose are subjected to the action of enzymes contained in the digitalis plant (suitably by allowing comminuted digitalis leaves to stand in ethyl acetate for 3 to 4 days) and by a described further treatment there may be obtained acetylated cardioactive digitalis glucosides free from glucose and possessing the general formula $C_{49}H_{66}O_x.4H_2O$, where x represents 14 or 15. They are white products crystallized in rectangular plates, soluble in methanol and ethanol, and substantially insoluble in water, which yield on acid hydrolysis 46 to 47% of an aglucon, 54 to 55% of digitoxose and 7 to 7.5% of acetic acid and which are useful for therapeutic purposes.—AUTHUR STOLL, WALTER KREIS and ALBERT HOFMANN, assignors to CHEMISCHE FABRIK VORM. SANDOZ. U. S. pat. 2,069,687, Feb. 2, 1937. (A. P.-C.)

Digitalis Purpurea—Digitoxin Obtained from, from Lake Nahuel-Huapi. The dried leaves from the drug cultivated in Argentina yielded 0.317% digitoxin, which had a minimum lethal dose toward cats of 0.96 mg. per kilo, whereas ordinary crystallized digitoxin has a minimum lethal dose of 0.3 to 0.5 mg. and amorphous digitoxin 1.2 mg.—G. SPAGNOL and N. MANZANO. *Rev. sud-americana endocrinol.*, 18 (1935), 683–689; through *Chimie & Industrie*, 37 (1937), 732. (A. P.-C.)

Enzyme Chemistry—Advancement of. The author briefly reviews the field of enzymes, presenting a brief history of the study of ferments, the facts so far established and some problems not yet solved.—H. JESSERER. *Scientia Pharm.*, 8 (1937), 22. (M. F. W. D.)

Enzymes and p_H—Activity of. The influence of acids on enzyme activity cannot be defined in terms of p_H alone; anions have an important effect on biological processes. The optimum reaction for an enzyme depends on the source and purity of the enzyme, the nature and concentration of the substrate, and other factors. It is more correct to speak of an optimum p_H zone than of an optimum p_H value. Many papers by the author and by others are cited.—W. KOPACZEWSKI. *Bull. Assoc. Chim. Sucr.*, 53 (1936), 344–356; through *J. Soc. Chem. Ind.*, 56 (1937), B., 76. (E. G. V.)

Menebea Venenata Baillon, New Digitalis-Acting Product. The plant, Family Asclepiadaceæ, is known as "tangembavy" or "tanghin femelle" in Madagascar where it grows wild. The roots contain two glucosides. The more active glucoside, menabein, or a decoction of the whole root has an effect like that of digitalis, as shown by the pseudo-nonexcitability of the cardiac pneumogastric in dogs.—RAYMOND-HAMET. *Compt. rend. soc. biol.*, 121 (1936), 1327–1329; through *Chimie & Industrie*, 37 (1937), 731. (A. P.-C.)

Optically Active Lactic Acid—Enzymic Racemization of. The associated growth of *Streptococcus lactis* or *Lactobacillus delbrückii* with the butyric acid organisms *Clostridium acetobutylicum* or *Clostridium butylicum* resulted in the production of inactive lactic acid, probably because of a racemizing action of the butyric organisms. In the absence of lactic acid bacteria both *Cl. acetobutylicum* and *Cl. butylicum* fermented part of the active lactic acid and changed the remainder to inactive acid. The racemization appears to be brought about by an enzyme system, elaborated by the butyric acid organisms, in which there seem to be at least two components, one extracellular and the other intracellular. The extracellular component is heat-labile (87°, 10 minutes), and the intracellular fraction is stable to this heat treatment.—E. L. TATUM, W. H. PETERSON and E. B. FRED. *Bicchem. J.*, 30 (1936), 1892–1897; through *Physiol. Abstr.*, 22 (1937), 135. (F. J. S.)

Peroxidase and Ascorbic Acid—Interaction of, in Biological Oxidations and Reductions. Ascorbic acid is oxidized rapidly by peroxidase in the presence of substances capable of forming quinones. The optimum conditions of reaction are governed by the nature of the quinone-forming substance. Oxidation is especially rapid in the presence of fresh extracts of suprarenal gland, which organ contains an unknown substance much more powerfully phenolic than adrenaline.—H. TAUBER. *Enzymologia*, 1 (1936), 209–212; through *Physiol. Abstr.*, 22 (1937), 138. (F. J. S.)

Peroxidase—Investigations on the Extraction and Purification of, from Castor Seed. Peroxidase can be extracted almost quantitatively from castor seed germs by triturating the dry material with quartz and sodium phosphate and allowing the mass to digest for some time after

having re-added the liquid obtained by pressing the triturated material. The enzymatic solution is subjected to adsorption by activated alumina at a p_H of about 4, and the adsorbed enzyme is recovered by means of sodium phosphate solution at p_H 8; a dialysis should be carried out before adsorption and after recovery of the enzyme. The dialyzed enzyme solution is evaporated under vacuum and treated with 5 volumes of 95% alcohol which precipitates a gray powder, soluble in water, possessing a high oxidizing power and capable of further purification. The peroxidase activity is measured by adding the enzyme solution plus hydrogen peroxide to a solution of a mixture of α-naphthol and *p*-phenylenediamine (violet color of indophenol) or to a solution of pyrogallol (yellow color of purpurogalline) and measuring colorimetrically.—D. GARILLI. *Giorn. biol. ind. agrar. aliment.*, 6 (1936), No. 1, 1–16; through *Chimie & Industrie*, 37 (1937), 347. (A. P.-C.)

Pharmaceutical Specialities—Amylolytic Value of. Determination of the amylase contents of various pharmaceutical preparations from the amount of reducing sugars produced in standard soluble-starch solution shows that the amylolytic activity varies over wide limits.—M. VAN HAUWAERT. *Natuurwetensch. Tijds.*, 19 (1937), 19–20; through *J. Soc. Chem. Ind.*, 56 (1937), B., 285. (E. G. V.)

Phosphatases—Micro-Method for the Estimation of, in Blood Plasma. A method is described for determining the phosphatase content of blood plasma using only 50 c. mm. of capillary blood. Plasma phosphatases are inhibited by barbituric acid or ammonia buffers. An alkaline reaction favors both the enzymic reaction and the destruction of the enzyme, so that the p_H optimum depends upon the time of reaction.—E. LUNDSTEEN and E. VERMEHREN. *Enzymologia*, 1 (1936), 273–279; through *Physiol. Abstr.*, 22 (1937), 133. (F. J. S.)

Phosphorus and Phosphatase Activity—Note on the Relative Distribution of, in the Floral Parts of Nicotiana Affinis, Petunia, Salpiglossis and Gladiolus. Phosphatase activity is higher in the sex organs as a whole than in other floral parts, and in *Gladiolus* the anthers are especially responsible for this higher activity. Also, in *Gladiolus* the total P of the sex organs is higher than that of spathes and petals and the anthers have the highest content.—V. IGNATIEFF. *Biochem. J.* 30 (1936), 1815–1818; through *Physiol. Abstr.*, 22 (1937), 131. (F. J. S.)

Pure Line Barley—Amylase Content of. The relation between free and active amylase and total amylase content of barley is characteristic for each species. Different species of barley have very varying amylase contents and these differences persist in green malt and in kiln-dried malt.—K. MYRBÄCK. *Enzymologia*, 1 (1936), 280–287; through *Physiol. Abstr.*, 22 (1937), 133. (F. J. S.)

Saponin and Digitonin—Effects of, on Lipase and Phosphatase Action. Purified saponin shows marked inhibiting action toward pancreatic lipase, while digitonin shows an accelerating action. Phosphatase is not affected by saponin.—BERNARD S. GOULD. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 290. (A. E. M.)

Sinigrin—Note on the Preparation of. Sinigrin, $C_3H_5.N{:}C(S.C_6H_{11}O_5).OSO_3K$, the important sulfur-bearing glucoside of black mustard, has been successfully prepared by the method of Herissey and Boivin. The method of Gadamar gave no sinigrin, but large quantities of sucrose. An essential point in the Herissey and Boivin method is the removal of sugars by fermentation with yeast.—S. MORELL and K. P. LINK. *J. Biol. Chem.*, 114 (1936), 123–124; through *Physiol. Abstr.*, 22 (1937), 121. (F. J. S.)

Yeast—Manufacture of. A yeast having an invertase content several times that of normal yeast is produced by first propagating yeast in a nutrient solution with aeration, and then affecting a yeast fermentation of the thus propagated yeast, at a rate of aeration which will prevent any considerable propagation, in a solution containing yeast-nourishing inorganic salts. A yeast-fermentable sugar material is introduced into the solution throughout the fermentation period, and the acidity is maintained at a p_H value of 4.5 to 6.0.—ALFRED SCHULTZ, assignor to STANDARD BRANDS, INC. U. S. pat. 2,079,634, May 11, 1937. (A. P.-C.)

Other Plant Principles

Chlorophyll. In this review which was delivered at the Harvard Tercentenary, F. summarizes his own work of the past seven years on chlorophyll and presents his postulated formula.—HANS FISCHER. *Chem. Rev.*, 20 (1937), 41; through *Squibb Abstr. Bull.*, 10 (1937), 745. (E. V. S.)

Chlorophyll—Chemical Structure of, Recent Progress in Determining. S. reviews the work of Fischer, Willstätter, Conant and others on the structure of the porphyrins, chlorophyll *a*, chlorophyll *b* and attempts at the synthesis of chlorophyll. Objections of Fischer's 1936 formula for chlorophyll *a* are summarized.—CATHERINE C. STEELE. *Chem. Rev.*, 20 (1937), 1; through *Squibb Abstr. Bull.*, 10 (1937), 746. (E. V. S.)

Convallaria Majalis—New Constituents of. The root of *Convallaria majalis* contains besides the active (heart tonic) convallatoxin and saponin-like constituent convallarin another ingredient convallamarin (I) which can be obtained in a comparatively pure form. The commercial convallamarin was obtained to the extent of 30%; it is amorphous and the specific rotation is $[\alpha]_D^{22} = -67.1°$. Convallamarin contains no lactone groups in its structure and renders no reaction when reacted with cholesterin. It has a sweet odor, is soluble in water, methanol and acetic acid; slowly soluble in chloroform, acetone and ether; insoluble in benzene and petroleum benzin. Convallamarin is also hygroscopic, and has the composition $C_{44}H_{70}O_{19} + 3H_2O$ with a double bond in the molecule. Hydrolyzing the compound with alcohol, for instance, it yields one molecule of convallaretin ($C_{26}H_{40}O_5$). This compound separates out from methanol in crystals which melt at 248–250°; specific rotation: $[\alpha]_D^{19} = -86.0°$; soluble in chloroform and methanol; insoluble in water and petroleum ether. With water and platinum oxide it yields a new compound dihydroconvallarametin whose crystals melt at 239–240°, 2 molecules of *l*-rhamnose and 1 molecule of *d*-glucose, $C_{44}H_{70}O_{19} + 3H_2O = C_{26}H_{40}O_5 + C_6H_{12}O_6 + 2C_6H_{12}O_5$. The splitting up of the sugar by heating with acids is not advisable.—W. VOSS and G. VOGT. *Ber.*, 69 (1936), 2333; through *Chem. Zentralb.*, 108 (1937), 98. (G. B.)

Quinotoxine—Occurrence of, in Cinchona Bark. Quinotoxine is not a normal constituent of cinchona bark, but it was found present by Howard in 1872. *C. succirubra* bark which had been exposed in a glass jar to full sunlight, and frequently to a temperature of 45° C., in a window for three years, yielded alkaloids which, after purification by precipitation and treatment with solvents, were found to contain quinotoxine. The bark contained 5.76% of total alkaloids when tested by the method of the Italian Pharmacopœia, but as it had not been tested before exposure it was impossible to say to what extent it had lost strength owing to the changes leading to the formation of quinotoxine.—C. MASINO. *Boll. chim.-farm.*, 75 (1936), 293; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 694. (S. W. G.)

Rhubarb—Detection of Rhapontic, in Galenical Rhubarb Preparations. The following summary is given: 1. "Rhapontic" rhubarb contains a fluorescent principle which is capable of being adsorbed on cellulose giving a bright blue fluorescence in screened ultraviolet radiation. 2. This reaction enables the presence of rhapontic in the official varieties of rhubarb to be detected with ease. 3. The presence of rhapontic rhubarb can be demonstrated in galenical preparations of rhubarb by this adsorption-fluorescence test. 4. The test has been carried out on a large number of different drugs and galenicals and of those examined positive results appear to be given only by rhapontic rhubarb. 5. A large number of rhubarb galenicals from British, Continental and other sources have been examined. Rhapontic rhubarb was found to be present in many preparations, frequently in amounts indicating substitution of gross adulteration. 6. Attempts made to isolate the fluorescent principle are described. 7. Rhaponticin was extracted, purified and examined for certain of its physical constants including its ultraviolet adsorption. 8. The adsorption-fluorescence reaction as described is due to the rhaponticin present in rhapontic rhubarb. *Method.*—A wide-mouthed bottle of thin nonfluorescent glass of about 150 cc. capacity was nearly filled with distilled water and 0.5 cc. of the tincture or other liquid under test was added. After mixing, a small pledget of cotton or other form of cellulose about as large as a walnut was added and the bottle and contents swirled and allowed to stand for a few minutes. The liquid was then poured off, the cellulose rinsed once or twice with distilled water and inspected under the lamp while still submerged in water. A bright blue fluorescence on the cellulose indicated the presence of rhapontic rhubarb. A blank may be used for comparison.—SYDNEY K. CREWS. *Quart. J. Pharm. Pharmacol.*, 434–444. (S. W. G.)

Fixed Oils, Fats and Waxes

Algæ—Some Fats Obtained from. The author discusses some of the unsaponifiable fats obtained from different species of algæ. From *Pelvetia Wrightii* Yendo. *Fucus evanescent* Ag. and *Laminaria longissima* the author isolated a new sterin: *Pervesterol*, m. p. 122°; $[\alpha]_D =$

$-39.0°$; acetate, m. p. 180°; $[\alpha]_D = -44.10°$; propionate, m. p. 104°; benzoate, m. p. 114°. The aceto-tetrabromide compound when decomposed is identical with fucosterin, which has been previously isolated. The sterin obtained from the green alga *Codium fragil* Hariot is perhaps sitosterin. The red alga *Chishiima Nori*, because of the small quantity available, could not be positively identified.—K. SHIRAHMA. *Chem. Zentralb.*, 107 (1936), 2566. (G. B.)

Cod Liver Oil. A review and comparison of German Oil with other sources.—G. DULTZ. *Apoth. Ztg.*, 52 (1937), 193–196. (H. M. B.)

Fats and Oil—Determination of Saturated Compounds in. A critical review.—D. NIKITIN. *Trud. Vniizh*, No. 2 (1934), 35–59; through *J. Soc. Chem. Ind.*, 56 (1937), B., 57. (E. G. V.)

Fats and Waxes—Determination of Melting Point of. A method is described which depends on the movement of the sample at the softening point in an open capillary tube under hydrostatic pressure. Sharp, easily reproducible end-points are claimed.—J. A. SCARROW. *Canad. Chem. Met.*, 20 (1936), 305–306; through *J. Soc. Chem. Ind.*, 56 (1937), B., 57. (E. G. V.)

Liver Oil—Method of Extracting. Livers of fish or the like are steamed at a temperature not substantially greater than about 100° C. The aqueous liquid produced is discarded. The material is cooled to a temperature below freezing, the oil is extracted by means of an organic solvent and the solvent is removed from the oil. The steaming is carried out in such a manner as to exclude air, and the material is protected against oxidation during the cooling step.—CARL NIELSEN, assignor to ABBOTT LABORATORIES. U. S. pat. 2,078,404, April 27, 1937. (A. P.-C.)

Marine Animal Oils—Hydrogenation of. Various methods of refining and hydrogenation of oils of different species of dolphins, seals, whale and shark are described and the results are tabulated. Good results are obtained by hydrogenation with nickel formate catalyst of oils that have been subjected to preliminary treatment with 3% nickel carbonate precipitated on keiselguhr and hydrogen at 130° C. for 30 min.—E. ETINBURG and L. NIKOLAIEVA. *Maslobo̍no Zhirovoe Delo*, 12 (1936), 212–214; through *Chimie & Industrie*, 37 (1937), 321. (A. P.-C.)

Methylene-Blue Induction Period and Virginity of Olive Oils. The anti-oxidant potency of oils cannot be used as a criterion of virginity.—B. B. CUNNINGHAM and L. G. SAYWELL. *Food Res.*, 1 (1936), 457–464; through *J. Soc. Chem. Ind.*, 56 (1937), B., 152. (E. G. V.)

Oils and Fats—Rancidity as a Problem in. A discussion.—E. E. RUSSELL. *Canad. Chem. Met.*, 20 (1936), 346–348; through *J. Soc. Chem. Ind.*, 56 (1937), B., 153. (E. G. V.)

Raspberry (Rubus Idaeus)—Presence of a C_{19} Alcohol in the Wax Obtained from the Oil of the Fruits of. By vacuum filtration at 15° of the oily matter obtained by extracting raspberries with ether, 6.5% of wax was obtained from which a new alcohol was isolated. Its formula corresponds to $C_{19}H_{40}O$. The melting point of the alcohol is 62.5°; of the benzoate 40°; acetate 58°; phenylurethane 80°. The name rubidaelyic alcohol is proposed for the new compound.—HENRI MARCELET. *Compt. rend.*, 204 (1937), 1446. (G. W. H.)

Tung Oil. A general account of the production and uses of tung oil, with special reference to the economic position in America.—M. J. HAUSMAN. *Am. Paint J.*, 14 (1936), No. 9, 17–19, 22; through *J. Soc. Chem. Ind.*, 56 (1937), B., 58. (E. G. V.)

Unclassified

Acridine Compounds—Basically Substituted, Effective against Malaria Parasites, etc. Compounds, such as 2-chloro-9-(α-diethylamino-δ-pentylamino)-acridine, forming a water-soluble dihydrochloride that decomposes at 160° to 165° C., and the corresponding 2-methyl and 2-ethyl derivatives, etc., are prepared by reacting upon acridine substitution products which contain in the 9-position a replaceable substituent and in the 2-position a halogen atom or an alkyl group, with aliphatic polyamines containing a primary or secondary amino group. Replaceable substituents in the 9-position may be ether and ester-like groups, such as halogen, aryloxy, alkoxy, aryl- and alkyl-mercapto groups. The reaction is preferably carried out in phenolic solution while heating, advantageously on the water-bath. Also other organic substances, containing hydroxyl or mercapto groups, are suitable solvents, *e. g.*, glycol, ethanol, amyl alcohol, cresol, naphthol, thiophenol, etc. The reaction temperature is advantageously about 130° C. when using these substances as solvents. If necessary the reaction is performed in closed vessels. Presumably when using the 9-halogen derivatives as starting material the reaction sometimes takes place with the

formation of acridines, containing the radical of the solvent used in ether- or thio ether-like linkage in the 9-position, as intermediate products. The reaction is complete after heating for about one to several hours. Various examples and details of procedure are given for the production of new compounds of the above type substituted in the 2-position by halogen or alkyl, which compounds dissolve in the form of the free bases in organic solvents and dissolve in the form of their salts with acids in water.—FRITZ MIETZSCH and HANS MAUSS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,077,249, April 13, 1937. (A. P.-C.)

Acylaminoaryl Phenylcinchoninates. Preferably, phenylcinchoninic acid is converted into the acyl chloride by means of phosphorus oxychloride, the nitroaryloxy group is substituted for the chlorine by means of a nitrophenol, the nitro group is reduced to an amino group by means of hydrogen and platinum oxide catalyst or by means of ferrous sulfate and ammonium hydroxide, and the amino group is acylated by means of an acid anhydride. *Para*-acetylaminophenyl α-phenylcinchoninate melts at 185° to 186.5° C. and has analgesic properties.—WALTER G. CHRISTIANSEN and SIDNEY E. HARRIS, assignors to E. R. SQUIBB AND SONS. U. S. pat. 2,076,706, April 13, 1937.—Preferably, phenylcinchoninic acid is converted into the acyl chloride by means of phosphorus oxychloride, the nitroaryloxy group is substituted for the chlorine by means of a nitrophenol, and the nitro group is reduced to an amino group by means of hydrogen and platinum oxide catalyst or by means of ferrous sulfate and ammonium hydroxide. *Para*-nitrophenyl α-phenylcinchoninate melts at 155.5° to 156° C., and *p*-aminophenyl phenylcinchoninate melts at 195° to 196° C.—U. S. pat. 2,076,707, April 13, 1937. (A. P.-C.)

Alkyl Cresols. A cresol derivative of the formula $C_6H_3(OH)(CHC_4H_{10})CH_3$ is a germicide suitable for therapeutic use as are also several listed analogs. Details of manufacture are given.—GEORGE W. RAIZISS and LEROY W. CLEMENCE, assignors to ABBOTT LABORATORIES. U. S. pat. 2,073,995, March 16, 1937. (A. P.-C.)

α-Alkylidene and α-Alkyl Cyclopentanones. Products suitable for use as perfumes are obtained by condensing cyclopentanone with heptyl aldehyde, caproic aldehyde or the like, examples being given of the production of α-heptylidene cyclopentanone, boiling point 144° C. under 10-mm. pressure, α-hexylidene cyclopentanone, boiling point 125° C. under 10 mm., α-octylidene cyclopentanone, boiling point 165° C. under 10 mm. (with use of sodium hydroxide as a condensing agent). By the catalytic hydrogenation of α-heptylidene cyclopentanone, α-heptylcyclopentanone (boiling point 130° C. under 10 mm.) is obtained, and hydrogenation of hexylidene cyclopentanone gives α-hexylcyclopentanone, boiling point 118° C. under 10 mm.—ALEXANDER S. PFAU, assignor to GIVAUDAN-DELAWANNA, INC. U. S. pat. 2,069,861, Feb. 9, 1937. (A. P.-C.)

***N*-Alkylaminobenzoic Acids—*N*-aminoalkylamides of.** *N*-Aminoalkylamides of *N*-alkylaminobenzoic acids may be produced by converting *N*-monoalkylaminobenzoic acids with the aid of unsymmetrically substituted alkylenediamines into basic amides. This transformation may be carried out by causing an unsymmetrically substituted alkylenediamine to act upon the *N*-monoalkylaminobenzoic acids, or their halides or esters. As such unsymmetrically substituted alkylenediamines, there may be used, for instance, 1-amino-2-diethylaminoethane or 1-amino-3-piperidylethane. The products obtained in this manner have the general formula: $R_1HNC_6H_4CONH(CH_2)_x.NR_2R_3$, where R_1 stands for alkyl, R_2 and R_3 each stands for alkyl or R_2 and R together stand for the grouping $—(CH_2)_5—$, and x stands for 2 or a whole number greater than 2. The compounds form colorless to weakly yellowish, water-insoluble oils which, in the form of their salts are water-soluble. They are local anæsthetics. Their toxicity is considerably lower than that of the known basic amides of the heterocyclic series.—OTTO EISLEB, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,073,100, March 9, 1937. (A. P.-C.)

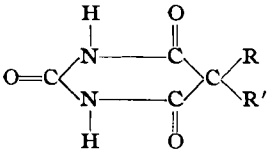
***N*-(Aminoalkyl)Anthranilic Acid Alkyl Esters.** By causing aminoalkyl halides to act upon anthranilic acid alkyl esters or by esterifying with alcohols the *N*-(aminoalkyl)anthranilic acids obtainable by the action of aminoalkyl halides upon solutions of the salts of anthranilic acids, compounds are obtained of the general formula: $o\text{-}R_1OOCC_6H_4NH(CH_2)_xR_2R_3$, where R_1 stands for alkyl, R_2 and R_3 stand for alkyl or hydrogen or R_2 and R_3 together stand for the grouping $—(CH_2)_5—$ and x stands for 2 or a whole number greater than 2. The compounds constitute colorless to weakly yellowish, water-insoluble oils of a bluish fluorescence which, in the form of their salts, are water-soluble. The compounds and their salts are local anæsthetics. Their anæsthetizing power is considerably stronger than that of already known analogous compounds of

the *para* series.—OTTO EISLEB, assignor to WINTHROP CHEMICAL Co. U. S. pat. 2,073,099, March 9, 1937. (A. P.-C.)

Aromatics—Synthesis of, with a Jasmon Odor. The synthesis of tetrahydrojasmon by the method of Treff and Werner (*Ber.*, 66 (1933), 1521) was repeated. The semicarbazone of 3-methyl-2-*n*-amyl-cyclopentanons (tetrahydrojasmon) was found to melt at 142° which is in disagreement with other reported values. The yield obtained by the proposed method is 45% as compared with 18% obtained by Treff and Werner. A new isomer of tetrahydrojasmon with a similar but stronger odor, 3-methyl-2-isoamyl-cyclopentanone, is synthesized and the following constants reported: b. p. (8 mm.) 98–99°, d_4^{20}, 0.8938, n_{d20}, 1.4537, m. p. of the semicarbazone 156–157°.—WATSCHE ISSAQULIANZ. *Riechstoff-Ind. Kosmetik*, 11 (1936), 84–86. (H. M. B.)

Aryl Mercury Hydroxy Mononuclear Aromatic Carboxylates. Production is described of various new and highly germicidal compounds, suitable for external (and in some instances internal) therapeutic use and which have the general formula $(RHg)_xR'$ in which R represents an aromatic structure to the carbon atom of which mercury is directly attached, and in which none of the carbon atoms have direct linkage with any element other than hydrogen, carbon and mercury; in which R′ represents a hydroxy-substituted mononuclear aromatic acid radical, which is linked to the RHg group through the replacement of acidic hydrogen; and in which x represents the number of RHg groups attached to the acid radical, and is an integer representing the number of acidic hydrogens in the acid.—CARL N. ANDERSEN, assignor to LEVER BROS. Co. U. S. pat. 2,074,040, March 16, 1937. (A. P.-C.)

Barbituric Acid Derivatives—2-Methyl-Allyl Substituted. The present investigation deals with a number of new methallyl-substituted barbituric acid derivatives synthesized by Doran and Shanle, with the general formula:



wherein R-alkyl radical may be an allyl, β-brom-allyl, phenyl, cyclopentyl, a primary or secondary alkyl radical with 2 to 6 C-atoms; and R′ a methallyl radical (2-methylallyl). They show shorter duration of activity.—EDWARD E. SWANSON and WILLIAM E. FRY. *J. Am. Pharm. Assoc.*, 26 (1937), 317. (Z. M. C.)

Biphenyl Derivatives—Bactericidal. Numerous examples are given of the production of compounds of the general formula $(YO)XC_6H_3C_6H_5$, in which X represents an alkyl, acyl, amino or substituted amino group and Y represents an alkyl when X is an amino group but otherwise represents hydrogen or alkyl.—WALTER G. CHRISTIANSEN, SIDNEY E. HARRIS and JOHN LEE, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,073,683, March 16, 1937. (A. P.-C.)

Calcium Lactobionate-Calcium Bromide—Preparation and Properties of. This double salt, calcium lactobionate-calcium bromide, is prepared by electrolytic oxidation of lactose and has marked advantages as a sedative. The method of preparation of calcium lactobionate is also outlined.—H. S. ISBELL. *J. Res. Nat. Bur. Stand.*, 17 (1936), 331–335; through *J. Soc. Chem. Ind.*, 56 (1937), B., 85. (E. G. V.)

Δ^5-3-Chloro-17-Etiocholenone. This compound, an intermediate for male sex hormone production, is produced by reaction of phosphorus pentachloride on dehydroandrosterone (suitably by trituration together and then treating with ether and dilute alkali solution).—JOHN WEIJLARD, assignor to MERCK & Co. U. S. pat. 2,072,913, March 9, 1937. (A. P.-C.)

Cyclopentano Phenanthrene Series—Saturated Alcohols of, and Method of Producing. Compounds of this series, possessing the physiological activity of the male sex hormone are produced by subjecting cyclopentano polyhydrophenanthrene compounds of the general formula $C_{18}H_n(OR)(OR').X$ (in which n is 17, 19, or 21, and X is attached to the cyclopentano ring while —OR is a phenolic group and —OR′ an alcoholic group) to the action of hydrogenating agents capable of hydrogenating the carbon-carbon double bonds in the starting material.—WALTER SCHOELLER and FRIEDRICH HILDEBRANDT, assignors to SCHERING-KAHLBAUM A. G. U. S. pat. 2,076,098, April 6, 1937. (A. P.-C.)

Dihydrotachysterol. This compound, of the formula $C_{28}H_{46}O$, having an increasing efficacy on the blood calcium level, is made by a process in which tachysterol-3,5-dinitro-4-methyl-1-benzoate is subjected to treatment with sodium in the presence of an absolute lower aliphatic alcohol such as absolute ethanol.—OTTO DALMER and FRITZ VON WERDER, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,070,117, Feb. 9, 1937. (A. P.-C.)

2,4-Dinitrophenylhydrazine as a Reagent for Carbonyl Compounds. From a study of the action of 2,4-dinitrophenylhydrazine on camphor derivatives it is concluded that: (1) electronegative groups in α-position exert an action on the carbonyl group of camphor so that 2,4-dinitrophenylhydrazine does not combine, or at most combines only very slightly in some cases, (2) electropositive groups are inert toward the carbonyl groups, (3) in spite of its electropositive character, the amino group prevents the formation of any derivative, probably through steric hindrance, (4) the 2,4-dinitrophenylhydrazones of hydroxycamphor and of β-camphosulfonic acid each occur in two forms, a red and a yellow, which is probably due to a phenomenon of molecular association, (5) α-camphocarboxylic acid, α-acetylaminocamphor, acetylhydroxycamphor, the methyl ester of hydroxycamphor and camphoquinone give only one form of hydrazone. The oxime of α-camphocarboxylic acid was obtained. In the assay of Spanish and Dalmatian pyrethrums, the semi-carbazones are formed. Formation of 2,4-dinitrodiphenylcarbazone offers, for this determination, no advantage over the semi-carbazone.—M. CASTILLO. *Farm. Mod.*, 47 (1936), 640–646, 662–674, 688–694; through *Chimie & Industrie*, 37 (1937), 238–239. (A. P.-C.)

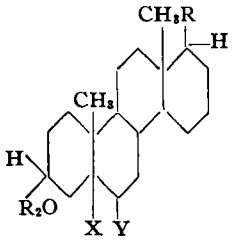
Follicular Hormone Series—Esters of. Esters of estrone are readily obtained by the action of the acid anhydrides or chlorides in the presence of pyradine. The following esters were thus prepared: propionate, m. p. 134–135.5°; *n*-butyrate, m. p. 101–102.5°; valerianate, m. p. 100–101°; caproinate, m. p. 71–71.5°; palmitate, 75.5–76°. Symmetrical 3,17-diesters of estradiol are obtained in a similar manner. The following were prepared: dipropionate, m. p. 104–105°; di-*n*-butyrate, m. p. 64–65°; divalerianate and dicaproinate, obtained as oils which as yet have not been obtained crystalline. 3-Monoesters of estradiol are obtained by treatment of the corresponding ester of estrone dissolved in ethyl acetate with hydrogen in the presence of platinum oxide. The following 3-monoesters were thus prepared: acetate, m. p. 136.5–137.5°; propionate, m. p. 124.5–125.5°; palmitate, m. p. 69–71°. The palmitate can also be obtained by the action of palmityl chloride on estradiol dissolved in *N* sodium hydroxide but the resulting product is difficult to purify. Estradiol-17-monoacetate, m. p. 215–217.5°, was obtained by shaking estradiol-diacetate in absolute alcohol under carbon dioxide for 24 hours in the presence of a little freshly reduced alkali containing platinum oxide catalyst. The 17-monopropionate, m. p. 199–200°, was obtained in a similar manner. It was also obtained in a nearly quantitative yield by stirring estradiol-dipropionate for 1½ hours at room temperature with a 1% solution of potassium carbonate in 90% methyl alcohol. It was also obtained by stirring the dipropionate 10 hours in 0.5 *N* absolute alcoholic hydrogen chloride with the exclusion of air. The 17-mono-*n*-butyrate was obtained from the di-*n*-butyrate by stirring 3 hours at 20° with 0.5% potassium carbonate in 95% methyl alcohol. Mixed esters are obtained by treating the estradiol-3-benzoate with the appropriate acid anhydride in the presence of pyridine. The following were thus obtained: 3-benzoate-17-acetate, m. p. 172–173°; 3-benzoate-17-propionate, m. p. 167–167.5°; 3-benzoate-17-butyrate, m. p. 128.5–129°. The pharmacological action of these esters is to be reported elsewhere.—K. MIESCHER and C. SCHOLZ. *Helv. Chim. Acta*, 20 (1937), 263. (G. W. H.)

Germicidal Preparation—Method of Producing. An appreciable excess of a cresol is condensed with amyl alcohol to produce amylated cresol.—MERRILL C. HART, assignor to THE UPJOHN CO. U. S. pat. 2,082,625, June 1, 1937. (A. P.-C.)

Glycyrrhetinic Acid—Concerning the Empirical Formula of. Evidence is given to support the empirical formula $C_{30}H_{46}O_4$ for glycyrrhetinic acid. The works of other investigators are thoroughly discussed and the results compared in tabular form. Glycyrrhetinic acid and its methyl ester and acetyl-glycyrrhetinic acid and its methyl ester were prepared and the results of the elementary analyses for carbon and hydrogen supported the formula given. The equivalent weights of the acid and its acetyl derivative were determined by means of 0.01*N* potassium hydroxide. The esters were subjected to methoxyl determinations and the saponification equivalents were determined.—L. RUZICKA, M. FURTER and H. LEUENBERGER. *Helv. Chim. Acta*, 20 (1937), 317. (G. W. H.)

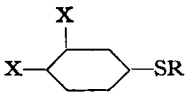
Halogen Derivatives of α-Ethylpropylcresols—Germicidal Compounds of Low Toxicity. Various details are given of the preparation of: monochlor (α-ethylpropyl) *o*-cresol, boiling point 138–140° C. under 14-mm. pressure; the corresponding *m*- and *p*-cresol derivatives, with boiling points under 10 mm. of 141° to 148° C. and 136° to 144° C., respectively; dichloro (α-ethylpropyl) *o*-, *m*- and *p*-cresols, boiling, respectively, at 142° to 148° C. under 14 mm., 160° to 170° C. under 8 mm. and 145° to 153° C. under 10 mm., and the corresponding monobromo- and dibromo-derivatives, having higher boiling points.—GEORGE W. RAIZISS and LEROY W. CLEMENCE, assignors to ABBOTT LABORATORIES. U. S. pat. 2,071,939, Feb. 23, 1937. (A. P.-C.)

Hormone-Like Ketonic Substances—Method of Obtaining. Substituted cyclic ketones having a cyclopentano polyhydrophenanthrene nucleus are produced by subjecting a compound of the general formula:



in which R_1 is an aliphatic side chain, R_2 an acyl radical containing a group capable of forming water-soluble salts, and X and Y are hydrogen or halogen, to the action of oxidizing agents which split off the side chain, and then separate the polynuclear ketonic material from the reaction mass.—ERWIN SCHWENK and BRADLEY WHITMAN, assignors to SCHERING CORP. U. S. pat. 2,078,978, May 4, 1937. (A. P.-C.)

Hydroxyaryl-alkyl and Aralkyl Sulfides. Compounds of the general formula:



where one X stands for hydroxyl and the other for hydrogen and R is an aralkyl or alkyl radical containing three or more carbon atoms, have antiseptic properties.—ELLIS MILLER, assignor to SHARP & DOHME, INC. U. S. pat. 2,074,851, March 23, 1937. (A. P.-C.)

Hydroxylamine—Biochemical Rôle of. I. Formation of Hydroxylamine by Sterigmatocystis nigra in Media Containing Ammonium Nitrate. Cultures of *Sterigmatocystis nigra* grown in ordinary Czapek's medium and in Czapek's medium containing 16 times as much ammonium nitrate at 35° C. produced a trace of nitrous acid which disappeared after 48 hrs. After about 5 days a positive test for hydroxylamine was obtained. In the ordinary medium the hydroxylamine remained for about 10 days, and in the medium containing an excess of ammonium nitrate it lasted 15 days.—M. LEMOIGNE and R. DESVEAUX. *Bull. soc. chim. biol.*, 18 (1936), 604–614; through *Chimie & Industrie*, 37 (1937), 454. (A. P.-C.)

8-Hydroxyquinoline Salt—Process of Producing a Novel. A novel salt of 8-hydroxyquinoline is obtained by converting 8-hydroxyquinoline and 5-sulfosalicylic acid in aqueous solution and in the presence of one atom of sodium into the 8-hydroxyquinoline salt of the primary sodium-sulfosalicylic acid, and separating out the salt.—FRIEDRICH BOEDECKER, assignor to CHINOLFABRIK A.G. U. S. pat. 2,079,312, May 4, 1937. (A. P.-C.)

Isatin Series—Condensation Products of, for Protection against Moths. 2,070,350. By the condensation of *N*-(benzylsulfonic acid)-isatin or *N*-(*o*-chlorobenzylsulfonic acid)-isatin with thymol or amylphenol (suitably by heating for 3 hours at 100° to 110° C. in the presence of concentrated hydrochloric acid and stannic chloride or zinc chloride), products are obtained such as dithymol-*N*-(benzylsulfonic acid)-isatin, dithymol-*N*-(chlorobenzylsulfonic acid)-isatin, and diamylphenol-*N*-(benzylsulfonic acid)-isatin. 2,070,351. Water-soluble protective agents against moths are produced by condensing isatin-5-sulfonic acid with substituted phenols such as thymol, amylphenol or amylcresol. 2,070,352. Condensation products of 6-chloroisatin-5-sulfonic acid and substituted phenol derivatives such as *p*-chlorophenol, 6-chloro-*m*-cresol or

2,4-dichlorophenol are used as protective agents against moths. 2,070,353. Condensation products of isatin-5-sulfonic acid with substituted phenols are used as protective agents against moths.—JAKOB BINDLER, assignor to J. R. GEIGY, S. A. U. S. pats. 2,070,350 to 2,070,353, Feb. 9, 1937. (A. P.-C.)

Mercuric Oxide—Study of the Combination of Glycocoll and Alanine with. By treating yellow mercuric oxide with glycocoll in neutral solution, a complex was obtained containing 54.52% Hg. It crystallizes in small white needles which are slightly soluble in cold water, more soluble in hot, insoluble in alcohol and ether. The aqueous solutions rapidly decompose with the liberation of metallic mercury. This decomposition is favored by heat. Reactions with numerous reagents are given. Starting with alanine, an analogous mercury compound containing 50.69% Hg was obtained. It is a white powder very soluble in water and insoluble in alcohol and ether. Its aqueous solutions are stable and it is more resistant to precipitation by the ordinary chemical reagents than the corresponding glycocoll compound.—M. R. TRUHAUT. *Compt. rend.*, 204 (1937), 1484. (G. W. H.)

***N*-Methyl-5,5-allylisopropylbarbituric Acid.** This compound is made by reaction of sodium-5,5-allylisopropylbarbiturate with dimethyl sulfate and acidifying. It melts at 56° to 57° C., boils under 12-mm. pressure at 176° to 178° C., is easily soluble in the usual organic solvents and is suitable for therapeutic use.—OTTO SCHNIDER, assignor to HOFFMANN-LA ROCHE, INC. U. S. pat. 2,072,829, March 2, 1937. (A. P.-C.)

Moth-proofing Detergent Composition. A mooth-proofing detergent composition is produced by adding to a neutral soapy washing agent a water-soluble moth-proofing agent having an affinity for wool, which may consist of salts of organic quaternary phosphonium bases or aromatic hydroxy-carboxylic acids or their halogen substituted derivatives, or aryl sulfamides and their derivatives in which hydrogen atoms connected to the nitrogen atoms of the amino groups are replaced by aryl or alkyl radicals. The composition is at the most only slightly colored in the dry state and is soluble in water.—HERMANN STÖTTER and THEODOR HERMANN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,082,188, June 1, 1937. (A. P.-C.)

Nitrogen—Ammonium Salts and Amino Acids as Sources of, in the Production of Pressed Yeast. Fresh plant extracts increase the utilization of sugar and ammonium salts by yeast. Amino acid mixtures are better than asparagine as a source of nitrogen.—FÉLIX WAGNER. *Ann. zymol.*, 3 (1936), 176–194. (A. P.-C.)

Oestrus-producing Compounds—Nomenclature of. A discussion with a table showing commercial names, structural formulas and chemical names.—C. A. ROTHENHEIM. *Pharm. Monatsh.*, 18 (1937), 59–61. (H. M. B.)

Organic Arsenic Compounds. Various examples are given of the production of compounds of the general formula $\underbrace{CH:CH.CX.CY:CA}_{}s:\underbrace{AsC:CH:CH:CZ.CZ:CH}_{}$ where one X stands for $CH_2(OH)CONH$— the other X for H or OH, Y stands for H or CH_3, Z stands for H, OH, NH_2 or acetylamino, the said compounds containing a nuclear hydroxy group and being suitable for therapeutic purposes.—KARL STREITWOLF, ALFRED FEHRLE and HUBERT OESTERLIN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,070,145, Feb. 9, 1937. (A. P.-C.)

Organic Arsenic Compounds. Numerous examples are given of the production of arsenic compounds of low toxicity and effective against trypanosoma diseases by a process in which haloacylaminobenzene arsonic acids, etc., are transformed into ester derivatives by treating them with alkali metal salts of carboxylic acids such as sodium acetate (suitably by refluxing for 2 hours in an aqueous medium). The new arsonic acids thus formed yield water-soluble salts with alkalies, ammonia and organic bases such as ethanolamine, piperidine and diethylamine, and by partial saponification the therapeutic hydroxyacylaminoarylarsenic compounds are obtained by heating the ester derivatives with dilute alkalies.—KARL STREITWOLF, ALFRED FEHRLE and HUBERT OESTERLIN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,070,146, Feb. 9, 1937. (A. P.-C.)

Organic Materials Containing Oleaginous Constituents—Retarding Oxidation of. With materials such as fats and fatty oils, etc., there is incorporated, as an oxidation inhibitor, about 0.5% or more of an unneutralized or partially neutralized phosphoric acid ester of a glycol, polyglycol or polyglycerol in which at least one hydroxy group of the polyhydroxy substance is replaced by a relatively high molecular weight aliphatic lipophile radical, such as that of stearic or cocoanut oil fatty acids.—ALBERT K. EPSTEIN and BENJAMIN R. HARRIS. U. S. pat. 2,075,806,

April 6, 1937.—The process uses as oxidation inhibitor an unneutralized or partially neutralized phosphoric acid ester of glycerol in which the hydrogen of at least one hydroxyl group of the glycerol is replaced by a relatively long chain non-nitrogenous aliphatic lipophile radical.—U. S. pat. 2,075,807. (A. P.-C.)

Organometallic Compounds—Relative Reactivities of. VIII. Aluminum and Zinc. The following summary is given: It has been shown that organo-aluminum and organo-zinc compounds show the same general reactions as Grignard reagents, but at a distinctly lesser rate. On the basis of the time required for a color test and on the basis of the time required to react with benzaldehyde, benzophenone and benzonitrile, the order of decreasing reactivity is: $R_3Al > R_3B > R_2Zn$. The relative reactivity of some functional groups with these three organometallic compounds is the same as that with the Grignard reagent: namely, $—CHO > —COC_6H_5 > —C\equiv N$. Aluminum displaces mercury from diarylmercury compounds more rapidly than zinc. The lower order of reactivity of organo-aluminum compounds makes it appear highly improbable that organo-aluminum compounds are formed as intermediates in the Friedel-Crafts reaction.—HENRY GILMAN and KENNETH E. MARPLE. *Rec. Trav. Chim.*, 55 (1936), 133. (A. C. DeD.)

Phenylmercury Acetate and Phenylmercury Hydroxide—Manufacture of. A mixture of one molecule of mercuric oxide, with at least one molecule of acetic acid and at least three molecules of benzene are heated at 120° to 160° C. under a pressure of 30 to 110 lb. per sq. in. until the reaction is complete.—LOUIS S. BAKE, assignor to E. I. DU PONT DE NEMOURS AND CO. U. S. pat. 2,075,971, April 6, 1937. (A. P.-C.)

Phenylmercury Chlorate, Bromate, Iodate and Perchlorate. These compounds (useful as antiseptics and germicides) melt, respectively, at 192° to 194° C., 165° to 174° C., about 228° C., and above 250° C. (if at all), and are produced by reaction of phenylmercury hydroxide with chloric, bromic, iodic and perchloric acid, respectively, in an aqueous medium (in some cases with heating on a steam-bath).—CARL N. ANDERSEN, assignor to LEVER BROS. CO. U. S. pat. 2,067,894, Jan. 19, 1937. (A. P.-C.)

1-Phenyl-2,3-Dimethyl-4-Amino-5-Pyrazolone—Derivatives of. 1-Phenyl-2,3-dimethyl-4-diethyl ether amino-5-pyrazolone, melting at about 158° C., of relatively low toxicity and high antipyretic and analgesic properties, is prepared by heating 1-phenyl-2,3-dimethyl-5-pyrazolone in water with β,β'-dichlorodiethyl ether and sodium carbonate on an oil-bath at 105° to 110° C. for 8 hours while stirring. Details are also given of the production of 1-phenyl-2,3-dimethyl-4-bis(β-hydroxyethyl)amino-5-pyrazolone, melting at 85° to 87° C., and mention is made of the similar production of the corresponding 4-bis(β-hydroxypropyl) and 4-bis(β-hydroxybutyl) derivatives, etc.—LOUIS FREEDMAN, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,076,714, April 13, 1937. (A. P.-C.)

Protein-Iodine Compounds—Process of Producing. An air-dry material containing protein is ground with solid iodine in a closed chamber until the iodine has combined chemically with the protein.—WILLIAM P. FITZGERALD, assignor to J. T. BAKER CHEMICAL CO. U. S. pat. 2,079,797, May 11, 1937. (A. P.-C.)

Sex Hormones—Double Unsaturated Ketones of the Androstan Series. *trans*-Dehydroandrosteron was converted into the dibromide by suspension in glacial acetic acid and treatment with bromine. The dibromide upon refluxing with anhydrous sodium acetate in absolute alcohol yielded Δ^4-6-bromo-androsten-3,17-dione, m. p. 171°, which was converted into androstadiendione, m. p. 173°, by refluxing with absolute pyridine. Δ^5-Androstendiol-17-monobenzoate was suspended in glacial acetic acid and brominate. The resulting dibromide was oxidized with chromic acid to 5,6-dibromo-dehydrotestosterone which upon refluxing with anhydrous sodium acetate in absolute alcohol yielded 6-bromo-testosterone benzoate, m. p. 176–177°. This was converted into dehydrotestosterone benzoate, m. p. 246°, by refluxing with absolute pyridine. Δ^5-Androsten-3-*trans*-17-diol-17 propionate by an analogous series of reactions was converted into Δ^6-dehydrotestosterone propionate, m. p. 134°.—L. RUZICKA and WERNER BOSSHARD. *Helv. Chim. Acta*, 20 (1937), 328. (G. W. H.)

Sex Hormones Oxides—Preparation of, from Δ^5-Cholestanone and Δ^5-Androstendione. α-Cholesterin oxide (I) was prepared by allowing cholesterin to stand at room temperature for three days in chloroform solution in contact with perbenzoic acid. 5-Hydroxy-cholestandion-3,6 (II) was obtained by oxidizing (I) with chromic acid. By refluxing (II) under reduced pressure and then distilling at 320–350°, Δ^4-cholestandion-3,6 was obtained. β-Cholesterin acetate-

oxide (III) was obtained in a manner similar to (I) from cholesterin acetate. From (III), 3-acetoxy-5-hydroxy-6-chloro-cholestan was prepared by passing dry hydrogen chloride gas into the chloroformic solution. Δ^5-Cholestanone-3 (IV) was prepared in quantity by converting cholesterin into the dibromide and treating it with zinc dust and sodium carbonate in absolute alcohol. α-Oxydo-5,6-cholestanone-3 was obtained from (IV) in a manner analogous to (I). β-Oxydo-5,6-cholestanone-3 (V) was obtained by concentrating the mother liquor from the α-oxide. By refluxing (V) with 2*N* sulfuric acid, cholestandione-3,6 was obtained. In an analogous manner, oxydo-5,6-androstandione-3,17 was prepared from Δ^5-androstendione.—L. RUZICKA and WERNER BOSSHARD. *Helv. Chim. Acta*, 20 (1937), 244. (G. W. H.)

Sodium Sulfomercurate—Oxidation of, by Hydrogen Peroxide. The solubility of mercuric sulfide in a mixture of sodium hydroxide and sodium sulfide is used to identify the mercuric ion, the mercury being reprecipitated by hydrogen peroxide. The solubility of mercuric sulfide in the sodium hydroxide-sulfide mixture corresponds to the formation of the complex $HgS.Na_2S$; it is proportional to the quantity of sulfide ion presence, whence the solubilizing action of the sodium hydroxide. Addition of hydrogen peroxide oxidizes sodium sulfide, which causes precipitation of mercuric sulfide, while at the same time causing a negative error due to oxidation of the mercury or formation of metallic mercury. The reaction is of about the same order of sensitiveness as precipitation of mercuric mercury by hydrogen sulfide. It can be used for the colorimetric determination of mercury, for, with small quantities of mercury, addition of hydrogen peroxide does not cause the formation of a precipitate but gives a dark-colored colloidal solution, that can be stabilized with a small quantity of gum arabic. The intensity of the color is proportional to the amount of mercury, if the latter lies between 1 and 4 mg.—E. OTTO AENLLE. *Farm. Mod.*, 47 (1936), 653–660; through *Chimie & Industrie*, 37 (1937), 239. (A. P.-C.)

Synthetic Drugs—Intermediates for. By reacting a heterocyclic compound of the general formula: o-arylene.$\overset{\lceil\text{———}\rceil}{\text{N:Cx}}$ (where x stands for hydroxyl, halogen or the sulfonic acid group) with hydrazine or a derivative in which one hydrogen atom is substituted by a hydrocarbon radical, there are obtained compounds of the probable general formula y.$\overset{\lceil\text{———}\rceil}{\text{arylene.N:CNHNHz}}$ (in which y stands for sulfur, oxygen, NH, *N*-alkyl, *N*-aryl or *N*-aralkyl, and z stands for hydrogen or a hydrocarbon radical), which are generally colorless to yellowish-colored crystalline substances, soluble in organic solvents and in dilute aqueous mineral acids, and insoluble in aqueous alkalies. The reaction is effected at various temperatures from room temperature to about 150° C. according to the specific character of the starting materials.—OTTO BAYER, ERNST HERDIECTKERHOFF and HANS SCHINDHELM, assignors to I. G. FARBENINDUSTRIE A. G. U. S. pat. 2,073,600, March 16, 1937. (A. P.-C.)

Tertiary Octylphenols—New Compounds Derived from. Tertiary octylphenols, such as *p-tert*-octylphenol, may be treated with acylating reagents such as acyl chlorides or acid anhydrides to form substituted phenol esters, or may be treated with a chloride of an inorganic acid such as $POCl_3$ to produce the corresponding phosphoric acid ester. Chlorine or sulphuryl chloride form chlorine derivatives which are potent germicides and insecticides and may be used as intermediates in the preparation of other compounds; bromine and iodine derivatives may be similarly prepared. Treatment of the tertiary octylphenols and sodium form a therapeutic tertiary octyl salicylic acid, the acetyl derivative of which also may be used as a therapeutic agent. Treatment with chloroform and sodium hydroxide forms a tertiary octyl salicyl aldehyde. Substituted acetophenones are formed by treatment with acetyl chloride and then heating in an atmosphere of hydrogen chloride in the presence of zinc chloride.—JOSEPH B. NIEDERL, assignor to RÖHM & HAAS CO. U. S. pat. 2,073,316, March 9, 1937. (A. P.-C.)

Triaryl Phosphates—New, with Fungicidal Properties. Triaryl phosphates of the general formula p-$(CH_3)_3CC_6H_4OP(:O)(OR)(OR')$, in which R and R′ each represent aromatic radicals, may be prepared by reacting a phosphorous oxyhalide with *p-tert*-butylphenol and, if required, other phenols (such as phenol, cresol, naphthol, cyclohexylphenol, etc.) or alkali metal salts thereof. When tri-*tert*-butylphenyl phosphate is the product desired, a phosphorous oxyhalide is caused to react directly with approximately three molecular equivalents of *tert*-butylphenol or an alkali metal salt thereof. When a mixed triaryl phosphate is desired, a phosphorous oxyhalide is treated successively with *tert*-butylphenol or an alkali metal salt thereof and the other necessary phenolic compounds. The reactions involved are sometimes sluggish even when carried out in

the presence of a catalyst. In such a case the rate of reaction and yield of product can be increased by carrying the reaction out under vacuum so as to remove hydrogen halide more effectively from the reaction mixture as it is formed. As catalysts, there may be used anhydrous magnesium chloride, aluminum chloride, ferric chloride, or the metals calcium, magnesium or aluminum, and reaction temperatures somewhat below 200° C. are usually most suitable, as high temperatures tend to cause formation of undesired by-products.—SHAILER L. BASS, assignor to DOW CHEMICAL CO. U. S. pat. 2,071,323, Feb. 23, 1937. (A. P.-C.)

Ureides of Certain Monobasic Acids and Ketones—Synthesis of. Because certain ureides possess marked hypnotic action, some ureides were prepared from brominated aliphatic monobasic acids and ketones. The compounds prepared were α-bromo-*n*-caproyl ureide, α-bromo-isocaproyl ureide, methyl-β-β-dimethyl-2-urea α-α-dibromo ethyl ketone and β-β-dimethyl-2-urea-α-α-dibrom ethyl-iso-propyl ketone and methods of preparing them are given. A preliminary study of physiological properties indicated that they possess hypnotic properties and more detailed studies are being made. Also the following new compounds were made and their action is being studied: α-bromo-secondary butyl acetyl ureide, α-bromo-tertiary butyl-α-cetyl ureide, α-bromo-di-methyl ethyl acetyl ureide, α-bromo-di-ethyl-acetyl ureide, α-bromo-methyl-isopropyl acetyl ureide.—CLIFTON E. MILLER and RUSSEL A. CAIN. *J. Am. Pharm. Assoc.*, 26 (1937), 418. (Z. M. C.)

BIOCHEMISTRY

Acetone Bodies—Method for Determination of Blood. The method is suitable for the determination of acetone at low levels and in small quantities of blood. Mix 2 cc. of oxalated blood with 14 cc. of water and 14 cc. of mercuric sulfate solution (as in Van Slyke's method). Centrifuge after one hour and filter the supernatant liquid. Mix 10 cc. with 4 cc. of a solution containing per 100 cc.: 70 cc. mercuric sulfate solution, 20 cc. of 50% sulfuric acid and 10 cc. water. Reflux for 90 minutes, adding at the beginning of boiling 0.5 cc. of a 5% potassium dichromate solution. Add 3–4 drops of a 10% barium chloride solution and centrifuge at high speed for 10 minutes. Pour the liquid off and wash the precipitate with 10% sodium hydroxide. Add 10 cc. 20% hydrochloric acid and distil into a 0.001*N* iodine solution made alkaline with 5 cc. of 40% sodium hydroxide. Acidify the receiving fluid with 50% sulfuric acid and titrate the excess of iodine with thiosulfate. The result is calculated as acetone by using the factor 1.33.—RICHARD H. BARNES. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 352. (A. E. M.)

Allantoin in Urine—Methods of Determining. The different methods are compared. The method of Ro-Kishun is preferred on account of accuracy and rapidity. It cannot be used in presence of reducing substances.—G. BERGAMI, P. BAER and E. BOERI. *Biochim. Terapia Sper.*, 23 (1936), 146–152; through *Chimie & Industrie*, 37 (1937), 872. (A. P.-C.)

Antidiabetic Substance. A nontoxic antidiabetic substance consists of an extract of prickly pear containing the active principles which reduce blood sugar in the system of patients suffering from a deficiency in carbohydrate metabolism.—CHARLES A. GRUWELL and FRANK H. E. PREENE, assignors to RESEARCH AGENCY CORP. U. S. pat. 2,082,952, June 8, 1937. (A. P.-C.)

Ascorbic Acid—Destruction of, in Acid and Alkaline Solution. Ascorbic acid is decomposed more rapidly and to a greater extent in alkaline (p_H 9.64) than in acid (p_H 4.93) medium.—A. CARTENI and A. MORELLI. *Boll. Soc. Ital. Biol. Sper.*, 11 (1936), 158–160; through *Chimie & Industrie*, 37 (1937), 945. (A. P.-C.)

Ascorbic Acid—Process for the Production of. Substantially fresh gladiola leaves are comminuted, the native juice is expressed and treated with 5 cc. of 10% potassium cyanide solution per 10 liters of juice, and mixed with five times its volume of methanol. The precipitate is separated, the solution is concentrated to a thin syrup, strong acid is added to bring the p_H value to 3, the syrup is mixed with acetone, the precipitate is removed and the filtrate is concentrated to a thin syrup.—OTTO DALMER and HERMANN WIETERS, assignors to MERCK & CO., INC. U. S. pat. 2,078,237, April 27, 1937. (A. P.-C.)

Ascorbic Acid and Its Analogs. A ketose, such as sorbose in the manufacture of ascorbic acid, is oxidized (suitably by heating with aqueous nitric acid) to form an oxidation product including the corresponding 2-keto acid. The oxidation product is worked up and purified (by cooling and neutralizing with barium carbonate, etc.) to obtain a concentrate including the 2-

keto acid; the concentrate is esterified (suitably by methanol), and the resulting esterified product containing the ester of the 2-keto acid is treated with an enolizing agent such as sodium methoxide without segregating the esterified 2-keto acid.—WALTER N. HAWORTH, EDMUND L. HIRST, JOHN K. N. JONES and FRED SMITH, assignors to BRITISH DRUG HOUSES, LTD. U. S. pat. 2,073,207, March 9, 1937. (A. P.-C.)

Barbiturates—Determination of, in Blood and Urine by a New Method. A new method for the extraction of barbiturates from the urine and blood filtrates is presented. The main feature is that barbiturates are adsorbed by activated carbon. Ortal sodium, sodium pentobarbital and sodium amytal when injected intravenously into dogs, leave the blood stream rapidly and are found in it only in high dilutions for a period of one minute to several days. The amount of barbiturate injected into the blood stream may be 1000 mg. yet the blood stream 1 minute later may contain a total of only 57 mg. The substance eliminated in the urine appears to be a degradation product of the barbiturate and not the barbiturate itself. Anesthesia never resulted in mice as a result of intraperitoneal injections of the extracted material.—JOHN T. BRUNDAGE and CHARLES M. GRUBER. *J. Pharmacol.*, 59 (1937), 379. (H. B. H.)

Bilirubin in Urine—New Method of Using Iodine to Detect. To 0.5 cc. of iodine solution (0.5 Gm. iodine, 1.5 Gm. potassium iodide, 10 cc. of 95% alcohol and 90 cc. of water) add 2 to 5 cc. of urine and shake the mixture. In the presence of bilirubin, a brilliant green color is formed.—A. BUSACCA. *Chimica*, 12 (1936), 110; through *Chimie & Industrie*, 37 (1937), 871. (A. P.-C.)

Blood Chlorides—Determination of. (1) Mix the plasma or hemolyzed corpuscles with a definite volume of decinormal silver nitrate, potassium permanganate and nitric acid, heat until the organic matter is destroyed and titrate with potassium thiocyanate. The addition of silver chloride at the outset avoids loss of chlorine. (2) Mix 5 cc. of plasma with 60 to 70 cc. of water and 1.5 cc. of a 5% solution of sodium metaphosphate, add 5 cc. of decinormal sulfuric acid, shake, filter and treat a 75-cc. aliquot as described in (1). Corpuscles must be laked previously with water. (3) Proteins can also be removed with alcohol or acetone. The method using organic-solvent defecation is as accurate as those using nitro-permanganic destruction of organic matter, but is quicker and gives a sharper end-point.—H. LESTRA, A. MASSOT and ARBASSIER. *Bull. Sci. Pharmacol.*, 43 (1936), 85–93; through *Chimie & Industrie*, 37 (1937), 245. (A. P.-C.)

Blood Groups—Determination of, with a View to Blood Transfusions. The Nurnberger test, which consists in bringing together on a glass slide a drop of the donor's blood and a drop of the receiver's blood, is practically useless as the agglutination generally passes unnoticed, and further the blood of universal donors coagulates the other corpuscles. The Jenbreau, Wallich-Levaditi, Epstein-Ohenberg and Douris tests are inapplicable at the bed-side because they require an extensive laboratory technic. The biological test consisting in the injection of 15 to 20 cc. of the donor's blood into the receiver's veins before affecting transfusion proper, is dangerous and has caused retarded fatal accidents. The Beth-Vincent-Tzanck test consists in placing a large drop of each of the serums on a stiff cardboard and a small drop of the corpuscles to be examined (pure blood or disintegrated clot) beside each of the larger serum drops; mix with a stirring rod and gently move the card back and forth. After a few seconds agglutination appears by formation of a granular precipitate, the grains of which increase very rapidly. The method necessitates the use of carefully prepared and stored standard serums.—R. DANET. *Bull. biol. pharmaciens*, 33 (1936), 238–246; through *Chimie & Industrie*, 37 (1937), 662. (A. P.-C.)

Bordet-Wasserman Reaction—Technique of, in Serum Freed from the Fraction Precipitable by Hydrochloric Acid. It has recently been observed that elimination from the serum of the fraction precipitable by hydrochloric acid increases the sensitivity of the reaction without impairing its specificity. Best results are obtained by using 4 volumes of $N/100$ hydrochloric acid to 1 volume of serum. The modified technic of the test is described.—C. AUGUSTE. *Compt. rend. soc. biol.*, 121 (1936), 1449–1450; through *Chimie & Industrie*, 36 (1936), 1126. (A. P.-C.)

Cancer Research—Microchemical and Microbiological Problems in. A review.—ALFRED FREIHERR VON CHRISTIANI. *Pharm. Monatsh.*, 18 (1937), 64. (H. M. B.)

Citric Acid Formation. Oxidation with hydrogen peroxide of a mixture of acetic and oxalacetic acids in sodium carbonate solution gives a 35% yield of citrate in 20 to 30 hours. It is suggested that this synthesis may occur in the living organism.—F. KNOOP and C. MARTIUS. *Hoppe-Seyl. Z.*, 242 (1936), 1; through *Physiol. Abstr.*, 22 (1937), 120. (F. J. S.)

Coproporphyrin—Spectrocolorimetric Determination of. The method of Schreus and Carrié (*Klin. Wochschr.*, 10 (1931), 1017–1019; 12 (1933), 146–148, 745–748) is confirmed and extended to fecal analysis.—F. CASANOVA and A. MALAGUTI. *Diagn. Tecn. Labor.*, 7 (1936), 18–26; through *Chimie & Industrie*, 36 (1936), 1126. (A. P.-C.)

Emulsion Stability and Fat Embolism. Fat embolism is discussed as the result of the the breaking of the normal fat emulsion in the blood. Preliminary experiments on the breaking of comparable oil-in-water emulsions stabilized by egg-albumin are reported.—H. L. DAVIS and C. E. GOODCHILD. *J. Chem. Educ.*, 13 (1936), 478–481; through *J. Soc. Chem. Ind.*, 56 (1937), B., 151. (E. G. V.)

Follicle Hormones—Acyloctahydro. Octahydro follicle hormones such as those of the general formula $C_{18}H_{30}O_2$ are subjected to the action of acylating agents such as acetyl chloride, benzoyl chloride, etc., or therapeutic products may be formed by hydrogenation. 2,071,804. Acyloctahydro follicle hormones are obtained by subjecting the acyl derivatives of the dihydro follicle hormone to a hydrogenation treatment sufficient only to cause the benzene nucleus present in the starting material to be transformed into the cyclohexane nucleus.—FRIEDRICH HILDEBRANDT, assignor to SCHERING-KAHLBAUM A.-G. U. S. pats. 2,071,803 and 2,071,804, Feb. 23, 1937. (A. P.-C.)

Follicular Hormones—Dihydro. For reducing the keto group of a keto cyclopentanophenanthrene compound having an unsaturated first ring, such as a follicular hormone, while leaving such ring substantially unattacked, the compound is dissolved in an aqueous alkaline solution and to this there is added a nonalkali metal such as magnesium which is capable of generating hydrogen in the solution.—ERWIN SCHWENK and BRADLEY WHITMAN, assignors to SCHERING CORP. U. S. pat. 2,072,830, March 2, 1937. (A. P.-C.)

Galactosemia—Microdetermination of. The Bang method is modified by the addition of yeast to the blood and dealbuminization with half-normal sodium hydroxide and 10% zinc sulfate.—B. DELLA MAGGIORE. *Diagnost. Tecnica Labor.*, 7 (1936), 273–276; through *Chimie & Industrie*, 37 (1937), 873. (A. P.-C.)

Glucose—Determination of, in Very Small Quantities of Blood by Oxidation with Hypoiodite. Several methods are discussed. The following modification of Kolthoff's method is recommended: Dilute 0.2 cc. of blood with 4 cc. of water, heat in a boiling water-bath for 3 to 5 min. and add 1 drop of 0.2% acetic acid. Filter off and wash the precipitated proteins. To the total filtrate, cooled to room temperature, add 2 cc. of two-hundredth normal iodine solution and 8 cc. of decinormal sodium hydroxide. Let stand for 30 to 40 minutes, acidify with dilute sulfuric acid and determine the excess of iodine with two-hundredth sodium thiosulfate solution. One cc. of two-hundredth normal iodine is equivalent to 0.45 mg. of glucose. Acetone bodies in the blood interfere.—E. GOUBAREW and M. RUTES. *Bull. soc. chim. biol.*, 18 (1936), 395–400; through *Chimie & Industrie*, 37 (1937), 452. (A. P.-C.)

Glucose in Blood—Clinical Determination of. A sample of venous blood is procured in the morning from the fasting patient and is collected in a flask containing 2 to 3 mg. of sodium fluoride per cc. of blood. All apparatus must be absolutely dry. The determination can be carried out on the whole blood or (preferably) on the plasma, provided the filtrate is perfectly clear and colorless. Place 5 to 6 cc. of distilled water and 2 cc. of the fluorided plasma in a 20-cc. volumetric flask, add 1 cc. of 10% sodium tungstate solution (prepared extemporaneously) and 0.7 cc. of decinormal sulfuric acid, make to 20 cc. with distilled water and filter. Reduction is carried out by placing 5 cc. of defecated plasma and 2 cc. of Fehling's solution in a centrifuge tube and 5 cc. of 0.02% glucose solution and 2 cc. of Fehling's solution in a second tube; place in a boiling water-bath for 10 minutes, centrifuge and decant the liquid; add 2 cc. of a solution containing 1 Gm. of ferric sulfate and 3 cc. of sulfuric acid per liter, and then add 0.1% potassium permanganate solution until a persistent pink color. If n and n' are the cc. of permanganate required by the sample and the standard, respectively, the glucose content is $2n/n'$ Gm. per liter. —R. DANET. *Bull. Biol. Pharmaciens*, 33 (1936), 209–211; through *Chimie & Industrie*, 37 (1937), 454. (A. P.-C.)

Gonadotropic Hormones—Determination of, during and after Normal and Pathological Pregnancy. The method of Brindeau, Hinglais and Hinglais (*Presse Médicale* (1933), 705–708) was applied to the study of the gonadotropic hormone content of blood serum and urine in normal and pathological pregnancy and also to the disappearance of the hormone after normal parturition,

in cases of the retention of a dead fetus and after delivery of moles. *Conclusions.*—A hormone content of 1,000 to 12,000 rabbit units indicates a normal pregnancy; this rule, while true in the vast majority of cases, has a very few exceptions. A content of less than 700 in a pregnant woman indicates interruption of gestation; if the dead fetus is retained over a long period, the reaction can become negative or practically so. A content above 60,000 units diagnosticates a hydatidiform mole; but a content below 60,000 does not necessarily exclude the possibility of a hydatidiform mole. The gonadotropic hormone content of the humors decreases progressively during the hours following expulsion of the fetus; after the third day it is no longer detectable in the serum by the usual methods. The curve of disappearance of the hormones in the blood after molar abortion can follow three different types corresponding to three different clinical evolutions: (1) a regularly descending curve tending toward zero after a period varying from a few days to a few weeks; recovery can then be considered as complete, (2) the curve has a generally downward, but somewhat irregular trend and at times rises slightly; the hormone content of the humors may persist at a relatively high level; this frequently corresponds to an exaggerated development of luteinic cysts and requires special attention, (3) the curve, after having fallen during the days following abortion, rises on two successive titrations; this gives an early and definite indication of degeneration into malignant chorio-epithelioma which necessitates an early hysterectomy.—LOUIS GERNEZ. *Ann Méd. Légale Criminol. Police Sci.*, 17 (1937), 120–136. (A. P.-C.)

Hippuric Acid in Blood—Determination of. A method for determining hippuric acid in blood is described which depends upon the extraction of the acid with ether from the albumin-free filtrate, and the extracted hippuric acid is titrated as amino-nitrogen by the method of Linderstrom-Lang (*Z. Physiol. Chem.*, 173 (1928), 32–50). In normal blood there is no hippuric acid present but in the blood of patients suffering from heart, kidney and liver diseases appreciable quantities are present. By adding known amounts of the acid to blood, the accuracy of the method was established.—H. MINIBECK and N. NEUMANN. *Mikrochem.*, 20 (1936), 91–103; through *Chimie & Industrie*, 37 (1937), 873. (A. P.-C.)

Histidine—Bromine Water Reaction for the Detection of. The Kapeller-Adler method (*Biochem. Z.*, 264 (1933), 131–141) is modified by first precipitating histidine from the urine with magnesium chloride in alkaline solution with an increase in sensitivity of the test to 1 in 90,000. The influences of other substances on this test are discussed.—G. D. IOJO. *Diagn. Tecn. Labor.*, 7 (1936), 8–17; through *Chimie & Industrie*, 37 (1937), 45. (A. P.-C.)

Insulin Compositions—Therapeutic. An insulin preparation which is less soluble in the blood plasma and tissue fluids than the usual insulin-hydrochloride is prepared by mixing a solution of an insulin salt and a solution of a protamine in such relative quantities that there is obtained, at a p_H of 6 to 8 and at normal temperature, a precipitate of protamine insulinate. Generally, the weight of the protamine is about $^1/_4$ to $^1/_{10}$ that of the insulin salt.—HANS C. HAGEDORN, BIRGER N. JENSEN and INGRID WODSTRUP-NIELSEN, assignors to NORDISK INSULINLABORATORIUM. U. S. pat. 2,076,082, April 6, 1937. (A. P.-C.)

Insulin—Modifications Contributing to the Action of, by Addition of a Colloidal Suspension (Gelatin). The simultaneous injection of insulin and 1–4 cc. of a 1-colloidal suspension of gelatin into rabbits considerably strengthened the hypoglycemic effect of insulin. It appears that the colloidal particles of gelatin can serve as a carrier for insulin and that the presence of such a carrier can sensibly modify the effect of the pancreatic hormone.—M. D. BROUN. *Compt. rend.*, 204 (1937), 1015. (G. W. H.)

Lactose in Urine—Identification of, Either Alone or Associated with Glucose. Lactose in urine is identified by the color which it gives when heated with ammonia. To separate lactose from glucose, adsorb the lactose by animal charcoal, and determine glucose in the filtrate by Fehling's solution.—F. MORENO MARTIN and ANA SEBASTIAN. *An. Soc. Espanola Fis. Quim.*, 33 (1935), 931–936; through *Chimie & Industrie*, 37 (1937), 871–872. (A. P.-C.)

Laminaria Flexicaulis—Vitamin Potency of. Powdered *Laminaria flexicaulis* contains no vitamins B and C, but has a fairly high potency in vitamins A and D.—MELLE. T. KOWARSKI, MELLE. G. PIETTE and R. AUDUREAU. *Rev. Pathol. Comp. Hyg. Gén.*, 35 (1935), 913; through *Bull. Soc. Sci. Hyg. Aliment.*, 24 (1936), 398. (A. P.-C.)

Lecithin—Comparative Actions of Sodium Oleate and Sodium Ricinoleate on. At p_H 7.4 to 8.0 sodium ricinoleate in concentrations of 50 to 150 mg. per 100 cc. has a marked solvent action

on lecithin, *i. e.*, it clears the opalescent suspensions. It requires approximately 6 mol. of sodium ricinoleates to dissolve 1 mol. of lecithin. Sodium oleate has a somewhat similar action but only at p_H above 9.8. The physiological action of sodium ricinoleate may be due to a solvent action on cell lipides.—G. VALETTE. *Compt. rend. soc. Biol.*, 122 (1936), 150–152; through *Chimie & Industrie*, 37 (1937), 734. (A. P.-C.)

Licorice—Determination of the Sweetness of Root and Extracts, as a Pharmacopœial Method. A brief review of several methods of determining the activity of glycyrrhiza is given. Since some of the methods are quite cumbersome and lengthy, the test for sweetness is accepted by the pharmacopœia. As an expression of the degree of sweetness, the reciprocal of the dilution of the material in which a definite sweetness is preceptible is taken. Before using persons for the test, their tastes should be checked against a standard solution of soluble saccharin. The author lists the precautions necessary in carrying out organoleptic tests for sweetness. The Austrian pharmacopœial tests for sweetness are considerably simplified in that only a minimum standard is set. This, therefore, necessitates only a single test.—L. FUCHS. *Scientia Pharm.*, 8 (1937), 57. (M. F. W. D.)

Micro-organisms—Use of Some, in Sugar Analysis. II. The Quantitative Differentiation of Fructose and Mannose. *G. tetragena* affords a ready method for the separation of fructose and mannose in dilute solution, and in combination with *P. vulgaris* and *M. krusei* it may be used to analyze mixtures of glucose, fructose and mannose and to recover added fructose and mannose from blood and urine filtrates. The use of *G. tetragena* necessitates a slight revision of the scheme of analysis previously published; the revised scheme is given.—T. F. NICHOLSON. *Biochem. J.*, 30 (1936), 1804–1806; through *Physiol. Abstr.*, 22 (1937), 118. (F. J. S.)

Nickel and Cobalt—Investigations on the Physiological Importance of. Feeding experiments were carried out with five lots of white mice beginning with each lot at the age of 21 days. The ration, consisting of starch, lactose, casein, etc., contained the necessary quantities of iron and zinc but was deprived of nickel and cobalt. With this ration 14 mice representing five lots survived an average of 19.7 days. From the same lots 15 other mice were fed the same ration except that 2.5 mg. of nickel chloride and 1.0 mg. of cobalt sulfate per kilo had been added; these survived an average of 23.1 days. The surviving mice had fixed a portion of the nickel and cobalt in their tissues.—GABRIEL BERTRAND and HIROSI NAKAMURA. *Bull. Soc. Sci. Hyg. Aliment.*, 24 (1936), 338. (A. P.-C.)

Orange Juice and Milk—Influence of Freezing on the Vitamin-C Content of. Scorbutic guinea-pigs receiving fresh orange juice or milk reached a given stage of healing in about two-thirds of the time needed by those receiving juice or milk kept at −30° for 24–36 days.—L. LILLEENGEN. *Acta paediat.*, 18 (1936), 392–418; through *J. Soc. Chem. Ind.*, 56 (1937), B., 180. (E. G. V.)

Orange Peel—Vitamin-C Content of, and Its Pharmaceutical Preparations. Chemical determination of ascorbic acid in orange peels, and in tinctures and infusions, showed good agreement with biological values (0.024–0.179 mg./Gm.). There is loss on drying of peels and on storage of peels, tinctures and infusions due to oxidation.—H. C. HOU. *Chinese Med. J.*, 50 (1936), 1227–1234; through *J. Soc. Chem. Ind.*, 56 (1937), B., 81. (E. G. V.)

Palm Oil—Dietetic Value of. Red palm oil contains considerable amounts of carotene (I). Its vitamin-A potency is approximately equivalent to that of cod-liver oil. The −D content is negligible. Removal of the solid constituents improves the palatability of the oil and the product is richer in (I). Oils of low acidity from unripe fruit usually contain less (I).—T. A. BUCKLEY. *Malay. Agric. J.*, 24 (1936), 485–488; through *J. Soc. Chem. Ind.*, 56 (1937), B., 81. (E. G. V.)

Parathyroid Injections—Effect of a Series of, on Blood Coagulation. Intramuscular injections of parathyroid (10 units) made into hares every second day with examinations of the blood seven hours later show that (1) the coagulation time of recalcified oxalated blood plasma is always shortened from the first to the twentieth injection, inclusive; (2) fibrinogen increases until about the twentieth injection, when it returns to normal; (3) calcium ions increase until about the ninth but diminish after the twelfth to fifteenth; (4) total calcium increases after the third to the ninth injection and is usually increased after the twelfth to thirteenth injection, usually decreasing again after the twentieth.—E. ZUNZ and O. VESSELOVSKY. *Arch. int. Physiol.*, 43 (1936), 327–340; through *Physiol. Abstr.*, 22 (1937), 140. (F. J. S.)

Polypeptide Nitrogen—Determination of in Blood and Its Dynamics after Injection of

Specific Exciting Agents. As non-specific exciting agents affect the tissue cells by tending to increase the ratio of residual to total nitrogen, they necessarily produce an increase in the fragments of high-molecular-weight protein molecules in the blood. As a result of the degradation of albumin, polypeptides are produced, which constitute the most mobile portions of these fragments. Determination of these polypeptides consists in determining the difference between the amount of residual nitrogen remaining after cold precipitation of the proteins by colloidal iron hydroxide, and after precipitation with phosphomolybdic acid. The first-mentioned is determined as follows: mix 0.1 cc. of blood with 1.9 cc. of distilled water, add 1 cc. of saturated sodium sulphate solution, and shake; add 3 cc. of very pure 1% colloidal iron hydroxide, shake frequently, after 2 hours filter or centrifuge, and determine nitrogen in the clear filtrate by Assel's method. For the second determination add 0.9 cc. of distilled water to 0.1 cc. of blood and then a 0.5% phosphomolybdic acid solution; filter at the end of one or two hours, and determine nitrogen on 0.5 cc. of filtrate by Assel's method.—O. STEPPOUN and N. NAOUMOVA. *Voprossy Pitania*, 5 (1936), 33–40; through *Chimie & Industrie*, 36 (1936), 1125–1126. (A. P.-C.)

Proteins—Anhydrolytic Decomposition of. The decomposition of edestin with hot anhydrous glycerol gives a product separable into four fractions. These substances have a closed polypeptide ring structure and molecular weights of 1300 and 2600. Compositions are suggested for them. Pepsin, pancreatin and unactivated papain hydrolyse them. After hydrolysis with pancreatin, but not with pepsin, the product may be hydrolysed further with arginase.—A. FODOR and N. LICHTENSTEIN. *Enzymologia*, 1 (1936), 311–320; through *Physiol. Abstr.*, 22 (1937), 124. (F. J. S.)

Proteins—Spectrophotemetry of. I. Absorption Spectra of Tyrosine, Tryptophan and Their Mixtures. II. Estimation of Tyrosine and Tryptophan in Proteins. The adsorption curves of tyrosine and tryptophan were measured between 260 and 305 mμ in acid, neutral and alkaline solutions. With the spectrographic method, a satisfactory estimate of the tryptophan and tyrosine concentrations is obtainable in as little as 5 mg. of the protein with small risk of failure, in contrast to the use of alkaline hydrolysis before estimation.—E. R. HOLIDAY. *Biochem. J.*, 30 (1936), 1795–1803; through *Physiol. Abstr.*, 22 (1937), 123. (F. J. S.)

Proteins and Other Lyophilic Colloids—Solubility and Flocculation of. Dilatometric measurements show that in the heat coagulation of ovalbumin and serum there is a small increase in volume while with blood pigment solutions there is a small decrease. The volume change is about 3–6% of the contraction on adding albumin to water. The denatured albumin is therefore hydrated to practically the same extent as natural albumin. The precipitation of proteins by clupein is hindered by the presence of salts. The precipitation results from an electrostatic combination between positive groups of clupein and exionic negative groups of the protein. Proteins without exionic negative groups are not precipitated by clupein. The colloidal structure of proteins and the character of the solvate sheath are considered.—F. HAUROWITZ and F. MARX. *Kolloidzschr.*, 77 (1936), 65–74; through *Physiol. Abstr.*, 22 (1937), 114. (F. J. S.)

Serum Proteins—Precipitation of, by Ammonium Sulfate in Arterial Hypertension. In a normal blood serum globulin can be sharply separated from albumin by means of ammonium sulfate, the former precipitating when the ammonium sulfate concentration is between 30 and 60% of saturation, and the latter at a concentration of 60 to 70% of saturation. When arterial hypertension exists sharp fractionation cannot be effected. Neither their solubility in presence of a neutral salt nor the variations of the logarithm of this solubility as a function of salt concentration permits of obtaining a sharp separation of albumin and globulin. The modifications of the serum observed in arterial hypertension seem to bear mainly on the nature of the proteins rather than on variations in the albumin or globulin contents.—ANDRÉE ROCHE, M. DORIER and L. SAMUEL. *Compt. rend. soc. biol.*, 122 (1936), 231–233; through *Chimie & Industrie*, 37 (1937), 244. (A. P.-C.)

Sorbitol—Occurrence of, in Tobacco. Pipe and cigarette tobaccos contained 0.3–0.4% of their dry weight of sorbitol. Mannitol, dulcitol and inositol could not be detected.—C. NEUBERG and M. KOBEL. *Z. Unters. Lebensm.*, 72 (1936), 116–121; through *J. Soc. Chem. Ind.*, 56 (1937), B., 187. (E. G. V.)

Sugar in Human Milk—Comparative Determinations of, by the Cupric and Iodometric Methods. The milk was defecated by the mercuric nitrate method. For nine samples the average lactose content was 6.09% when determined by the iodometric method and 5.73% when de-

termined by Bertrand's method. Human milk contains small quantities of carbohydrates other than lactose.—M. BIERRY. *Compt. rend. soc. biol.*, 122 (1936), 857; through *Chimie & Industrie*, 37 (1937), 454. (A. P.-C.)

Suprarenal Gland Cortical Hormone—Extract of. An extract of the cortical hormone in aqueous alcohol is obtained by treating suprarenal cortex tissue with an organic lipoid solvent which may be benzene, ether, gasoline or carbon tetrachloride; removing the solvent leaving a residue; treating the residue with acetone to precipitate lipoids; removing the acetone leaving a residue, and subjecting the last-mentioned residue to a fractional distribution between aqueous alcohol and gasoline, thereby obtaining the cortical hormone in the aqueous alcohol.—WILBUR W. SWINGLE and JOSEPH J. PFIFFNER, assignors to PARKE, DAVIS & Co. U. S. pat. 2,074,492, March 23, 1937. (A. P.-C.)

Suprarenal Gland Cortical Hormone—Extract of. Material from the cortical portion of the suprarenal gland is dissolved in a solvent capable of preserving the activity thereof; proteins, inert meterials, adrenaline, phospholipides, neutral fats and cholesterol are removed; the cortical hormone thus obtained is dissolved in 70% aqueous alcohol; the solution is distilled in partial vacuum to remove solvents and water; the residue is dissolved in 95% alcohol, and the solution is filtered through permutit, thereby obtaining the entire activity of the cortical hormone free from adrenaline.—WILBUR W. SWINGLE and JOSEPH J. PFIFFNER, assignors to PARKE, DAVIS & Co. U. S. pat. 2,074,493, March 23, 1937. (A.P.-C.)

Tissue Extract—Ultra Violet Spectra of. A description of a method by means of which ascorbic acid can be determined quantitatively in tissue extracts which have been freed as far as possible of all other substances which absorb ultraviolet light. The de-albuminized extracts are precipitated successively with phosphotungstic acid in acid solution and by mercuric acetate at p_H 5.6 or 5.8. A spectrographic study of brain extracts obtained in this way showed that the reducing power as determined by Tillmanns' method is due mainly to ascorbic acid. There are not more than 30% of derivatives of reducing glucides. The probable error, after correction, is therefore $\pm 13\%$.—J. A. DE LOUREIRO. *Bull. soc. chim. biol.*, 18 (1936), 757–768; through *Chimie & Industrie*, 37 (1937), 662. (A. P.-C.)

Uric Acid—Chromic Oxidation of. A mixture of 1 volume of 1% potassium dechromate, 5 volumes of saturated solution of potassium sulfate and 1 volume of sulfuric acid is boiled with uric acid. One molecule of the latter requires 3 atoms of oxygen for transformation into urea. The boiling of urea with the chromate mixture produces a partial hydrolysis which becomes total after the addition of silver sulfate as a catalyst.—A. LEVEQUE and J. MOULIN. *Bull. sci. pharmacol.*, 43 (1936), 213–220; through *Chimie & Industrie*, 37 (1937), 452. (A. P.-C.)

Urinary Ammonia. The Sahli method for determining urinary ammonia, which involves precipitation of the urine with barium chloride and sodium hydroxide and titration of portions of the filtrate with hydrochloric acid before and after elimination of the ammonia *in vacuo*, was compared with the methods of Folin and Schlösinger and found to be sufficiently accurate for clinical purposes. It has the advantages of being relatively simple, taking a short time and not requiring the constant presence of the experimenter. This method was used to determine the increase of urinary ammonia after ingestion of ammonium acetate in certain pathological conditions of the liver. Persons with normal livers showed initially a lower urinary ammonia than those in whom liver function was impaired. In all cases only a small part of the ingested ammonia was recovered, but a greater increase was found in the case of persons with normal livers.—S. MIKAELOFF. *Bull. soc. chim. France*, 3 (1936), 1048–1052; through *Chimie & Industrie*, 37 (1937), 663. (A. P.-C.)

Vagotonin—Preparation of, Perfectly Free from Insulin. A detailed description of the procedure used to remove non-hormonal impurities and insulin from commercial vagotonin.—D. SANTENOISE, TH. BRIEU and E. STANKOFF. *Compt. rend. soc. biol.*, 121 (1936), 1420–1422; through *Chimie & Industrie*, 37 (1937), 731. (A. P.-C.)

Vitamin A—Methods for the Determination of. The Rosenthal modification of the Carr-Price antimony trichloride method is further modified by substituting "Parabraun Z extra" for potassium permanganate as the color standard, and omitting the addition of guaiacol. Under these conditions, cholesterol gives a variable red color. The method is therefore not applicable to the determination of vitamin A in organ extracts.—G. BALASSA and G. SZANTO. *Hoppe-Seyler's Z. Physiol. Chem.*, 240 (1936), 29–32; through *Chimie & Industrie*, 37 (1937), 945. (A. P.-C.)

Vitamin A—Photochemical Destruction of, in an Alcoholic Medium. I. Primary Reactions. Changes in the absorption curves during the destruction of vitamin A in slightly acidified alcohol by ultraviolet light of 365 mμ are shown. It requires 120 microcalories to transform that quantity of vitamin having an absorption of 0.003. The application of the reaction to the determination of vitamin A, previously described (*Bull. soc. chim. biol.*, 18 (1936), 190–194), is further discussed.—A. CHEVALIER and P. DUBOULOZ. *Bull. soc. chim. biol.*, 18 (1936), 703–722; through *Chimie & Industrie*, 37 (1937), 662–663. (A. P.-C.)

Vitamin A and Carotene in Argentine Butter. Determinations were by means of the Carr-Price color reaction and the Hilger spectrophotometer. Significantly higher values were seen in Argentine butters than in those obtained in England and United States by authors using the same analytical methods. No seasonal variation occurred. The higher values are attributed to the fact that pastures in the Argentine are rich in precursors of vitamin A and the animals are in the fields all the year round.—C. T. RIETTI. *Rev. soc. argentina biol.*, 12 (1936), 459; through *Physiol. Abstr.*, 22 (1937), 171. (F. J. S.)

Vitamin A Preparation—Manufacture of. Vitamin-containing fresh liver is treated directly with about half its quantity of a 30% solution of an alkali metal hydroxide in about 50% aqueous ethanol in an inert atmosphere at a temperature of about 60° C. to saponify the fish liver oil in the presence of the liver. The saponification mixture is treated with an equal volume of 40% aqueous alcohol and is extracted with a water-immiscible lipoid solvent.—FRITZ LAQUER and PAUL VON DOBENECK, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,076,901, April 13, 1937. (A. P.-C.)

Vitamin B_1—Constitution of. Aneurin and thiochrome each contain 2 C-CH_3 groups. In aneurin a CH_2 links the thiazole and pyrimidine nuclei. Aneurin is almost quantitatively converted by sulfite into 2-methyl-4-amino-5-pyrimidylsulfonic acid and 4-methyl-5-B-hydroxyethylthiazole.—T. IMAI. *Hoppe-Seyl. Z.*, 243 (1936), 11; through *Physiol. Abstr.*, 22 (1937), 172. (F. J. S.)

Vitamin B_1—Synthetic. A review.—ANON. *Drug Cosmetic Ind.*, 40 (1937), 660–662, 677. (H. M. B.)

Vitamin-D—Antirachitic Potency of. Present knowledge on the potency of the various forms of -D is reviewed. The identity of -D_2 with calciferol is mentioned and the standardization of -D from fish-liver oils discussed. The results of investigations in different laboratories are collated.—A. L. BACHARACH. *Food*, 6 (1937), 180–182; through *J. Soc. Chem. Ind.*, 56 (1937), B., 287. (E. G. V.)

ANALYTICAL

Acetone—Microdetermination of. Distil the liquid (containing about 0.1% of acetone) in a Schloesing-Aubin apparatus collecting about one-quarter of the original volume which is received in 10% sodium bisulfite solution (1 cc. of which is sufficient for 25 cc. of distillate). To an aliquot containing a few 0.1 mg. of acetone add 1 drop of 1% soluble starch solution, add twentieth normal iodine to nearly complete oxidation of the bisulfite, make slightly alkaline to litmus with a few drops of five-normal sodium hydroxide, shake and acidify with a few drops of ten-normal sulfuric acid. Very slowly add two-hundredth normal iodine until a faint violet persists for a few seconds. Add sufficient five-normal sodium hydroxide to give an alkalinity of about half-normal and then an excess of fiftieth-normal iodine. Let stand 5 minutes, make decidedly acid with ten-normal sulfuric acid, and titrate the excess iodine with two-hundredths normal sodium thiosulfate. For 0.5 to 2 mg. of acetone, the relative error is 0.2 to 0.5%.—A. LINDENBERG. *Compt. rend. soc. biol.*, 122 (1936), 317–319; through *Chimie & Industrie*, 37 (1937), 871. (A. P.-C.)

Acetylcholine—Identifications and Determination of, in Biological Substances. Acetylcholine hydrochloride added to serum or blood can be extracted by addition of 3 volumes of 96% alcohol. The filtrate is acidified with 2% of acetic acid heated to boiling, and evaporated in the cold as rapidly as possible in a current of dry air. The residue is dissolved in absolute alcohol and extracted with ether. The solution lends itself to the precipitation of the acetylcholine as phosphotungstate, silicotungstate, reineckate (Reinecke's salt is ammonium chromi-diammoniotetrasulfocyanide) and periodide. The first three of these salts can be identified by the residue on ignition. The determination proper is carried out by weighing the phosphotungstate or silicotungstate after drying at 100° C. or igniting, or of the reineckate after drying in vacuum over

sulfuric acid or igniting, by bromometry of the reineckate, or by iodimetry of the periodide. The method is applicable to the detection or determination of 5 mg. of acetylcholine hydrochloride in 50 cc. of serum.—E. KAHANE and JEANNE LÉVY. *Bull. soc. chim. biol.*, 18 (1936), 505–528; through *Chimie & Industrie*, 37 (1937), 246. (A. P.-C.)

Acetyl Group—Detection of, in Certain Drugs by the "Lanthanum Blue" Reaction. Colloidal basic lanthanum acetate gives a blue color with iodine similar to that given by starch. To 1 to 2 cc. of the solution to be tested add 4 to 5 drops of 5% lanthanum nitrate solution, then enough fiftieth normal iodine to color the solution light brown, then normal ammonia dropwise to faint turbidity. If 0.1 mg. or more of acetate ion is present a blue or violet color or precipitate forms. Drugs are tested for the acetyl radical by adding 10 to 20 mg. to 2 to 3 cc. of 50% sulfuric acid, distilling over about half in a microdistillation apparatus, and testing the distillate. This method is suitable for heroine, aconitine, antifebrine, exalgin, phenacetin, etc., but not for aspirin, tanninogen and some other drugs. Aspirin and tanninogen give positive tests if 30% ferric chloride is used in place of the 50% sulfuric acid in the distillation.—A. D. DEL BOCA and A. REMEZZANO. *An. Farm. Bioquim.*, 6 (1935), 111–116; through *Chimie & Industrie*, 37 (1937), 731–732. (A. P.-C.)

Albumin and Globulins in Serum—Microdetermination of. Dilute 0.5 cc. of serum with 4.5 cc. of physiological salt solution; to part of this solution add an equal volume of saturated ammonium sulfate solution to precipitate the globulines, and filter. Determine albumin nitrogen on 2 cc. of the filtrate by the Roche and Marquet method consisting in precipitating the proteins with an acetic acid solution of tannin, washing the precipitate till free of ammonium salts and determining nitrogen by the micro-Kjeldahl method. Determine total protein nitrogen, by the same method, on 1 cc. of the original diluted serum. Globulin nitrogen is obtained by difference. The error does not exceed 1%.—ANDRÉE ROCHE. *Compt. rend. soc. biol.*, 121 (1936), 1022–1023; through *Chimie & Industrie*, 36 (1936), 968–969. (A. P.-C.)

Alcohol—Determination of Small Amounts of. The extent of reduction of a solution of chromic acid in nitric acid provided that the majority of the chromic acid is reduced, is readily determined from the color of the solution. The reagent consists of a 0.025% solution of chromic acid, as potassium dichromate, in 33% nitric acid. The color of 10 cc. of this solution is completely discharged by 0.8 cc. of a 0.1% solution of alcohol. The reagent may be diluted up to 5 times if necessary. For the analysis of aqueous solutions of alcohol containing no interfering substances, varying quantities of the solution are run into test tubes each containing 10 cc. of the nitro-chromic acid reagent and the tubes matched with similar tubes containing definite weights of alcohol. The use of a Conway unit is advocated in some cases where non-volatile interfering substances such as sugars are present in the solution; in such cases the central chamber contains the reagent and the outer annular one the solution to be examined. At room temperatures complete reaction requires about twenty-four hours. With this method it is possible to detect the alcohol in 0.1 cc. of a 0.025% solution. Methods essentially similar to that described are also given for the determination of alcohol in respired air, body fluids and industrial products.—D. A. WEBB. *Sci. Proc. Roy. Dub. Soc.*, 21 (1936), 281; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 695. (S. W. G.)

Alcohol Determination—Fundamentals of, in Spirituous Liquors Containing Extract, Using the Test Still. The procedure and precautions in measuring the necessary volume of the liquor are described in great detail.—C. LUCKOW. *Z. Spiritusind.*, 59 (1936), 442; through *J. Soc. Chem. Ind.*, 56 (1937), B., 177. (E. G. V.)

Alcohol in Putrefied Blood and in Corpses—Microdetermination, Chemical Study, Neoformation of. Alcohol can be determined in putrefied blood and tissues if they are first treated to remove the bulk of the volatile substances which can interfere with the dichromate titration of the alcohol. A little alcohol was added to beef blood and the mixture stored under various conditions and analyzed at intervals. The alcohol gradually disappeared; at 20° C. it disappeared in 13 to 16 days, at 15° to 18° C. in 17 to 20 days and at 3° C. in 77 days. White mice given 1 to 1.5 mg. of alcohol per Gm. body weight were killed and stored under various conditions. At 20° to 22° C. the alcohol was absent in 26 days and at 3° C. it practically disappeared in 100 days. Experiments with buried mice also are reported. In control mouse corpses stored under the same conditions some alcohol was formed during putrefaction. At 20° to 22° C. the maximum was found on the 8th day, at 15° to 18° C. on the 9th day (about 0.1% of the body weight), and at

3° C. a detectable quantity was present on the 14th day. Traces of butyl alcohol also were formed.—MAURICE NICLOUX. *Bull. soc. chim. biol.*, 18 (1936), 318–351; through *Chimie & Industrie*, 37 (1937), 246. (A. P.-C.)

American Larch—Bark of. Indian tribes have held this to be a valuable remedy. White settlers adopted the traditions and it continues to be used in chronic bronchitis. The bark has been examined chemically. Procedure is given and results tabulated. It was found to contain pentosans, tannins of the catechol type, saponins and 10 per cent of hard brittle resin, partly acid, but no alkaloid. Steam distillation yielded a small amount of a white solid which may be paraffin.—K. E. LARSEN and E. V. LYNN. *J. Am. Pharm. Assoc.*, 26 (1937), 288. (Z. M. C.)

Ampul Glass—Methods Used in the Determination of the Alkalinity Imparted to Water of. Composition of several types of ampul glass is given. Action of water on glass is one of diffusing and disintegration rather than a true solution and this is discussed. Alkalinity tests used were N. F. VI, B. P. methods for whole ampuls and for crushed glass, G. P. method, titration method of Lilly, titration method of Kimble, hydrogen-ion concentration method using quinhydrone electrode, hydrogen-ion concentration colorimetric method and bromthymol blue method. Results of these tests are shown in several tables. Discussion of the methods used covers procedure in cleansing ampuls before testing, heating the water or test solution in the ampul for each of the methods. Tests were also run on used ampuls. The following conclusions were reached: 1. For the cleansing of ampuls preparatory to testing them for the free alkalinity of the glass, it has been found that several rinsings with distilled water is all that is necessary. 2. Autoclaving the ampuls filled with water or the test solution for 30 minutes at 15 pounds pressure is to be preferred to boiling for six hours. 3. The phenolphthalein test for free alkalinity in ampul glass as found in the N. F. VI is entirely unsatisfactory and should be replaced by a better method of testing. 4. The hydrogen-ion concentration colorimetric method, in which is determined the amount of difference in p_H between that of the freshly boiled distilled water to be used in the ampul and that of the solution removed from the ampul, is quite satisfactory. This difference can be readily duplicated and is fairly constant for the individual ampuls of a lot of ampuls. It is recommended that a difference of 0.5 p_H be the maximum limit of change. 5. The Kimble titration method is satisfactory. It indicates the amount of free alkalinity in glass very closely. The marked disadvantage of the method is that it requires such a large amount of crushed glass, approximately 60 Gm., to run the test in duplicate. It is recommended that a titration value of 0.5 cc. of $N/50$ hydrochloric acid be set as a limit for the alkalinity of a 10-Gm. sample.—R. K. SNYDER and E. N. GATHERCOAL. *J. Am. Pharm. Assoc.*, 27 (1937), 321. (Z. M. C.)

Arsenic—Determination of Traces of, in Musts and Wines. Lockemann's method is valuable as a rapid approximate indication of small amounts (>2 mg. per liter) of arsenic. That of Gangl and Sanchez is to be recommended, provided that the residual arsenic is separately determined.—W. DIEMAIR and J. WAIBEL. *Z. Unters. Lebensm.*, 72 (1936), 223–234; through *J. Soc. Chem. Ind.*, 56 (1937), B., 176. (E. G. V.)

Arsenic—Microchemical Detection of, in Toxicological Analysis. To test the efficacy of the proposed test, some guinea pigs were given the smallest lethal dose of arsenic trioxide and after the death of the animals their organs were examined. Treat the minced sample with 20 parts of hydrogen peroxide and an equal volume of 30% sodium hydroxide. After 15 minutes the arsenic will be dissolved as arsenate. Place a drop of the solution on a microscope slide, add 1 drop of concentrated hydrochloric acid, mix, add 1 drop of concentrated sodium iodide solution, mix and finally add 1 drop of quinoline. On shaking, yellow-orange crystals of quinoline arsenate-iodide are obtained. Treat another drop of the solution with 1 drop of 20% cesium chloride solution, 1 drop of cold saturated disodium hydrogen phosphate and some pyridine; colorless tetrahedrons are soon obtained if arsenic is present. In all cases positive tests were obtained very quickly, when arsenic was known to be present.—A. MARTINI and B. BERISSO. *Mikrochemie*, 19 (1936), 181–182; through *Chimie & Industrie*, 37 (1937), 453. (A. P.-C.)

Benzaldehyde in Cherry-Laurel Water—Method of Determination of. A discussion of 3 methods. (1) *Denner's Method.*—Treatment with an acetic acid solution of phenylhydrazine and weighing of the precipitate or iodometric titration of the excess of phenylhydrazine. (2) *Tiffeneau's Method.*—Addition of melubrin (or aminoantipyrine), allowing to stand 2 days, and weighing the precipitate. (3) *Morvillez and Desfossez' Method.*—Oxidation with potassium permanganate and titration of the excess of permanganate. The three methods give practically

identical results and are equivalent from the standpoint of manipulation.—A. GUILLAUME and MELLE. G. DUVAL. *Bull. Sci. Pharmacol.*, 43 (1936), 105–114; through *Chimie & Industrie*, 36 (1936), 970. (A. P.-C.)

Bismuth—Determination of, in Organic Compounds. The use of perchloric acid, as suggested by Kahane, is recommended by the author for the determination of bismuth in organic compounds and in ointments, powders, etc. When the organic matter has been destroyed, the bismuth is precipitated as sulfide, the precipitate is washed and, while still wet, treated with an excess of volumetric solution of silver nitrate ($Bi_2S_3 + 6AgNO_3 = 3AG_2S + 2Bi(NO_3)_2$) and the excess of silver titrated with thiocyanate. The following is the method of oxidation. Two Gm. of ointment containing 10% of (*e. g.*) dermatol (together with the paper on which it is weighed) is placed in a beaker with 4 Gm. of anhydrous sodium sulfate and oxidized with a mixture of 10 cc. of sulfuric acid (sp. gr. 1.81) and 5 cc. of nitric acid (sp. gr. 1.39) heating if necessary. When the reaction is completed a mixture of two parts of perchloric acid (sp. gr. 1.61) and one part of fuming nitric acid is added drop by drop until the liquid is colorless and only faintly yellow, the excess of nitric acid is then driven off by further heating and the bismuth precipitated as sulfide.—C. MASINO. *Boll. chim.-farm.*, 75 (1936), 409; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 696. (S. W. G.)

Blood Sugar—Direct Microtitration Method for. A direct titration method for the sugar in 0.1 cc. of blood is described. The blood is deproteinized with cadmium hydroxide, the excess cadmium is removed with barium carbonate, and the filtrate is then heated with a large excess of ferricyanide. The ferrocyanide produced is titrated by ceric sulfate solution with setopaline C as indicator. Only two precise measurements are required, that of the blood sample and that of the final titration. Each 0.01 cc. of 0.002754 *N* ceric sulfate solution used in the titration indicates 1 mg. per cent of blood sugar. Except in blood with marked nitrogen retention, the sugar found agrees closely with the fermentable sugar. Bloods with less than 40 mg. per cent of urea nitrogen show only 0–1.5 mg. per cent of non-fermentable reducing sugar.—B. F. MILLER and D. D. VAN SLYKE. *J. Biol. Chem.*, 114 (1936), 583–595; through *Physiol. Abstr.*, 22 (1937), 115. (F. J. S.)

Boron Determinations—Accuracy of, Carried Out in Pyrex Glassware. In the determination of boron in mineral water by distillation of the methylboric ester, it is impossible to use Bohemian glass flasks which are too fragile, or silica flasks which are too expensive. Jena glass and pyrex have the disadvantage of containing boron. It is therefore necessary to take this fact into consideration and apply a correction which, in some cases, may reach 5 to 10% of the amount found.—R. LAGRANGE. *Documentation Sci.*, 5 (1936), 108–109; through *Chimie & Industrie*, 37 (1937), 869. (A. P.-C.)

Camphor—Colorimetric Determination of. When camphor is heated in alcoholic solution with furfurol and sulfuric acid a violet color is produced which can be used for determining the amount of camphor present. One cc. of spirit of camphor is mixed with 3 cc. of alcohol (95%) and two drops of a 1% alcoholic solution of furfurol added. The solutions are well mixed and 2 cc. of concentrated sulfuric acid added drop by drop, shaking cautiously. The mixture is heated for five minutes, immersed in boiling water, cooled thoroughly under a jet of cold water, 5 cc. of alcohol (95%) is added, the mixture is cooled again, and the depth of color determined. A similar reaction using 1 cc. of spirit of camphor, 1 cc. of alcohol (95%) and 2 cc. of a 1% alcoholic solution of benzaldehyde, adding sulfuric acid and treating as above, gives a bright red color which can be used for the same purpose. As the depth of color is not exactly proportional to the proportion of camphor present it is necessary to make a curve to get accurate results from the colorimeter readings.—A. CASTIGLIONI. *Ann. Chim. appl. Roma*, 26 (1936), 53; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 697. (S. W. G.)

Carbonate Alkalinity of Plants—Method for the Determination of. The change of the acidity of plants by the action of CO_2 was studied by a glass electrode with $10^{-4}M$ $NaHCO_3$ saturated with CO_2. Calculations were made according to Kako and Carlbert (*C. A.* 30, 507).—Y. KAUKO and LAINA KNAPPSBERG. *Suomen Kemistilehi*, 10B (1937), 3 (in German); through *Chem. Abstr.*, 31 (1937), 3814. (F. J. S.)

Chloramine—Analysis of. The methods employed for the analysis of a number of samples of chloramine were as follows. *Active Chlorine.*—Titration by the iodine and arsenous acid methods were found equally satisfactory. *Total Chlorine.*—A solution is reduced with sodium sul-

fite and nitric acid, excess of sulfur dioxide is removed by the addition of hydrogen peroxide and the solution is neutralized and titrated with silver nitrate, using potassium chromate as indicator. *Nitrogen.*—The chloramine is first decomposed by the addition of sodium sulfite and sulfuric acid, and the nitrogen in the mixture then determined by the Kjeldahl method. *Sodium.*—Since the decomposition of chloramine on heating is rather violent, it is better to dissolve the sample in water, decompose by the addition of excess of sulfurous acid and, after filtering, to determine the sodium in the filtrate by ignition with sulfuric acid. *Water.*—Drying at 70° C. to constant weight gives satisfactory results, and tests showed that the dried material had not lost any appreciable quantity of active chlorine. The results both for total chlorine and for nitrogen content were slightly higher than the figure given by the content of active chlorine, indicating the presence of a small amount of sodium chloride and of *p*-toluenesulfonamide. The percentage of sodium was rather higher than calculated, possibly due to the presence of some salt other than chloride, while the water content proved to be only 16% instead of the 19.19% required by the presence of three molecules of water of crystallization.—C. O. BJÖRLING. *Svensk Farm. Tidskr.*, 40 (1936), 271; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 698. (S. W. G.)

Chrysalis Oil—Fatty Acid of. Samples of commercial chrysalis oil as well as the oil obtained from the living chrysalis of several varieties of *Bombyx mori* were investigated. It was found that commercial oil contained considerable quantities of a solid material which was identified as glyceryl-1:3-dipalmitate. The mixture of fatty acids obtained from chrysalis oil consisted of 20% palmitic, 4% stearic, 2% palmitoleic, 35% oleic, 12% linoleic and 28% linolenic acid, besides less than 1% of saturated and 1 to 2% of unsaturated acids containing more than 18 carbon atoms.—W. BERGMANN. *J. Biol. Chem.*, 114 (1936), 27–38; through *Physiol. Abstr.*, 22 (1937), 128. (F. J. S.)

Chysopsis Graminifolia, Nutt.—A Preliminary Study. An introductory description of the plant is given. Experimental work covered moisture and ash determination, extraction with selective solvents, preliminary test including elemental test and testing an aqueous extract by Bourquelot's method for glucosides, Kraft's procedure for saponins. Tannins were examined by the method of Dafert and Fleischer. Following is their summary of findings: (1) Moisture content varying from 9.8–10.8 per cent for three lots of the entire herb collected at various seasons of the year. (2) Total ash varying from 6.26 per cent to 8.33 per cent; acid-insoluble ash 0.67 to 4.65 per cent. (3) Extracts with selective solvents using the Palkin-Watkins' Extractor are determined. (4) Preliminary tests show the presence of nitrogen, phosphorus, saponins and reducing substances, tannins and bitter principle. (5) Quantitative determinations show (*a*) saponins 0.36 per cent and (*b*) catechol tannins 3.35 per cent and pyrogallol tannins 0.60 per cent.—H. DALE ROTH and HENRY M. BURLAGE. *J. Am. Pharm. Assoc.*, 26 (1937), 415. (Z. M. C.)

Citric Acid—Determination of, in Wine. A reply to Mohler's assertion that the factor 0.52 used by the author for converting pentabromoacetone into citric acid is > the theoretical value. As the yield is only 90%, owing probably to oxidation of some of the acetonedicarboxylic acid produced intermediately, the above factor is more accurate; results illustrating this are cited.—T. VON FELLENBERG. *Mitt. Lebensm. Hyg.*, 27 (1936), 157; through *J. Soc. Chem. Ind.*, 56 (1937), B., 76. (E. G. V.)

Clerodendron Infortunatum—Chemical Examination of. I. Analysis of the leaf showed ash 8.04%, protein 21.12, crude fiber 14.84, free-reducing sugars 3.00 and total sugars after inversion 17.05; the analysis of the ash as well as the extracts with various solvents are given. From the petroleum ether extract a bitter substance designated as clerodin (0.12% of the air-dried leaf), melting at 161–120°, a sterol (0.01%), as hexagonal plates, melting at 147–148°, acetyl derivative, melting at 127–128°, an alcohol, melting at 75°. A fatty acid portion was found to have iodine value of 111.42, neutralization value of 183.9, mean molecular weight 305, unsaponifiable matter 4.75 (yielded by Twitchell process), a liquid-acid portion (80%) consisting essentially of linolenic (74.88%) and oleic (25.13%) acids and a solid acid portion (20%) consisting of stearic acid (48.82%) and lignoceric acid. Sterols were separated from the unsaponifiable portion by freezing out its methyl alcohol solution and then by precipitation with digitonin as well as two pigments carotin and xanthophyll by the method of Willstätter. The sterol (1.20%) melted at 138–140° with softening at 135°, its acetate melts at 125–127°. The ether extract yields an oil similar to that of the petroleum ether extract and gallic acid. Other substances

found in other extracts were reducing sugars, tannins, proteins, chlorides and sulfates. Clerodin was found to be toxic to lower forms of life, may act as a vermifuge, is soluble in hydrochloric acid, olive and castor oils, glycerin and slightly in both forms of petrolatum.—HIRENDA NATH BANERJEE. *J. Indian Chem. Soc.*, 14 (1937), 51–57. (H. M. B.)

***d*-Cocaine—Microchemical Identification of.** *d*-Cocaine can readily be identified, even in mixture with other allied alkaloids, by the characteristic crystals of its permanganate. If a drop of 1% solution of potassium permanganate, acidulated with sulfuric acid, is added on a microscope slide to a solution of *d*-cocaine, abundant hexagonal crystals are formed, especially if the glass is rubbed with a pointed stirring rod. The best strength of the solution of the alkaloid is 0.1 to 1%; weaker solutions require some minutes before the crystals form. The official *l*-cocaine gives rectangular plates. Tropacocaine yields minute prismatic crystals, mostly in H forms which rapidly branch. The two eucaines give irregular masses or oily drops which do not crystallize. Other substitutes for cocaine and allied alkaloids are oxidized.—R. CECCONI. *Ann. Chim. Appl. Roma*, 26 (1936), 218; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 693. (S. W. G.)

Coffee—Determination of Caffeine and Aqueous Extract in Caffeine-Free and Caffeine-Containing. The methods of (A) Helberg as proposed for official use in Switzerland, (B) Pritzker and Jungkunz, modified by using the Kjeldahl method to determine the caffeine and (C) method A modified by using potassium permanganate purification as in B, are compared. For caffeine-free coffees B and C agree, but the results are approximately 50% > those given by A. For other coffees the agreement is better, but B gives slightly higher results and is recommended as being quicker and simpler. Variation of the particle size of the sample used for the determination of aqueous extract between 0.5 and 1 mm. may produce variations which make it impossible to judge whether the true extract is > or < the minimum value of 20 and 22% specified for caffeine-free and other coffees, respectively. The proposed pyknometric method gives results > those obtained gravimetrically, and introduces similar doubts.—E. BURGIN and M. STREULI. *Mitt. Lebensm. Hyg.*, 27 (1936), 1–8; through *J. Soc. Chem. Ind.*, 56 (1937), B., 81. (E. G. V.)

Cognacs—Analyses of Genuine. The analyses of seven samples are tabulated. Each was distilled in six fractions, the characteristics of which are discussed.—A. EVEQUOZ. *Mitt. Lebensm. Hyg.*, 27 (1936), 260–261; through *J. Soc. Chem. Ind.*, 56 (1937), B., 77. (E. G. V.)

Compounds Containing the CO Group—Systematic Study of Various. Hydroxylamine easily reacts with compounds containing the CO group; with the chlorides of organic acids and amides especially it forms the corresponding hydroxamic acids, which are readily detected by the cherry-red or violet-red coloration which they give with the ferric ion. Systematic detection of the CO group can be undertaken as follows: the substance under investigation should not give an intense coloration with ferric chloride; if it does, add a little hydrochloric acid; if the coloration is not destroyed, the method is inapplicable. If no coloration is produced, dissolve the sample in methanol; to 2 cc. of the solution add 1 drop of hydroxylamine solution and 1 Gm. of sodium acetate, shake, let stand 10 minutes and add 1 drop of ferric chloride solution; a red coloration indicates an acid chloride or anhydride, which can be differentiated by the fact that the former contains chlorine. If no coloration is produced, to the methanol solution add hydroxylamine and sodium hydroxide, after 10 minutes add a hydrochloric solution of permanganate and 1 drop of benzene; blue coloration of the supernatant benzene indicates acetone; if the benzene remains colorless, neutralize, add hydrochloric acid to complete solution of the precipitate and add ferric chloride solution; a red color indicates aldehyde. To the methanol solution add hydroxylamine hydrochloride and alcoholic potash, heat at 70° C. for 10 minutes, cool, neutralize and add ferric chloride; if a red coloration is produced, saponify the original material with alkali: production of ammonia indicates an amide, production of an alcohol or phenol, an ester and of none of these a lactone. If no coloration is produced, heat the methanol solution for 30 minutes at 70° C. with hydrochloric acid, and test for the formation of an ester; a positive result indicates that the original substance contained an organic acid.—E. GRAF. *Anales. soc. españ. fís. quím.*, 34 (1936), 95–99; through *Chimie & Industrie*, 37 (1937), 446. (A. P.-C.)

Cotarnine—Detection of, in Cotarnine Chloride and Other Pharmaceutical Preparations. An aqueous solution of the cotarine salt (0.05 Gm. in 5 cc.) on warming with 2–3 cc. of 15% sodium carbonate solution for 1 minute became orange and a white amorphous precipitate separated which turned yellow and finally brown. The limit of concentration for the test is 1:50,000. —D. BARKOVIC. *Rept. III Congr. Slav. Pharm.* (1934), 252–258; through *J. Soc. Chem. Ind.*, 56 (1937), B., 86. (E. G. V.)

Crystalline Substances Isolated from the Suprarenal Gland—Chemistry of. This paper is a preliminary description of the fractionation of an extract of the suprarenal gland. Four compounds were isolated and a fifth was identified through its products of oxidation. The general nature of these compounds, which contain only carbon, hydrogen and oxygen, is that of polyhydroxycarbonyl compounds. A possible error in the application of the tetranitromethane test for double bonds is discussed.—H. I. MASON, C. S. MYERS and E. C. KENDALL. *J. Biol. Chem.*, 114 (1936), 613–631; through *Physiol. Abstr.*, 22 (1937), 199. (F. J. S.)

Cysteine Hydrochloride—Assay of. It is pointed out that methods previously reported use aqueous solutions and require exact control of acidity, iodine concentration and temperature and that in acid aqueous solution cysteine can react in more than one way. The authors have found that when the titration medium is ethyl alcohol, with no more than 20 per cent water at the end of the titration, the following reaction occurs: $2\ \text{R.S.H.} + \text{I}_2 = 2\,\text{HI} + \text{R—S—S—R}$. The action is rapid and gives practically quantitative estimation of cysteine in cysteine hydrochloride remonohydrate. No empirical factor needs to be used. The cysteine salt, hydrochloride or iodide separates as a white crystalline precipitate. Several tabulations of results of experimental work are given and these results are discussed.—C. F. BICKFORD and R. E. SCHOETZOW. *J. Am. Pharm. Assoc.*, 26 (1937), 409. (Z. M. C.)

Derris Extract—Approximate Colorimetric Determination of. Derris root (1 Gm.) is shaken with dimethyl detone (10 cc.) for 5 minutes. One cc. of the filtered solution is diluted with 25 cc. of water. To 0.2 cc. of this mixture are added 5 cc. of concentrated sulfuric acid containing 0.1 Gm. of sodium nitrite per liter. The resulting colored solution has an absorption maximum at 530 millimicrons, measurement of the extinction coefficient of which determines the extract content of the root within 2% without being affected by rotenone content. Alternatively, the color is matched against mixtures of aqueous and alcoholic cobalt chloride.—T. M. MEIJER. *Rec. trav. chim.*, 55 (1936), 954–958; through *J. Soc. Chem. Ind.*, 56 (1937), B., 74. (E. G. V.)

Dinitrochlorobenzene—Determination of, in Air. The air is passed through alcohol to the dinitrochlorobenzene. The solution is treated with 4 times its volume of pure acetone, then absorbed with sodium hydroxide, and the compound is determined colorimetrically by the yellow color thus produced. Oxides of nitrogen, when present, produce an interfering yellow color; in this case the solution of dinitrochlorobenzene is heated with sodium hydroxide to hydrolyze off the chlorine, and the yellow sodium dinitrophenolate is determined colorimetrically. B. A. RACHKOVAN. *J. Prikl. Khim.*, 9 (1936), 576–579; through *Chimie & Industrie*, 36 (1936), 1140. (A. P.-C.)

Easton's Syrup—Determination of Strychnine in. The following method gives satisfactory results with old and new syrups. Carry out the assay for strychnine exactly as described in the B. P. to the stage when the impure alkaloid is obtained. Dissolve this residue in 10 cc. of *N*/1 hydrochloric acid and filter through a 9-cm. filter paper into a separator. Wash the flask and filter with three further quantities of 5 cc. *N*/1 hydrochloric acid and then with 25 cc. of a saturated solution of sodium chloride. Repeat the extraction of the filtered liquid by shaking with five successive quantities of 25 cc. of chloroform and continue the B. P. process of separation to the same stage as above and weigh the residue, which should be almost white.—N. EVERS and W. SMITH. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 397–400. (S. W. G.)

Elderberry-Seed Oil (Sambucus Canadensis, L.). The yield of oil from the seeds varied, according to the solvent (8 tested) employed, from 28% (light petroleum) to 31.9% (dichloroethane); the constants of the variously extracted oils obtained are given.—H. A. SCHUETTE and J. W. BROOKS. *Oil and Soap*, 13 (1936), 314–316; through *J. Soc. Chem. Ind.*, 56 (1937), B., 152. (E. G. V.)

Fats and Oils—Identification of Minor Component Fatty Acids in. A review of the available methods for the isolation and the identification of fatty acids occurring in very small amounts in oils and fats.—J. B. BROWN. *Oil and Soap*, 13 (1936), 303–306; through *J. Soc. Chem. Ind.*, 56 (1937), B., 153. (E. G. V.)

Fatty Oils—Microcolorimetric Determination of Acidity of. The oil is dissolved in ethyl alcohol (when very little acid is present) or pentyl alcohol (in presence of larger amounts of acid) to which bromocresol-purple has been added, and the color compared with standard solutions containing known quantities of oleic acid. The alcohol-indicator solution is preferably made in bulk and alcoholic alkali added till the color is blue-violet.—V. V. ILLARIONOV and I. S. KOGAN. *Mikrochem.*, 21 (1936), 11–16; through *J. Soc. Chem. Ind.*, 56 (1937), B., 153. (E. G. V.)

Fluorescent Indicators—Acidimetry and Alkalimetry in Presence of Some. A study of the following fluorescent indicators: fluoresceine, giving an intense green fluorescence at p_H of 4.3 or over and a slight blue fluorescence below p_H 3.8; acridine, green fluorescence at p_H below 4.85 and violet-blue luminescence above 4.95; umbelliferone, intense blue fluorescence at p_H less than 6.6; quinine, blue fluorescence decreasing progressively from p_H 4 to 9 at which point it disappears sharply. With strong mineral acids these indicators are particularly useful at high dilutions in which cases the colored indicators lack accuracy; umbelliferone gives excellent results with thousandth-normal acids. Sodium di-hydrogen phosphate is decidedly acid to umbelliferone; disodium hydrogen phosphate is neutral to umbelliferone and to quinine, and alkaline to acridine and fluoresceine; trisodium phosphate is alkaline to all these indicators. With umbelliferone, organic acids, even in dilute solution, can be determined as accurately as strong mineral acids. Umbelliferone is the most sensitive indicator for fixed alkalies, and also permits of determining ammonia as accurately as the fixed alkalies. When fluorescent indicators are used in titrating alkali carbonates, the solution should be warmed in order to eliminate the carbon dioxide which might affect the fluorescence of the indicator. Umbelliferone and acridine lend themselves quite well to the titration of alkali borates and cyanides. Umbelliferone is extremely useful for titrating the acidity of certain highly colored substances, especially wines, and also for the titration of fats and oils by working in organic solvents, or for the titration of emulsions.—Y. VOLMAR. *Documentation Scientifique*, 5 (1936), 33–39; through *Chimie & Industrie*, 37 (1937), 446–447. (A. P.-C.)

Fluorine—Methods of Testing and Significance of, in Water Supplies. The zirconium-alizarin method is suitable for determination of small amounts of fluorine in drinking-water, but in presence of interfering substances it is advisable first to separate the fluorine as hydrofluosilicic acid. (Details of the method are given in the appendix.) The toxicity of equivalent amounts of fluorine compounds varies with their solubility in water, and hence the fluorine content of the drinking-water is a major factor in the production of mottled dental enamel.—J. M. SANCHIS. *J. Amer. Water Works Assoc.*, 28 (1936), 1456–1468; through *J. Soc. Chem. Ind.*, 56 (1937), B., 193. (E. G. V.)

Formic Acid—Determination of, in Fruit Juices and Syrups. Two methods based on the reduction of mercuric chloride are described. Either the formic acid is extracted completely with diethyl ether, or a single extraction is carried out and the value obtained is corrected by means of a distribution coefficient.—T. VON FELLENBERG. *Milt. Lebensm. Hyg.*, 27 (1936), 182–200; through *J. Soc. Chem. Ind.*, 56 (1937), B., 81. (E. G. V.)

Free and Combined Iodine—Determination of, in Some Iodine Preparations. The simplest method for the analysis of iodine preparations is Viebock's oxidation method which consists in converting the iodine into iodate. Oxidation can advantageously be effected by means of chloramine solution in presence of an acetate-bromide buffering solution. The method is suitable also for tincture of iodine. Free iodine and potassium iodide are separated by means of chloroform and each is determined separately; free iodine can be titrated directly; the sodium iodide obtained is oxidized to iodate and again titrated.—W. AWE. *Pharm. Zentralhalle*, 77 (1936), 529–534; through *Chimie & Industrie*, 37 (1937), 938. (A. P.-C.)

Glutathione—Determination of, in Biological Material. Glutathione is a tripeptide of glutamic acid, cysteine and glycine. It interferes with the determination of thiocyanate in blood serum and in saliva. Details are given for its determination in biological fluids, and the results of about 20 analyses are tabulated. After the removal of albumin by treatment with trichloroacetic acid, glutathione can be precipitated either with cadmium hydroxide or by adding cadmium sulfate and sodium hydroxide or with silver chloride. The content of glutathione in either precipitate can be determined by adding potassium bromide and a known volume of standard potassium bromate in the presence of acid. After the bromination which consumes 10 atoms of bromine per molecule of glutathione, the excess of bromine can be determined by adding potassium iodide, buffering the solution with disodium phosphate and titrating the liberated iodine with sodium thiosulfate.—F. HARTNER and E. SCHLEISS. *Mikrochem.*, 20 (1936), 163–179; through *Chimie & Industrie*, 37 (1937), 874. (A. P.-C.)

Gravimetric Analysis—New Methods of. A review.—WILHELM BÖTTGER. *Pharm. Monatsh.*, 18 (1937), 65. (H. M. B.)

Halogens—Determination of, by Mercurimetry. Description of a method of determining halogens, and other ions, by titration with standard mercurous nitrate, without the use of adsorp-

tion indicators or of silver nitrate. *Determination of Chlorine and Bromine Ions.*—Weigh an amount of chloride or bromide equivalent to 100 cc. of decinormal solution, dissolve to 100 cc., transfer a 25-cc. aliquot to an Erlenmeyer flask, add 1 cc. of twentieth normal ammonium thiocyanate and 2 to 3 cc. of concentrated ferric nitrate solution. Titrate the blood-red solution with decinormal mercurous nitrate to complete decolorization, and subtract from the titration the amount of solution required to decolorize the 1 cc. of thiocyanate indicator. *Determination of the Iodine Ion.*—Weigh an amount of iodide equivalent to 100 cc. of decinormal solution, dissolve to 100 cc., transfer a 25-cc. aliquot to an Erlenmeyer flask, add 50 cc. of decinormal mercurous nitrate, filter out the yellow mercurous iodide precipitate, wash 4 or 5 times with 10 to 15 cc. of water acidified with 1 or 2 drops of dilute nitric acid. Acidify the filtrate with 2 cc. of dilute nitric acid, oxidize the filtrate by addition of potassium permanganate to a permanent pink which is destroyed by means of ferrous sulfate and titrate the mercuric nitrate formed by oxidation by means of standard ammonium thiocyanate to a faint pink. The difference between the volume of mercurous nitrate solution used and the volume of ammonium thiocyanate gives the amount of mercurous nitrate which combined with the iodide.—M. CHTCHIGOL. *Ann. chim. anal.*, 18 (1936), 61–64; through *Chimie & Industrie*, 37 (1937), 868–869. (A. P.-C.)

Higher Alcohols—Detection and Determination of, in Imitation Absinthe. Essential oils are removed by treatment with salicylaldehyde and sulfuric acid, the latter being insufficiently concentrated to react with the higher alcohols. These are determined, after removal of interfering substances with animal carbon, by the Komarowsky-Von Fellenberg method.—T. VON FELLENBERG. *Mitt. Lebensm. Hyg.*, 27 (1936), 292–302; through *J. Soc. Chem. Ind.*, 56 (1937), B., 77. (E. G. V.)

Hydrogen Sulfide—Determination of Small Amounts of, in Air. Application of Giberton's method using 1% silver nitrate solution to absorb the hydrogen sulfide from the atmosphere, and then treating it with 20% potassium cyanide solution to convert the silver sulfide into potassium argentocyanide. The hydrogen sulfide is then determined colorimetrically as lead sulfide. —I. S. CHERECHEVSKAIA. *J. Prikl. Khim.*, 9 (1936), 572–575; through *Chimie & Industrie*, 36 (1936), 1140. (A. P.-C.)

Indicators—Recent Developments in Carbon Monoxide. An apparatus designed by Malecki consists of a U-shaped glass tube on to each end of which a bulb is fused. In the lower part of the tube, which is partly filled with mercury, there were two platinum electrodes. A liquid of low boiling point above the mercury half fills the bulbs. A catalyst covering one of the bulbs promotes combustion of carbon monoxide in the gas sample, causing expansion of the liquid in the bulb and upward movement of mercury toward one of the electrodes, both of which are connected to an alarm device. By suitable adjustment of the position of the electrodes it is possible to set the alarm for carbon monoxide contents ranging from 0.01 to 0.02%.—H. POHL. *Schlagel u. Eisen*, 34 (1936), 243–245; through *J. Soc. Chem. Ind.*, 56 (1937), B., 133. (E. G. V.)

Iodine—Rapid Volumetric Determination of, in Mineral Water. Insoluble carbonates are removed by addition of 2–3 Gm. of sodium carbonate to the sample which is then evaporated to 200–300 cc., the filtrate is acidified with dilute hydrochloric acid, and 0.2–0.3 Gm. of potassium nitrite is added, followed by slow addition of sodium bicarbonate to render alkaline. 25 cc. of 0.02*N*-sodium arsenite are added and the mixture is titrated with 0.02*N*-iodine. The iodine content is given by the difference between this and a blank.—H. IVEKOVIC and L. DANCEVIC. *Arh. Hemiju*, 10 (1936), 51–53; through *J. Soc. Chem. Ind.*, 56 (1937), B., 193. (E. G. V.)

Iodine Value—Determination of. A critical comparison of existing methods.—W. SCHMITT. *Margarine-Ind.*, 28 (1935), 171–173, 185–187; through *J. Soc. Chem. Ind.*, 56 (1937), B., 150. (E. G. V.)

Iodine Value—Refractometric Determination of, in Flax-Seed Oils. Ninety-six samples of oils, cold-pressed or extracted at room temperature by diethyl ether from freshly ground samples of flax seed of different varieties from various countries, or districts, including frost-damaged, scabby and immature specimens, had I value (Wijs, 1 hour) 155.4–197.3, n^{25} 1.47582–1.48065 The correlation between I value and n^{25} was +0.9965 with a standard error of prediction for 1 value of ±0.82. The linear relation could be expressed as: I value = 8584.97, n^{25} −1251.83 (the graph and a convenient table are given), the maximum and average errors being 1.8 and 0.6, respectively. The method cannot be applied to mouldy seed, or to commercial (processed) oils, but is valuable to flax-seed crushers as a rapid means to predict the quality of the oil to be expected

from given batches of seed.—L. ZELENY and D. A. COLEMAN. *Oil and Soap*, 13 (1936), 253–256; through *J. Soc. Chem. Ind.*, 56 (1937), B., 58. (E. G. V.)

Iron—Determination of Official Preparations of, by Means of Ceric Sulfate. The following method is recommended for saccharated iron carbonate: Dissolve about 0.5 Gm. of the sample by heating it with about 20 cc. of 25% w/v sulfuric acid. Cool, add one drop of ferrous-orthophenanthroline sulfate solution as indicator and titrate with standardized approximately *N*/10 ceric sulfate solution until the orange color just disappears. The method was found to be convenient, and the end-point is very sharp. The methods of assay involving titration with potassium dichromate (including the official method) are claimed to be less accurate than the above method.—C. G. LYONS and F. N. APPLEYARD. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 462–470. (S. W. G.)

Iron and Copper—Colorimetric Determination of, in Wine and Other Alcoholic Beverages. Iron is determined colorimetrically with potassium cyanide, organic matter being removed by combustion with sulfuric acid and nitric acid. Copper is determined by a modification of Fischer and Liopoldi's dithizone method.—O. ANT-WUORINEN. *Z. Unters. Lebensm.*, 72 (1936), 219–223; through *J. Soc. Chem. Ind.*, 56 (1937), B., 176. (E. G. V.)

Iron and Manganese Citrate—Determination of Manganese in. If the sample contains about 7% of manganese, up to 0.14 Gm. may be used, but with 12% manganese, not more than 0.08 Gm. of sample should be taken. The iron and manganese citrate is dissolved in a mixture of 50 cc. of dilute nitric acid and 40 cc. of 25% sulfuric acid, and the solution raised to boiling. Twenty-five cc. of *N*/10 silver nitrate is added, followed by 1 Gm. of ammonium persulfate, and the solution heated until oxidation begins, and for 30 seconds afterwards. The brown precipitate is redissolved by the addition, drop by drop, of sulfurous acid to the hot solution, which is then boiled for a few seconds, allowed to cool somewhat, treated with a further 1 Gm. of ammonium persulfate, and heated as before for 30 seconds during oxidation. Where more than 0.10 Gm. of sample has been taken the solution should again be reduced by sulfurous acid, and reoxidized with another 1 Gm. of ammonium persulfate. The solution is then cooled and titrated with *N*/40 arsenite, each cc. of which is equivalent to 0.00043 Gm. of manganese.—G. J. W. FERREY. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 471–479. (S. W. G.)

Liabiates—A Study of Some. The tests were carried out on dry commercial products, various varieties of mint, origanum, *Salvia*, *Ajuga reptans*, *Brunella vulgaris*, lavender, etc. After having proved the absence of water-insoluble glucosidic principles, the glucosidic principles are separated by extracting the plant with water, adding 200 cc. of a 20-Gm. per liter milk of lime per 100 cc. of extract; the precipitate, which retains tannins, pectic matter, etc., is removed by filtration and the filtrate is treated with charcoal. The charcoal is separated by filtration and is extracted by refluxing 3 times at 60° C. for 1 hour with 1 liter of alcohol. The alcohol is evaporated and the dry residue is taken up in acetone to separate the soluble and insoluble portions. The products were hydrolyzed and the tests carried out proved the presence of: an essential oil, three glucosidic principles, one soluble in water and two saponins (one having an acid reaction and the other neutral), choline, and inorganic salts in which potassium nitrate predominates.—J. BALAMSARD. *Bull. sci. pharmacol.*, 43 (1936), 148–152; through *Chimie & Industrie*, 37 (1937), 730. (A. P.-C.)

Lead—Microdetermination of, in Normal or Pathological Tissues. Destroy the organic matter of 0.5 to 1.0 Gm. of tissue with concentrated sulfuric acid and hydrogen peroxide, separate lead as lead sulfate, wash with aqueous alcohol, dissolve in ammoniacal ammonium tartrate and determine lead colorimetrically by saturating the solution with hydrogen sulfide and comparing in a Plesch comparator with standard colors. The error is less than 0.30%. Lead accumulates in greater quantity in various neoplastic tissues than in normal tissues.—F. GALLEGO Y GOMEZ. *An. Soc. Espanola Fis. Quim.*, 33 (1935), 937–941; through *Chimie & Industrie*, 37 (1937), 871. (A. P.-C.)

Leaf Oil of Douglas Fir. Brief references are made to previous studies. Experimental work is reported in detail and the work summarized as follows: "The fresh leaves and twigs yielded 0.8 per cent of oil which consisted of 75 per cent of terpenes and 19 per cent of higher boiling constituents including an alcohol and sesquiterpenes. The composition of the oil was found to be about: 12 per cent levo alpha pinene; 7 per cent levo camphene; 33 per cent levo beta pinene; 18 per cent dipentene; 12 per cent geraniol partly as the caprate or acetate; capric

acid was present in both the free and combined state, while acetic acid was found in the combined state only. The phenols, which amounted to 0.07 per cent consisted chiefly if not entirely of salicylic acid."—CARL H. JOHNSON and RUSSEL A. CAIN. *J. Am. Pharm. Assoc.*, 26 (1937), 406. (Z. M. C.)

Melanin, Distilled Water and Various Indicators—Differences in Activity Exhibited by, in Henry's Reaction. The addition of melanin to serum produces a vocculation due to the combination of the melanin with part of the euglobulins. The melanin does not behave as a simple colored indicator. It plays an active part in certain states of unstability by inducing precipitations.—F. TRENSZ. *Compt. rend. soc. biol.*, 55 (1936), 139–140; through *Chimie & Industrie*, 37 (1937), 664. (A. P.-C.)

Mentha Puleguim, L—Constituents of the Essential Oil of. The isolation of pulegone is described.—K. SAKURAI. *J. Pharm. Soc. Japan*, 55 (1935), 86–96; through *J. Soc. Chem. Ind.*, 56 (1937), B., 187. (E. G. V.)

Mercuric, Silver and Stannous Ions—Demonstration of. The reaction $2Hg^{\cdot\cdot} + Sn^{\cdot\cdot} = Hg_2 + Sn^{\cdot\cdot\cdot\cdot}$ is sufficiently sensitive; it is, however, upset by lead and silver ions in that after the addition of the stannous chloride a white precipitate of $PbCl_2$ or AgCl is formed. However, if one adds stannous chloride to the solution containing mercuric and silver ions, a black precipitate is formed. The silver ion is not reduced to silver by $SnCl_2$ in acid solution and in a definite concentration of acid the mercuric ion is reduced to HgCl by the $SnCl_2$ and very little mercury is formed. However, if both ions are present in the solution then a black precipitate of silver and mercury is formed. The reaction proceeds slowly at first, as follows: $2Hg^{\cdot} + Sn^{\cdot\cdot} = Hg + Sn^{\cdot\cdot\cdot\cdot}$ The mercury in nascent state then reacts further: $2Ag^{\cdot} + Hg = 2Ag + Hg^{\cdot\cdot}$ If one adds a few drops of silver nitrate solution and then a few drops of stannous chloride solution to the solution under investigation containing the various cautions, a black precipitate will be formed if $Hg^{\cdot\cdot}$ is present. If $Ag^{\cdot}$, as well as $Hg^{\cdot\cdot}$, is present then a precipitate will be formed upon the addition of $SnCl_2$ alone. The reaction thus serves to detect $Hg^{\cdot}$ and $Ag^{\cdot\cdot}$ Sn can also be determined by the reaction but in this case it is less sensitive.—N. A. TANANAEFF. *Zeitschr. anal. Chem.*, 106 (1936), 167; through *Pharm. Weekblad*, 73 (1936), 1716. (E. H. W.)

Mercury—Determination of. The following summary is given: Methods for the determination of mercury in several compounds of mercury have been examined. A new volumetric method is described consisting of the reduction of the mercury salt from solution to metallic mercury by alkaline formaldehyde. The precipitated mercury is collected on a sinter glass filter, dissolved in nitric acid and titrated with ammonium thiocyanate solution. The process is shown to be applicable in the presence of substances which interfere with most methods for the determination of mercury. It is recommended that calcium chloride be added in the official process for the assay of mercuric chloride to obtain the precipitated mercury in a finely divided form which is readily soluble in the $N/10$ iodine used. The process is a modification of Rupp's method and is shown to be applicable to other mercuric compounds. In all cases where Rupp's method is employed, the addition of calcium chloride is recommended.—H. BRINDLE and C. E. WATERHOUSE. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 519–527. (S. W. G.)

Methylxanthines (Caffeine, Theobromine, Theophylline)—Microchemistry of. The following method for identifying the therapeutic methylxanthines is given: Place about 1 mg. of the sample on a slide, add a droplet of hydrochloric acid (1:2) and mix with the fine rod (used to transfer the hydrochloric acid) until dissolved. Add gently to the center of the solution a smaller droplet of hydrobromite solution and allow the solutions to mix by diffusion. An orange precipitate forms, the precipitate in the case of caffeine having a more reddish cast than those obtained with theobromine or theophylline. The color disappears in time. As soon as the precipitate forms, examine with a cover slip under a magnification of 130 to 150 diameters. Diagrams are given showing the different crystals formed.—G. DENIGÈS. *Bull. Trav. Soc. Pharm. Bordeaux*, 74 (1936), 5–11; through *Chimie & Industrie*, 37 (1937), 653–654. (A. P.-C.)

Monarda—Study of Several Species. II. Chemical Examination of Alcoholic Extractive and Miscellaneous Determinations. Species studied were *M. menthæfolia* collected in southeastern Wyoming and adjacent Colorado and *M. punctata var. leucantha* collected in Florida. The alcoholic extract of *M. menthæfolia* yielded a volatile oil, non-saponifiable matter, linoleic acid hexabromide, linoleic acid tetrabromide, unknown brominated acid melting at 95–95.5° C., oleic acid dibromide, hydrothymoquinone, solid fatty acids, pigment melting at 216–218° C.,

pigment melting at 204–205° C. The alcoholic extract of *M. punctata var. leucantha* yielded a volatile oil, possibly sterols, high alcohols, hydrocarbons, probably myristic acid, palmitic acid, stearic acids and higher acids including arachidic, linoleic acids and unsaturated fatty acid whose bromide melts at 134–136° C., oleic acid, a product from ethyl acetate extract that has not been characterized but no lecithin and no hydrothymoquinone. *Monarda menthæfolia* plants were submitted to the Dragendorf selective solvent analysis. Other determinations included: the A. O. A. C. pentosan determination as recommended by the Association of Plant Physiologists; the A. O. A. C. tannin determinations; the U. S. P. X crude fiber determination; the crude fiber determination, the so-called "Dutch Method" of Wallis and Goldberg. The latter gives lower results than the U. S. P. method.—B. V. CHRISTENSEN and R. S. JUSTICE. *J. Am. Pharm. Assoc.*, 26 (1937), 387. (Z. M. C.)

Monoaminophosphatides—Fatty Acid Content of. Hydrolysis of phosphatides generally gives an amount of fatty acids lower than theory, the deficiency being due to oxidation. The fatty acids obtained always contain a very slight amount of phosphorus and their iodine number depends largely on the hydrolysis process. The latter seems to be incomplete when the process used favors oxidation of the fatty acids with formation of hydroxy acids insoluble in petroleum ether. The intensity of oxidation increases with the time of manipulation, the concentration of the hydrolytic agents and the heterogeneity of the medium. Two hydrolytic processes, one in alkaline medium (modified Lemeland method), the other in homogeneous acid medium, yielded over 67% of fatty acids containing only 0.04% phosphorus and having an iodine number corresponding to that of the lecithin used in the experiments.—M. FLATTER. *Bull. soc. chim. biol.*, 18 (1936), 406–412; through *Chimie & Industrie*, 37 (1937), 319. (A. P.-C.)

Morphine Sulfate—Color of. Examination of different brands of morphine sulfate and also solutions of them show that they differ in color. Spectrometric analyses of the light reflected by various samples were made and the evidence suggests that a trace of blue dye is sometimes used. Superior whiteness is sometimes due to the comparative fineness of the crystals of which the cubes are composed. It is unsafe to judge the purity of market brands solely by comparing whiteness of cubes since whiteness may or may not be directly related to the chemical purity.—J. M. ORT and W. G. CHRISTIANSEN. *J. Am. Pharm. Assoc.*, 26 (1937), 329. (Z. M. C.)

Oil Seeds and Cake—Determining the Fat Content of, by the Shaking Method. A sample of seeds (1 Gm.) or press cake (2 Gm.) is wrapped in filter-paper, covered with light petroleum and shaken for 1 to 2 hours. Fat is determined in an aliquot portion of the extract.—P. ZAUTSCHENKO, L. KRUPITZKAJA and K. KOCHOVA. *Trad. Vniizh*, No. 2 (1934), 2–8; through *J. Soc. Chem. Ind.*, 56 (1937), B., 57. (E. G. V.)

Oxalic Acid—Identification of, by the Diphenylamine and the Carbazol Tests. A small quantity of the substance supposed to contain oxalic acid is heated gently in a porcelain dish with an approximately equal quantity of diphenylamine hydrochloride and a small quantity of benzoic acid to complete fusion of the mass; in presence of oxalic acid the mass is an azure blue and dissolves in alcohol to a very deep blue. The reaction is definitely positive with 0.01 Gm. of oxalic acid. In the case of a solution, evaporate to dryness and apply the test to the residue. If the test is carried out with carbazol instead of diphenylamine the fused mass is azure blue and the alcoholic solution deep violet blue; the reaction is definitely positive with 0.08 Gm. of oxalic acid. To identify the oxalic ion in oxalates, moisten a small quantity of the salt with a few drops of hydrochloric acid, dry over gentle heat, and apply the two above tests on the residue. The dyes formed are triphenyl-*p*-rosaline hydrochloride and tricarbazolcarbinol, respectively.—S. AUGUSTI. *Chimica*, 12 (1936), 51–52; through *Chimie & Industrie*, 37 (1937), 447. (A. P.-C.)

Pancreatic Preparations—Measurement of the Proteolytic Activity of. The British Phar. method for the determination of the proteolytic power of pancreatin is not entirely satisfactory. It is lengthy and the end-point is not very easy to observe. A further source of error is that the p_H is not adjusted to a definite point before the addition of the formaldehyde. The following method is suggested. *Casein Solution.*—Dissolve 4 Gm. of Hammarsten's casein in 90 cc. of water containing 3 cc. of *N*/1 sodium hydroxide, adjust to p_H 8.7, using phenolphthalein as external indicator and make up the volume to 100 cc. *Neutral Standard.*—Take 10 cc. of the B. P. phosphate buffer solution at p_H 7.0 and add one drop of 0.1% solution of neutral red in alcohol (50%). *Alkaline Standard.*—To 10 cc. of the B. P. boric acid-potassium chloride-sodium hydroxide buffer solution at p_H 8.7 add one drop of 0.1% solution of neutral red in alcohol (50%) and 3 drops of 1.0%

solution of phenolphthalein in alcohol (50%). *Preparation of the Enzyme Solution.*—Triturate the required weight of the sample with a little chloroform water in a small mortar, wash into a 100-cc. graduated flask and make up to volume with chloroform water. The liquid should not be filtered but should be used as a suspension if insoluble matter is present. *Digestion.*—Dilute 30 cc. of the casein solution and a definite volume of the enzyme solution to 100 cc. with water, remove 50 cc. as a control and heat the remainder rapidly to 55° C., keeping at this temperature for 20 minutes. Cool rapidly to laboratory temperature. Add 5 drops of neutral red solution to both liquids and $N/10$ acid or alkali to both until each color matches the neutral standard. (This is most easily done by pouring 10 cc. into a test-tube and comparing with the standard in a similar tube.) Add 15 drops of 0.1% phenolphthalein solution and 10 cc. of formaldehyde solution (B. P.) to both liquids. Titrate with $N/10$ alkali until the color matches the alkaline standard. The difference between the two titrations represents the amino-acids formed. The result is preferably expressed as a volume of standard alkali for a definite weight of the enzyme preparation; *e. g.*, number of cc. of $N/1$ sodium hydroxide for 1 Gm. of sample. It is suggested that an amount of sample be used to require 4.3 to 4.7 cc. in the final titration.—N. EVERS and W. SMITH. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 392–396. (S. W. G.)

p_H of Blood, etc.—Determination of, by Glass Electrode. The application of the glass electrode to the determination of the p_H (with an accuracy of 0.01–0.02) of blood and biological fluids containing CO_2 and protein fission products is described.—L. SEEKLES. *Biochem. Z.*, 288 (1936), 402–408; through *Physiol. Abstr.*, 22 (1937), 144. (F. J. S.)

Phosphates—Determination of, in Presence of Arsenates. Three methods of determining phosphoric acid in presence of arsenic acid are described, the actual phosphate determination being carried out by Copaux's method. The first method determined phosphoric acid selectively as the water-ether-phosphomolybdic complex when definite limits of sulfuric acid are maintained, repressing the formation of the arsenic pentoxide complex. By the second method phosphates are determined as before, after arsenates have been reduced to arsenites by sulfur dioxide in sulfuric acid solution; this method is applicable in all cases. By the third method which is especially suitable for biological media, arsenic acid is reduced by hydriodic acid in sulfuric acid solution, phosphates are separated as magnesium ammonium phosphate, redissolved in dilute sulfuric acid and determined by Copaux's method.—J. COURTOIS. *J. pharm. chim.*, 23 (1936), 404–418; through *Chimie & Industrie*, 37 (1937), 865–866. (A. P.-C.)

Phytolacca Americana—Chemical and Pharmacological Study of. The present report covers work undertaken to clarify uncertainties, especially whether alkaloids were present and the pharmacological action of the drug. Experimental work included determination of a number of constants, separation of starch, volatile constituents, alcoholic extractives, pharmacological tests and aqueous extractives. An oil was obtained by steam distillation from an alcoholic extract and its specific gravity, 0.9977, indicated the absence of terpenes. It was not miscible with 98 per cent alcohol. No active alkaloid was found and no alkaloid was indicated though amorphous precipitates were obtained by some alkaloidal reagents. The substances are not basic. Pharmacological action is due to at least two principles. The water-soluble principle has strongly irritant properties, the alcoholic resin-like principle is responsible for the ascending depressant action on the cerebrospinal axis of cats. The fixed oil had no significant action. Methods are given for isolating hemicellulose, isosaccharic acid, gum, resin, oxalic acid, potassium oxalate and saponin. Starch was obtained from the expressed juice. Free reducing sugars are absent.—SAMUEL W. GOLDSTEIN, GLENN L. JENKINS and MARVIN R. THOMPSON. *J. Am. Pharm. Assoc.*, 26 (1937), 306. (Z. M. C.)

Potassium—Determination of, in Horse Serum. Modification of the cobaltinitrite method. Sodium nitrite used for the preparation of the cobaltinitrite reagent is treated with absolute alcohol to precipitate out any potassium that may be present as an impurity; cobaltinitrite that has been precipitated with alcohol keeps perfectly when dry if it has been washed thoroughly. Direct titration of the cobaltinitrite precipitate with permanganate gives high results on account of organic matter adsorbed by the precipitate, and the latter is best incinerated at not over 800° C. before titration.—G. BALDASSI. *Diagn. Tecn. Labor.*, 6 (1935), 948–951; through *Chimie & Industrie*, 36 (1936), 1125. (A. P.-C.)

Potassium—Microanalysis of, in Biological Material. Digest the material with a mixture of nitric acid and potassium perchlorate and transfer by means of dilute hydrochloric acid to a 40-

cc. centrifuge tube provided with a separable tubulation for gas. Precipitate the potassium as potassium chloroplatinate, evaporate the mixture to dryness, add 25 cc. of absolute alcohol and centrifuge. Reduce the residue by heating below redness for one and one-half to two hours in a current of hydrogen, leach with water, treat with excess of decinormal silver nitrate and centrifuge. Titrate the excess of silver nitrate with potassium thiocyanate by the Volhard method. The error does not exceed 2% on quantities of 0.2 to 1.0 mg., and the results agree with those obtained by the cobaltinitrite colorimetric method.—MELLE. A. CAHEN. *Bull. soc. chim. France*, 3 (1936), 640–643; through *Chimie & Industrie*, 37 (1937), 452. (A. P.-C.)

Potassium—Volumetric Microdetermination of, in Blood Serum and in Cerebrospinal Fluid. Organic matter is destroyed by a modification of Guillaumin's nitric-perchloric method using a previously prepared mixture of 2 volumes of perchloric acid (specific gravity 1.67) and 5 vol. of concentrated nitric acid. The residue is perfectly white and consists chiefly of perchlorates; the excess of perchloric acid is removed by prolonged heating on the hot plate. Take up the residue in 1 to 2 cc. of water and 3 microdrops of 20% sodium hydroxide (about 3 mg. of sodium), evaporate to dryness on a hot plate at 100° to 110° C., add 1 to 2 cc. of water and a few microdrops of perchloric acid. Carefully heat at 130° to 150° C. to eliminate perchloric acid, wash with 6 to 8 cc. of 95% alcohol, dry at 100° to 110° C. for 15 minutes, dissolve in 2 cc. of water, heat, add 1 cc. of twice normal potassium iodide. Heat for 4 minutes on the hot plate, and titrate with hundredth normal sodium thiosulfate to a greenish yellow end-point. 1 cc. of hundredth normal thiosulfate is equivalent to 0.391 mg. of potassium.—P. WENGER, CH. CIMMERMAN and C. J. RZYMOWSKA. *Mikrochem.*, 20 (1936), 10–28; through *Chimie & Industrie*, 37 (1937), 872–873. (A. P.-C.)

Rennet Casein—Determination of the p_H of, by the Quinhydrone Electrode. The p_H of casein depends on the particular set of conditions under which it is measured. Temperature casein to water ratio, weight of quinhydrone, mesh-size of casein and time of contact of quinhydrone with the casein-water suspension are all material factors which have to be carefully controlled. Curves showing the effect of these variables on p_H are given and the conditions for reproducible p_H are stated. It is recommended that a standard time of 15–30 minutes be allowed for the casein-water suspension to come to equilibrium and that the relative proportions of quinhydrone be 0.5 Gm. for a 30:10 water to casein ratio and 0.25 Gm. for a 30:5 ratio.—C. A. COOPER and P. G. T. HAND. *J. S. C. I.*, 55 (1936), 341–344T; through *J. Soc. Chem. Ind.*, 56 (1937), B., 181. (E. G. V.)

Saccharated Iron Compounds—Assay of. The following summary is given: 1. In the determination of ferrous iron by titration with potassium dichromate, both potassium ferricyanide as external indicator and diphenylamine as internal indicator yield high results in the presence of carbohydrates. 2. It is shown that during the titration with potassium dichromate, oxidation of iron and glucose proceed side by side—not, as hitherto supposed, in successive isolated stages. In consequence, no significant improvement can be effected by varying the type of indicator, or otherwise modifying the experimental procedure. 3. It is confirmed that ferrous iron in saccharated iron compounds may be accurately estimated by Heisig's iodate method.—C. MORTON and D. C. HARROD. *Quart. J. Pharm. Pharmacol.*, 9 (1936), 480–484. (S. W. G.)

Semicarbazides and Semicarbazones—Determination of. The method proposed consists essentially in: (1) prolonged hydrolysis in a sealed tube in a boiling water-bath of the semicarbazide or semicarbazone by means of 10, 20 or 30% hydrochloric acid, according to the ease of hydrolysis; the aldehyde or ketone is liberated and the regenerated semicarbazide is decomposed into hydrazine, carbon dioxide and ammonia; (2) conversion of the hydrochloric solution to an acetic solution by addition of sodium acetate or by neutralization with sodium hydroxide and addition of acetic acid; (3) addition of excess of decinormal iodine ($(NH_2)_2 + 2I_2 = N_2 + 4HI$), and titration with decinormal sodium thiosulfate after the solution has been allowed to stand for 20 minutes. With semicarbazones of aldehydes, the hydrolysis should be carried out in an open tube in presence of a current of steam to volatilize the aldehyde, which otherwise combines with hydrazine to give the corresponding aldazine. The method cannot be considered as a general one, as it is dependent on the ease of hydrolysis of the compound and may be interfered with by possible secondary reactions depending on the nature of the compounds tested.—VICTOR HARLAY. *J. pharm. chim.*, 23 (1936), 199–204; through *Chimie & Industrie*, 37 (1937), 448. (A. P.-C.)