

PHARMACEUTICAL ABSTRACTS

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PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY (*Continued*)

Filix Group Drugs—Standardization and Stabilization of. The present-day gravimetric method is unsatisfactory since the filicin is not an indication of the value of the drugs of the filix group. *Cusso* may be assayed by a biological method depending upon the isolation of crude cosine with baryta water; of the crude cosine in a yield of not less than 4%, 4 mg. in 100 cc. of water should kill the four test animals (fish method) within half an hour. *Kamala* also yields divergent results. Here the biological assay is carried out with an aqueous solution made from the ethereal *kamala* extract with magnesium oxide; 0.03 Gm. of the ether extract dissolved in 100 cc. of water must kill half of the four test animals (fish method) within half an hour. An age limit should also be made for *kamala* since its activity depends to a great extent upon its preservation. *Filix rhizome* is easily preserved. The extract, however, retains its activity poorly if kept in ampuls or in the desiccator; when kept in bottles (the usual method) it loses one-third of its activity in one year. Crude filicin, dried in a vacuum, keeps very well as does also crude filicin in olive oil. The latter method is a good one for the pharmacy.—K. JARETZKY. *Süddent. Apoth.-Ztg.* (Sept. 1936); through *Pharm. Tijdschr.*, 14 (1937), 219. (E. H. W.)

Floripondio. The word is used in Mexico to designate a number of *datura* species especially *Datura arborea* L. and was called by the Aztecs "Toloachi." Its action as an aphrodisiac is refuted.—VICTOR A. REKO. *Pharm. Monatsch.*, 18 (1937), 177. (H. M. B.)

Folliculin—Uterine Changes Due to. The author confirms the finding that in infantile or mature castrated rats proliferative changes in the uterus follow repeated administrations of folliculin in large doses. He used progynon-B oleosum as long as thirty days, and found that the increase in size affected the myometrium as well as the endometrium. The epithelium remained cylindrical, often in several layers. Although superficially resembling glandulocystic endometrial hyperplasia in human subjects from unduly active follicular secretion, the endometrium in no case showed true glandular function with the production of mucin or glycogen. Two out of six infantile, and seven out of fourteen mature, animals had endometrial islets of squamous epithelium, without any suggestion, however, of malignancy. No syncytial formation occurred. About one-third of the animals showed an aseptic pyometra.—G. GARUFFI. *Arch. Ostet. Gynec.* (May–June 1937), 189; through *Brit. Med. J.*, 4009 (1937), 948D. (W. H. H.)

Glutathione—Possible Rôle of, as a Detoxifying Agent. The injection of benzoic acid into rabbits which have been starved for 24 hours causes an increase of glutathione in the blood. Using bromobenzene, the results are suggestive that the detoxication process is accompanied by a definite increase of glutathione in the blood.—BENJAMIN HARROW, I. M. CHAMELIN and ABRAHAM MAZUR. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 271. (A. E. M.)

Gonadotropic Extract—Comparison of Pituitary, and Prolan on Ovarian and Uterine Response in Immature Rats. The ovarian and uterine weight response to pituitary extract and prolan follows the same type of curve, the logistic. However, the numeric values differ greatly, the maximal response being higher in the ovaries, but lower in the uterus after pituitary extract compared with prolan. The ovarian weight curve with pituitary extract may be of interest in assay.—S. K. CHOU and S. H. LIU. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 228. (A. E. M.)

Helichrysum Arenarium—Pharmacology of the Cholagogic Action of. The cholagogic action of *Helichrysum arenarium* decoctions and infusions, previously noted, has been confirmed by experiments on dogs and by clinical observations on thirty-eight patients. The drug, which was mentioned in older but not in modern works of pharmacy, is recommended by P. as a comparatively harmless agent in diseases of the bile duct and gall bladder, but not in icterus or acute inflammations. In most of the human subjects the cholesterol (I) and bilirubin (II) contents of the bile were decreased by the drug while the bile acids were increased. In dogs, the bile acids and II were increased and I decreased. For therapeutic use, a fresh 3% hot decoction is recommended, in doses increasing from 0.25 to 1.0 glass, three times a day before meals, for three courses of ten days each, separated by ten-day rest periods. This treatment increased the pain in two of the thirty-eight patients treated. The cholagogic action of the drug is apparently due to a stimulatory effect on smooth muscle, since the decoctions increased the activity of the isolated mammalian intestine and increased the internal pressure in the dog gall bladder.—GEORG PETROWSKY. *Arch. intern. pharmacodynamie*, 57 (1937), 99; through *Squibb Abstr. Bull.*, 10 (1937), A-1957. (F. J. S.)

Insulin—Influence of, on Amino Acid Utilization. The spontaneous output of amino acid nitrogen by muscles of the eviscerated dog is inhibited by the administration of glycine. The administration of insulin to such animals results in an increased utilization of amino acids by the muscle.—I. ARTHUR MIRSKY, SAMUEL SWADESH and JOSEPH RANSOHOFF. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 223. (A. E. M.)

Iodine Question. Experiments are reported which involve the hydrolysis of iodized protein to prepare substances similar to thyroid, since the product (otherwise active) obtained by barium hydroxide hydrolysis, when freed from barium, loses its biological action. Accordingly, hydrolysis was accomplished by means of superheated steam, calcium hydroxide and strontium hydroxide; only with strontium hydroxide was a weakly biological product obtained.—E. NOLTE. *Arch. Pharmazie*, 274 (1936), 415–418; through *Chimie & Industrie*, 38 (1937), 930. (A. P.-C.)

Laxatives—Their Pharmacology and Chemical Constitution. The author presents a general review of the subject of laxatives describing the mode of action, pointing out the dangers that may be connected with their use, and classifying the different agents into the following 8 groups enumerating many examples both pharmacopœial and patented: large intestine stimulators, the drastics, the saline laxatives, lubricants, bulk producing materials, hormonal laxatives, bacterial preparations and antispasmodics.—KONRAD SCHULZE. *Scientia Pharm.*, 8 (1937), 129. (M. F. W. D.)

Magnesium—Excretion of Some Purgative Salts of. The oral intake of magnesium sulfate and citrate is followed by an increased excretion in the urine. The latter is proportional to the dose and is greater after the citrate. The intake of magnesium produced a variable effect on the level of urinary calcium.—RICHARD WEBER. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 55. (A. E. M.)

Oestrogen Esters—Duration of Action of. The physiology of feather development in the Brown Leghorn capon is such that both the intensity of action and duration of action of oestrogenic substances can be determined. Massive doses of oestrone, oestradiol and oestriol given in a single injection have only a transient effect. It is evident that the large dose is mostly wasted by excretion or destruction and that the bird is unable to conserve the hormone. Oestrone acetate is only slightly more effective than the free ketone. Oestradiol diacetate, oestradiol monobenzoate and oestrone benzoate show increasingly prolonged activity without increase in the minimum effective dose. Oestradiol 3-benzoate-17 acetate also shows prolonged activity but with a slight loss of intensity. Oestradiol dibenzoate may have a very prolonged action in large doses but has a very low intensity. Oestradiol triacetate shows both transient effect and low intensity. It appears that the effect of esterification is to reduce the availability of hormone to the bird so that a single dose may serve to maintain the amount of free hormone in circulation continuously above the threshold value.—A. S. Parkes. *Biochem. J.*, 31 (1937), 579; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 572. (S. W. G.)

Oesterone—Absorption and Excretion by the Human Organism. If oestrin is administered to men or to castrate women three to twelve per cent of it is excreted in the urine shortly after administration. The proportion excreted is somewhat greater after oral than after parenteral administration. When oestrin is given by mouth the quantity excreted is proportional to the dose administered. Oestrin, administered orally, is very rapidly absorbed and excreted by the body and has therefore a comparatively low specific biological action. It should, therefore, be administered, so far as possible, in such form that it can be absorbed slowly, and be given divided into three or more daily doses.—T. KEMP and K. PEDERSEN-BJERGAARD. *Lancet*, 233 (1937), 842. (W. H. H.)

Paraldehyde and Other Preliminary Hypnotics. Paraldehyde is compared with barbiturates, avertin and morphine (with and without atropine) as a pre-anesthetic.—A. H. MILLER. *Anesthesia and Analgesia*, 15 (1936), 14–21; through *J. Soc. Chem. Ind.*, 56 (1937), 1406. (E. G. V.)

Paulownia Imperialis—Pharmacologic Action of. The flowers and leaves of *Paulownia imperialis* contain a crystallizable glucoside which is toxic and produces the death of animals with excitation of the voluntary and reflex movements and progressive paralysis. On the isolated heart the glucoside has a clearly diastolic effect.—A. GARELLO CANTONI. *Atti Soc. Sci. Lett. Genova*, 1 (1936), 182–188; through *Chimie & Industrie*, 38 (1937), 934. (A. P.-C.)

Pilocarpine and Potassium—Mode of Action of, on Muscle Phosphorolysis. Under anaerobic conditions pilocarpine increases the decomposition of phosphagen in normal frog muscle

but not in muscle poisoned with iodoacetate. Under the same conditions potassium chloride accelerates the decomposition of phosphagen in both normal and poisoned muscle while adrenaline has no effect in either case. The other phosphorus compounds of the muscle are not appreciably affected by pilocarpine or potassium salts.—J. WAJZER and R. LIPPMAN. *Bull. soc. chim. biol.*, 18 (1936), 1428–1435; through *Chimie & Industrie*, 38 (1937), 934. (A. P.-C.)

Plant Juices—Medication with. An extensive discussion of the administration and action of plant juices.—C. HEUN. *Apoth. Ztg.*, 52 (1937), 1407–1408. (H. M. B.)

Prostigmin—Notes on the Observed Effects of, in Man. The effects of prostigmin subcutaneously in 9 patients with epilepsy is reported. With 1-mg. dose one of 6 patients exhibited the effects of moderate peristalsis and sweating in the axillæ, occurring half hour after medication and disappearing in half hour. Three patients received 2 mg. of prostigmin. One showed no demonstrable reaction. One patient developed muscular fibrillation, and increased peristalsis twenty-five minutes after prostigmin. These effects persisted for two hours and twenty-five minutes and were abolished at that time by atropine sulfate. The last patient developed increased peristalsis in half hour after prostigmin, which was accompanied by projectile vomiting and faintness one hour and twenty minutes after prostigmin. None of the patients exhibited any miosis or cardiovascular changes from prostigmin. The reactions did not differ from the manner in which normal men react to prostigmin.—LEON J. ROBINSON. *J. Pharmacol.*, 61 (1937), 396. (H. B. H.)

Rutoside—Biochemical and Pharmacological Study of. Extraction of rutoside from *Ruta graveolens* by means of alcohol is difficult; the best method consists in extracting small quantities of rutoside in a Soxhlet by means of aqueous ether. Good results are obtained with the use of pyridine for purifying. Dissolve the crude product and heat slightly in 5 times its weight of pyridine; the glucoside separates slowly in the crystalline state; separation is complete in 48 hours. Injection into dogs of a solution of 1 Gm. of rutoside and 1 Gm. of pyridine in 10 cc. of water produces a slight and transient reduction in blood pressure, with bradycardia. Rutoside possesses no diuretic properties. It is not toxic in doses of 0.25 to 0.50 Gm. per kilo body weight.—R. PARIS. *Bull. sci. pharmacol.*, 43 (1936), 279–283; through *Chimie & Industrie*, 38 (1937), 932. (A. P.-C.)

Strychnine—Effect of, on Irritability and Certain Other Properties of Perfused Frog Heart. The effects of strychnine sulfate solution (0.001 and 0.0001%) upon irritability, latent period, phases of contraction, auriculo-ventricular interval, and heart rate were studied on thirteen perfused frog hearts. In general, these properties were influenced in the same direction by both concentrations of the drug, the major effects occurring more frequently with the stronger solution. When irritability, as measured directly by threshold of response to artificial stimulation, was affected by either concentration of strychnine, it was depressed. This occurred in the majority of instances for auricle and in every instance for ventricle with the 0.001% solution; a similar effect was noted in about half the cases with the weaker drug solution. With increasing drug dosage, irritability was the first property measurably and consistently affected. With one exception, the latent period of auricle and ventricle was either prolonged by strychnine, or was not significantly altered. No consistent effect on contraction phase, relaxation phase, or diastolic pause was noted with either concentration of the drug. The auriculo-ventricular interval was either prolonged or not significantly changed. Heart rate was decreased in the majority of instances by the 0.001% solution; increase occurred once. With the weaker solution, decrease and increase of rate occurred with equal frequency, but 45% of the applications produced no consistent alteration. The results show that strychnine depresses the fundamental properties of frog heart, even in threshold doses.—PAUL L. MCLAIN. *J. Pharmacol.*, 61 (1937), 348. (H. B. H.)

Sulfanilamide—Pharmacological Actions of. Sulfanilamide has almost no action on smooth muscle, heart or blood pressure. When very large doses are given to rabbits or cats, it produces nervous symptoms somewhat resembling decerebrate rigidity.—F. HAWKING. *Lancet*, 233 (1937), 1019. (W. H. H.)

Tannic Acid—Pharmacological Action of. VI. The minimum lethal dose when injected intravenously into rabbits was found to be 160 mg. per kilo, which produced death in 28 hours. With 175 mg., death can occur in about 2 hours.—U. SAMMARTINO. *Arch. farm. sper.*, 61 (1936), 156–159; through *Chimie & Industrie*, 38 (1937), 526. (A. P.-C.)

Tikitiki Extracts—Biological Assay of. Extract of tikitiki made from fine grade of rice polishings, found to prevent and cure polyneuritis in rats, pigeons, chickens; most effective in prevention and cure of infantile beriberi. Essential constituent of extract tikitiki analyzed by pigeon curative method. Six pigeons used in preliminary, and 50 in final assay. Acceptable brand of tikitiki, 0.025 to 0.05 cc. will cure in 2 days, pigeons made polyneuritic by diet of polished rice.—MARIA LUISA GARGARITANO, *et al.* *Rev. Filipina Med. Y Farm.*, 28 (1937), 287. (G. S. G.)

Vitamin E—Relation of Bile to Absorption of, in the Rat. Administration of deoxycholic acid increases the availability of vitamin E, when given orally, in the bile fistula rat. The prevention of degeneration in the testis was used as a criterion for the absorption of vitamin E.—JOSEPH D. GRAEVES and CARL L. A. SCHMIDT. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 40. (A. E. M.)

Vitamin K. Nature of the Factor Concerned in Loss of Blood Coagulability of Bile Fistula Rats. Bile fistula rats show a loss in blood coagulability and a decrease in the prothrombin level. This condition can be relieved by administration of vitamin K concentrate prepared from alfalfa.—JOSEPH D. GRAEVES and CARL L. A. SCHMIDT. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 43. (A. E. M.)

TOXICOLOGY

Bamboo Sprouts—Poisonous Character of. The author investigated bamboo sprouts and reports the presence of hydrocyanic acid and water-soluble oxalates, concluding therefrom that bamboo sprouts, as such, are not harmless to health. The "atjar reboeng" of commerce, because of its special preparation, contains no hydrocyanic acid. The partaking of uncooked bamboo sprouts is not recommended.—ARIE GOUDSWAARD. *Pharm. Tijdschr. Nederland.-Indië*, 13 (1936), 97. (E. H. W.)

Derris Root—Significance of the Rotenone Content in. In judging the quality of derris root, two factors are taken into consideration: ether extract and rotenone content. The London market recognizes three varieties of quality, (1) Good testing, 16–17% ether extract; (2) Low testing, 12% ether extract and (3) High testing, 22% ether extract (all determined on air-dried material). The American market utilizes the rotenone content. In this connection it should also be noted that in America, lonchocarpus root (cubéroot) is also judged on this basis. Lonchocarpus root is now also found on the London market under the name of Barbasco root. The authors conducted several experiments with regard to the activity of various derris roots on caterpillars, butterflies and ants. Results showed that the biological activity was proportional to the rotenone content and not to the ether extract.—W. SPOON and P. A. VAN DER LAAN. *De Bergcultures*, No. 41 (1935); through *Pharm. Tijdschr. Nederland.-Indië*, 13 (1936), 9. (E. H. W.)

Grapes—Diseases Produced by. I. Intoxications. Accidents caused by ingestion of grapes can be classed as follows: (1) intoxication due to sulfating of the vines; (2) infections by bacteria which they carry; (3) mechanical troubles (seeds, skins); (4) troubles due to contra-indication. In (1) both copper hydroxide and calcium sulfate are involved; there is local irritation (mouth, stomach, intestines) that is generally accompanied by fever, and the toxic substances are eliminated by the natural emunctories (milk and urine). The secondary intoxication of a nursing by the milk of an intoxicated nurse is frequently serious and at times fatal.—M. CANCEULESCO and N. RADULESCO. *Bull. acad. méd. Roumanie*, 2 (1936), 890–898; through *Chimie & Industrie*, 38 (1937), 975. (A. P.-C.)

Haiari or Cubé Root—Toxic Content of. The rotenone and diethyl ether extract contents of *Lonchocarpus* spp. are less than those of *Derris elliptica*.—C. D. V. GEORGI. *Malay. Agric. J.*, 25 (1937), 334–337; through *J. Soc. Chem. Ind.*, 56 (1937), 1390. (E. G. V.)

Insecticides and Insect Toxicology. The toxicity of Paris-green, lead arsenate (I) and calcium arsenate to larvæ of *Pieris rapæ* decreased in the order named. Relative toxicities of I, zinc phosphide and diphenyl oxide were in the ratio 20:7:1. Comparative susceptibility of various insects to the above substances and to dihydrorotenone is examined. A synthetic nornicotine was highly toxic to *Aphis rumicis*.—C. H. RICHARDSON. *Iowa Agric. Exp. Sta. Rept. Agric. Res.* (1934), 71–72; through *J. Soc. Chem. Ind.*, 56 (1937), 1390. (E. G. V.)

Liver Oil—Toxic Effect of High Doses of, and the Activity of Yeast in Preventing the Toxicity. The nutritive value of liver oil of *Squalus wakiyæ* was superior to that of cod liver oil. The nutritive value of the fatty acid esters prepared from liver oil of *Squalus wakiyæ* was also superior to that prepared from the latter. Growth was greatly retarded when rats were fed with a diet

containing 15% of liver oil of *Squalus wakiya*. The toxicity was due to the higher unsaturated acids in the oil. It was prevented by the administration of yeast. Flavin crystals isolated from yeast and liver proved to be effective to prevent the toxicity. The activity could not be found in vitamin B₁ nor in the extract of liver or yeast freed from flavin. The unsaponifiable matter separated from liver oil of *Squalus wakiya* was also toxic at the level equivalent to 10% of the original oil while the addition to the diet of 10% of the oil itself was harmless. The toxicity of the unsaponifiable was reduced by treatment with heat, sunlight, charcoal and Fuller's earth. The toxicity was found in the liquid fraction of unsaponifiable, but selachyl alcohol, a main constituent of this fraction, was not toxic. The toxicity was proportional to the vitamin A content of unsaponifiable matter and independent of the quantity of unsaponifiable matter. This was also observed with the unsaponifiable of other fish-liver oils. The toxic action of the unsaponifiable could not be counteracted by feeding the amount of yeast that was sufficient to prevent the toxicity of the liver oil.—M. YOSIDA. *J. Agr. Chem. Soc. Japan*, 13 (1937), 120-147; through *Chimie & Industrie*, 38 (1937), 528. (A. P.-C.)

Mercurial Poisoning—Acute. The author in discussing acute mercurial poisoning following the ingestion of bichloride or oxycyanide of mercury stresses the importance of general treatment. He advises daily subcutaneous injections of solutions of sodium chloride and sodium carbonate, while frequent estimations are made of the alkaline reserve, the chlorine and urea content of the blood, and sometimes also the concentration of cations (Na, K, Ca, Mg). He uses at the same time the Strzyzowski antidote—a stable solution of sulfuretted hydrogen. This antidote, however, is efficacious only when given not later than two hours after the ingestion of the poison.—L. MICHAUD. *Schweiz. med. Wochschr.* (Aug. 28, 1937), 878; through *Brit. Med. J.*, 4012 (1937), 1102B. (W. H. H.)

Potassium Permanganate Poisoning. Report of a Fatal Case. Report of a fatal poisoning caused by the ingestion of an unknown quantity of solid potassium permanganate. The patient died after twenty days, not from potassium or manganese poisoning, but from the extremely caustic action of the chemical.—C. JOHNSTON. *South. M. J.*, 30 (1937), 1030; through *Squibb Abstr. Bull.*, 10 (1937), A-1898. (F. J. S.)

Selenium Problem—Further Field Studies on, in Relation to Public Health. Fifty rural families in a highly seleniferous area in South Dakota and Nebraska showed no evidence of ill health which could be ascribed with any degree of certainty to selenium other than a high incidence of symptoms pointing to gastric or intestinal dysfunction, and a few instances of hepatic dysfunction. The urine of the group contained 20-198 γ /100 cc.—M. I. SMITH and B. B. WESTFALL. *Public Health Repts.*, 52 (1937), 1375; through *Squibb Abstr. Bull.*, 10 (1937), A-1978. (F. J. S.)

Staphylococci—Food Poisoning by. The author states that in recent years staphylococci have been shown to be an occasional cause of food poisoning. The symptoms, which are the same in all cases, appear two to four hours after the ingestion of infected food and consist in vomiting, which may be very severe, abdominal pain and diarrhoea. There is sometimes severe prostration. The gastro-enteritis subsides in about twenty-four hours, but the patients remain weak for a few days. No fatal cases have occurred. The author reports a small outbreak which occurred at Utrecht as the result of eating liver sausage. Staphylococci were grown from the sausage, and produced in broth an enterotoxic substance which when taken by mouth produced typical symptoms of food poisoning in a human volunteer.—W. A. TIMMERMAN. *Nederland. Tijdschr. Geneeskunde* (Sept. 18, 1937), 4443; through *Brit. Med. J.*, 4012 (1937), 1102A. (W. H. H.)

Sulfanilamide—Toxicity of. A Study of Pathological Lesions in White Mice. Sulfanilamide was not well tolerated in large doses and produced unsteadiness, incoördination, paralysis, acute anterior flexions of the spine, spastic extensions of the legs, prostration, convulsions and sometimes death. Pathological changes were found in the spleen, which apparently progressed after discontinuation of the drug. The bone marrow showed an increase of eosinophils.—P. O. HAGEMAN. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 119. (A. E. M.)

Vitamin B₁—Toxic Effects of an Excess of, in Rats. Brewer's yeast equivalent to 50 units of B₁ daily causes a disturbance in lactation and a loss of the nursing instinct, evident in the first, but almost universal in the second generation. Synthetic vitamin was less toxic than B₁ adsorbate.—DAVID PERLA. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 169. (A. E. M.)

THERAPEUTICS

Aloes—External Use of. A favorable report is given on the use of crude aloes powder, leaves and ointment (containing 4 Gm. each of powdered aloes and calamine to 30 Gm. of white petrolatum) in ulcers on amputation stumps, pruritis vulvæ, ulcers of advanced mammary carcinoma, ivy poisoning, burns, and in the treatment of carbuncle, small infections and abrasions and "winter itch." In one case catharsis resulted, indicating that the ointment should not be used on mucous surfaces because of absorption; and in two cases an allergic erythema was noted.—J. E. CREWE. *Minnesota Med.*, 20 (1937), 670; through *Squibb Abstr. Bull.*, 10 (1937), A-1946. (F. J. S.)

Anemia—Treatment of, with Bone Marrow Injections. Good therapeutic results were obtained in anemias, especially those secondary to malaria or to worm infestation, by intramuscular injections of 1–2 cc. fresh bone marrow. The marrow was obtained by sternal punctures of the patient himself, of normal human subjects or patients convalescing from anemia. These injections were used as an adjunct to specific liver therapy, the latter alone being inadequate in many of the cases. A case of pernicious-like anemia in a malaria patient is described, which was refractory to liver alone but responded to liver + bone marrow.—A. SCHRETZANMAYR. *Klin. Wochschr.*, 16 (1937), 1010; through *Squibb Abstr. Bull.*, 10 (1937), A-1876. (F. J. S.)

Anesthetic Agents—New. As inhalation anesthetics ether, chloroform and a mixture of nitrous oxide with oxygen are still very widely used, but they all have certain disadvantages. Ethyl chloride, ethylene, tribromethyl alcohol, numerous barbituric acid compounds and a host of other substances have all been used, but in each instance their routine employment is limited by certain drawbacks. Since 1928, when two Canadian pharmacologists commenced experiments with cyclopropane on cats and rabbits, cyclopropane has been yielding very favorable results as an anesthetic agent. Cyclopropane, C_3H_6 , is a saturated cyclic hydrocarbon having a specific gravity of 1.46. It will produce narcosis when inhaled in a concentration as low as 4%. The average concentration used for surgical anesthesia is 10 to 15%, and in such concentrations it is possible to maintain an ample supply of oxygen to the patient. Cyclopropane is used in a closed circuit apparatus in which carbon dioxide is absorbed and the patient re-breathes the anesthetic, so that hardly any of the gas escapes into the operating room. This almost eliminates the possibility of the formation of an explosive mixture with the anesthetic gas and air. Pentothal Sodium is a yellow, crystalline powder freely soluble in water, producing a lemon-yellow colored solution with emission of some gas. For intravenous use the solution must be freshly prepared, and must be quite free from any undissolved particles. The dose of the solution ranges from 2 cc. to 10 cc. according to the duration of the operation. Anesthesia is very rapidly induced by injection of Pentothal Sodium; the patient usually becomes unconscious in about 10 seconds, and recovery is rapid. A compound which is claimed to have the property of producing surface anesthesia when applied to mucous membrane is Decicain—known in America and formerly in Great Britain as Pantocain Hydrochloride, $C_4H_9NH.C_6H_4COO.C_2H_4N(CH_3)_2HCl$. Decicain is a white crystalline stable compound, easily soluble in water and alcohol. For applications to the eye a 0.5% solution is used, whereas for application to the nose and throat, 2% solutions are needed.—ANON. *Pharm. J.*, 139 (1937), 467. (W. B. B.)

Antipruritic Agent—New. Good results were obtained, especially in subacute and acute eczema, pruritis and urticaria, with intravenous or intramuscular injections of 2–5 cc. 5% calcium bromide in 25% glucose, repeated up to 10 times.—A. SSELISKI. *Sovetskij Vestnik Venerol. Dermatol.* (1936), No. 11; through *Dermatol. Wochschr.*, 105 (1937), 1337; through *Squibb Abstr. Bull.*, 10 (1937), A-1956. (F. J. S.)

Antipyrine in the Treatment of Acute Articular Rheumatism. The authors have affirmed, on the proof of a long personal experience, that antipyrine merits a place of choice in the treatment of articular or visceral manifestations of acute articular rheumatism. Immediately after sodium salicylate had taken its place for these failings, antipyrine could claim the term of "specific curative medication of the Bouillaud sickness."—L. BOUCHUT and M. LEVRAT. *Presse méd.*, No. 84 (1937), 1467. (W. H. H.)

Arachidonic Acid—Effectiveness of, in Curing "Fat Deficiency" Disease. Methyl arachidonate is about three times as efficacious as methyl linoleate in curing fat deficiency disease in rats.—OSMO TURPEINEN. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 37. (A. E. M.)

Arsenic—Toxic Effects of. The authors have treated one hundred and thirty-seven cases of psoriasis with the Gebert arsenical cure, fifty-seven patients being submitted to the "strong" and eighty patients to the "weak" cure. All of them showed toxic effects and only a few were able to stand the "strong" cure for a considerable length of time. There was little evidence of an increased tolerance to arsenic during the course of treatment, the reverse being usually found. No ill effects resulted from an abrupt cessation of the cure, suggesting that commonly practiced gradual cessation of arsenical cures is unnecessary. The pepper which enters into the composition of the arsenical pills used may cause disagreeable symptoms and is therefore better omitted. The cure was never followed by an increase of body weight; in fact stout patients often lost weight. In more than one-third of the cases the skin showed evidence of melanosis, which was more common after the "weak" than after the "strong" cure. Arsenical herpes zoster was noted in thirteen patients treated with the "weak" cure and in only one with the "strong" cure. The herpes usually subsided even when the treatment was continued.—SIMENS and SIMONS. *Münch. Med. Wochschr.* (September 10, 1937), 1444; through *Brit. Med. J.*, 4009 (1937), 948C. (W. H. H.)

Arsenobenzene and Vitamin C—Tolerance of. Vitamin C constitutes a very important factor for the tolerance of the organism, with respect to arsenobenzene, and the administration of which, from actual knowledge, is a condition of concern in the cure of syphilis. Therefore, for assurance in this disease, it is indispensable that a sufficient amount of vitamin C be given pending the continuance of salvarsan treatment.—I. DAŃNOW. *Presse méd.*, No. 94 (1937), 1670.

(W. H. H.)

Bismuth Therapy in Acute Angina. Study of 40 cases of superficial angina exudate diminished promptly after injection of bismuth.—PEDRO L. ERRECART. *Rev. Med. Argentina*, 48 (1934), 310; through *Rev. brasil. med. Farm.*, 13 (1937), 65. (G. S. G.)

Carbon Monoxide Poisoning—Methylene Blue in the Treatment of. It is shown on theoretical grounds that methylene blue therapy is not only useless but may give rise to unpleasant secondary effects.—K. THIEL. *Draeger-Hefte*, No. 186 (1936), 3314-3315; through *Chimie & Industrie*, 38 (1937), 475. (A. P.-C.)

Choline—Treatment of Anemias by. Acetylcholine acts on the hematopoietic organs in the same manner as extract of liver. In experimental anemia induced in a dog by repeated bleeding, as in the case of anemia of various cases, encountered in man, acetylcholine rapidly augments the number of red corpuscles and produces a strong reticulocyte reaction, a phenomena very evident of regeneration of the blood. The rate of hemoglobin was least augmented. The clinical phenomena were improved rapidly. Without saying directly that the treatment with acetylcholine advantageously replaces liver extract, the authors do affirm that this substance is a good aid in the practice of the treating of anemias. This medicament in many cases is also efficacious to that of liver extract and it is very easy to handle. Further the authors have seen the case where the effectiveness of extract of liver for the time being ceased to function and when the treatment by acetylcholine was started it was shown to be very effective. They have also seen cases where hepatic therapy or treatment with extracts of gastric mucosa have not given results, whereas treatment with acetylcholine has been very effective. In other cases, acetylcholine added to liver extract or to gastric mucosa extract has reinforced the action of both the latter substances. The doses employed were first started with 2 Cg. per day of acetylcholine by subcutaneous injection and then gradually increased to 8-10 Cg., continuing with these daily doses improving value is obtained. The treatment may be continued for many weeks without an inconvenience. The larger quantities, as 8 Cg., were found by the authors to be unnecessary. If necessary the quantity may be increased to 10 to 12 Cg. without any inconvenience. The only time it is necessary to interrupt the treatment was due to intestinal colic provoked by acetylcholine (action on the intestinal musculature). Acetylcholine especially active on the red corpuscles and not so on the hemoglobin, it was sometimes necessary to augment the treatment of acetylcholine with iron medication. With respect to the mechanism of action of acetylcholine upon the hemopoietic organs, the authors refer to their earlier research, that the liver is normally a reservoir of choline. It seems logical to believe that a constituent part of liver extract which acts on the hematopoietic organs is its choline content.—D. DANIELOPOLU and R. BRAUMER. *Presse méd.*, No. 86 (1937), 1507.

(W. H. H.)

Cobalt Polycythemia in the Dog. The oral administration of 2 mg. cobalt as chloride per Kg. daily to dogs produces a significant increase in the erythrocyte number. No toxic symptoms

were observed in dogs which were fed as much as 6 mg. cobalt per Kg. daily for 3 weeks.—JOHN EMERSON DAVIS. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 96. (A. E. M.)

Congo Red in the Treatment of Certain Infections. Intravenous injections of 1% Congo Red caused marked clinical improvement in every case of a series of infections including *Streptococcus viridans* septicemia, acute rheumatic fever, erysipelas, puerperal sepsis, infectious arthritis, undulant fever and lobar pneumonia (untyped). Ten of the cases are reported in tabular form and one is described in detail. The series is not large enough for accurate statistical analysis based on mortality figures. Only one death is mentioned, occurring in a puerperal sepsis patient with a temperature of 105° who showed marked temporary improvement on treatment but relapsed after fourteen hours. Throughout the series, the dye caused subjective relief within a few minutes and brought the temperature to near normal in 6–12 hours. The white and red blood cell counts were both increased even in the most virulent streptococcus infections. The dye caused no toxic manifestations, but sometimes produced a dusky red coloring over the entire body after repeated injections. The coloration disappeared within a short time after discontinuation of the drug. Extravasation at the site of injection caused no ill effects. The usual dosage was 20 cc. daily of the 1% aqueous solution for 3–7 days, or 20 cc. at less frequent intervals for a longer period. In the single case described in detail, the *Streptococcus viridans* septicemia was refractory to treatment with “sulfonamide” (sulfanilamide?) “in varying doses” for two weeks, and responded to subsequent treatment with Congo Red. Previous studies have appeared on the hemostatic use of Congo Red, but to G.’s knowledge its parenteral use in the treatment of infections is new.—WILLIAM L. GREEN. *J. Indiana M. A.*, 30 (1937), 527; through *Squibb Abstr. Bull.*, 10 (1937), A-1924. (F. J. S.)

Electrolytes in Therapy. The author classifies the importance with which the electrolytes can be present in the pharmaceutical-therapeutic field in the following way: (1) Those which are the base of the electrolytic therapy. (2) Those which are the indication of electrom therapy. (3) Those which are the minerals which do not react as electrolytes of the organism. The author gives a very detailed discussion of these in three articles.—E. MERDINGER. *Farm. ital.*, 14 (1936), 340. (A. C. DeD.)

Endocrine Treatment of Endarteritis Obliterans. The author has treated a number of cases of endarteritis obliterans and of ulcer cruris by means of sexual hormones. He believes that endarteritis obliterans, which is more common in men than in women, is partly caused by endocrine imbalance, and that it is favorably influenced by the administration of folliculin. Ulcer cruris, which is more common in women, is, in his opinion, caused in the same way and is equally amenable to folliculin therapy. Acroparesthesia caused by defective circulation of the blood in the extremities also responds very rapidly to folliculin, progynon or any other similar preparation. Good results from the same therapy have also been observed in decubitus and gangrene of the limbs in diabetes, and in Raynaud’s disease.—H. TEITGE. *Med. Klin.* (Aug. 27, 1937), 1153; through *Brit. Med. J.*, 4012 (1937), 1102B. (W. H. H.)

Endocrine Treatment of Enlarged Prostate. The author states that hormones were first used in the treatment of retention of urine due to enlargement of the prostate by Van Capellen in 1933, followed by Moskowitz, Verk and Uebelhor, who obtained cures in seventy-five per cent of their cases. These writers used testicular hormones only, but Freund showed that it was best to combine it with folliculin, which has the property of stimulating and reinforcing the action of the male hormone, and more recently Ilic and Valerio have recorded good results obtained by this combined treatment. The author reports ten cases of enlarged prostate treated by this method, of which four were cured, one was much improved, and the other five underwent suprapubic prostatectomy. The cases undergoing operation, however, found the post-operative period much less trying than those who had not been treated with hormones. The writer concludes that hormones cannot at present take the place of operation, despite the encouraging results so far achieved.—E. COMINELLI-GUARIGLIA. *Rinasc. med.* (Aug. 15, 1937), 520; through *Brit. Med. J.*, 4009 (1937), 948B. (W. H. H.)

Ephedrine in Enuresis. The author has exploited in several cases of enuresis the properties of ephedrine, which he had found previously responsible for disturbances of micturition, with somewhat more or less retention of urine, in three cases of elderly men. One of these, aged 63, suffered from heart disease and had a high blood pressure and pulmonary oedema and the administration of ephedrine was followed by difficulty in micturition, although there had not been any previous

dysuria. After seeing two other cases in which the ephedrine disturbed micturition, the author, proceeded to give this drug for the relief of enuresis. The first case he records was that of a male, aged 18, in whom the nocturnal enuresis of childhood had persisted. He was given 50 mg. of ephedrine hydrochloride in tablet form at bedtime every other evening. Several months after discontinuing this treatment he was still symptom free. After giving details of several other cases of nocturnal enuresis in children, successfully treated in this way, the author records the case of a man, aged 23, who suffered from transverse myelitis with incontinence of urine. The successful response to ephedrine in this case has encouraged the author to recommend it for the dysuria of other nervous diseases.—E. ORKILD. *Ugeskr. Laeg.* (Aug. 12, 1937), 851; through *Brit. Med. J.*, 4009 (1937), 948A. (W. H. H.)

Ergot—Effect of Small Doses of, on the Animal Organism. Decrease in the weight of rats and chickens and cyanosis of the comb of roosters are observed after 5 to 50 days' dosage of 0.12 to 0.03% of ergot in flour. The ergot pigment accumulates in the liver of rats and mice. The present allowable content of 0.06% ergot in flour should be reduced.—B. I. ROUDOCHEVSKAIA. *Voprossy Pitania*, 5 (1936), 171-184; through *Chimie & Industrie*, 38 (1937), 933. (A. P.-C.)

Gas Poisoning—Drugs Which Play a Rôle in the Treatment of. This paper is the first report of the advisory committee on gas attacks on the Dutch Pharmaceutical Association. It discusses several of the warfare gases, their physiological action and their therapeutics both first-aid and in continued treatment. Among those which are discussed extensively are the suffocating gases: chlorine, phosgene, palite, surpalite and chlorpicrine; the lachrymogenic gases: bromoxylol, bromacetone, benzylbromide, brombenzyl cyanide, chloracetophenone and chlorpicrine; the sternugenic gases: dimethylchlorarsine, dimethylcyanarsine, diphenylchlorarsine and diphenylaminochlorarsine and the vesicating gases: including those containing arsenic (phenyl-dichlorarsine, chlorvinyl-dichlorarsine, dimethylcyanarsine, diphenylcyanarsine, diphenylchlorarsine, and amidophenylchlorarsine); those containing sulfur (dichlorodiethylsulfide, and dibromdiethyl sulfide); those containing selenium (selenium-dichlorodiethyl and selenium-dibromdiethyl) and miscellaneous (chloracetophenone and iodacetophenone). The article concludes with a brief summary of general therapy in gas poisoning.—A. KEBLHOLZ. *Pharm. Weekblad*, 74 (1937), 46-62 and 70-83. (E. H. W.)

Gold Treatment of Arthritis. Gold treatment has been used for four years in nine hundred cases of arthritis; seven hundred and fifty were examples of rheumatoid arthritis. Apparent cure or striking improvement occurred in eighty per cent of the cases of rheumatoid arthritis. Relapse may occur, especially after the first course, but if treatment be continued a second relapse is rare. All patients should have at least two full courses of treatment. Toxic reactions occurred in four per cent of cases, but as a rule did not contra-indicate further treatment. Gold treatment is of doubtful value in other forms of arthritis.—S. J. HARTFALL, H. G. GARLAND and W. GOLDIE. *Lancet*, 233 (1937), 838. (W. H. H.)

Histamine—Value of, by Inunction in the Treatment of Chronic Arthritis. Eleven of 16 patients suffering from chronic infectious arthritis, showed marked subjective and objective improvement on treatment with histamine ointment; three showed slight objective and fair subjective improvement; and two were unimproved. Of ten hypertrophic arthritic patients, five were markedly improved; one slightly improved; two unimproved; two said the pain was increased. Some patients who did not respond to the application of the ointment by inunction, did respond to its use by iontophoresis, and afterward a satisfactory result could be achieved by applying the ointment by inunction. Application several times a week may be continued indefinitely. Too frequent or vigorous application may cause a local skin irritation. The action of the ointment is to increase local capillary or arterial circulation. The product used in this study (Imadyl unction) consisted of methyl salicylate 15; acetyl glycol ester 5; menthol 10; thymol 1; histamine 1; water 22; special hydrophylic base *q. s.* to 100.—ALBERT G. YOUNG. *Med. Record*, 146 (1937), 315; through *Squibb Abstr. Bull.*, 10 (1937), A-1966. (F. J. S.)

Magnesium Oleate as a Cholagogue. The author has investigated the cholagogue action of magnesium oleate. In ten patients a duodenal tube was passed and the duodenal secretions tested at ten-minute intervals. After one hour 5 Gm. of magnesium oleate were injected into the tube and the duodenal secretion again tested. In the majority of cases a marked increase of bile in the secretion was noted. No effect on the excretion of bile was noted in severe cases of jaundice, but in diseases of the gall-bladder and of its ducts magnesium oleate appeared to have a beneficial

action. In cases of enlarged liver due to heart failure long-continued treatment with magnesium oleate resulted in a retrogression in size of the liver, even to normal dimensions in some instances.—F. GRANDINGER. *Med. Welt* (July 31, 1937), 1072; through *Brit. Med. J.*, 4005 (1937), 730B. (W. H. H.)

Medicament. An ointment containing salicylic acid, mercury salicylate and chlorobutanol is used for treating fungous infections of the type of dermatomycosis, epidermomycosis and epidermophytosis.—ADELIA McCREA, assignor to PARKE, DAVIS & CO. U. S. pat. 2,105,197, Dec. 11, 1937. (A. P.-C.)

Merthiolate in the Treatment of Tuberculosis. As far as the author's clinical tests indicate merthiolate, in safe doses, is without significant effect. Used for the irrigation of chronic tuberculosis in a strength of 1, 1000, it fails to clear up the condition after three weeks' trial, which suggests that the treatment is ineffectual. In Besredka's medium there is a slow but sure sterilization of the culture, a bactericidal or perhaps a bacteriostatic effect, all tubercle bacilli being killed off in three weeks in dilutions up to 1 in 100,000. This sterilization of the culture is perhaps of importance, and it is remarkable that it takes place even in the presence of egg protein. In water its action is rapid and efficient, as found by Douglas and Hartley (1934), and as shown by the author's own confirmatory experiments. In Wright's capillary blood clots its action on tubercle bacilli is restricted to a dilution of 1/1000.—S. L. CUMMINS. *Lancet*, 233 (1937), 962. (W. H. H.)

Methylcholanthrene—Cancerigenic Action of. When applied in benzene solution to the skin of mice, methylcholanthrene has a cancerigenic action fully as great as that of benzopyrene applied in the same manner.—J. MAISIN and M. L. COOLFEN. *Compt. rend. soc. biol.*, 123 (1936), 159-160; through *Chimie & Industrie*, 38 (1937), 932. (A. P.-C.)

Oestrin—Treatment of Gonococcus Vulvo-Vaginitis by. Lewis was the first in 1933 to treat gonococcus vulvo-vaginitis with oestrin. The results obtained have been confirmed by a number of others. The author employed this method in ten cases of vulvo-vaginitis in children two to ten years for a period of about three weeks. No external treatment was employed in most of the cases. Oestrin was administered either by mouth or rather by intramuscular injection of 4-40 international units in oil solution or oestrin benzoate (10-50 international units) in oil. The discharge diminished rapidly in two to three weeks. It changed the aspect, decreased the density, grayish color, then entirely disappeared. Under the microscope the gonococci and leucocytes disappear and they persist no longer than the nucleated epithelial cells. Recurrences are rare; when they survive, a few days' treatment is sufficient to definitely stop the discharge.—BETHMANN. *Acta dermato-venereologica*, 18 (1937), 229; through *Presse méd.* (Oct. 13, 1937), 152. (W. H. H.)

Ointment Bases and Ointments—Action of, on the Healing of Wounds. Four artificial wounds were made in each of fifteen rabbits and treated with Vaselinum Flavum Americanum D.A-B. 6 (I); Adeps lanæ anhydricus D.A-B. 6 (II); a mixture of Adeps lanæ anhydricus 20, vaselinum album 30, oleum arachidis 20, aqua destillata 30 (Unguentum emolliens, III); and one was allowed access to air (IV). Healing was about equally prompt with III and IV at 16-18 days followed by II at 20-22 days, and lastly by I. In similar studies on gonorrhœa patients with healthy skins, these differences between ointment bases and access to air was almost completely blotted out with regard to their healing action on artificially produced wounds; but Unguentolan and diacetylaminoazotoluene (Pellidol) emolliens accelerated healing somewhat.—M. SCHUBERT. *Dermatol. Wochschr.*, 105 (1937), 1251; through *Squibb Abstr. Bull.*, 10 (1937), A-1932. (F. J. S.)

Oxybismorphine - Cerebral Action of. In dogs the intravenous injection of 0.3 to 2.0 mg. per kilo body weight of oxybismorphine benzenesulfonate produces a very marked hypotension and symptoms similar to those of cerebral anemia. Changes produced in the chronaxia of the leg muscles are also described.—A. RICHARD and B. DRFVON. *Compt. rend. soc. biol.*, 123 (1936), 962-964; through *Chimie & Industrie*, 38 (1937), 935. (A. P.-C.)

Pentothal Sodium in Intravenous Anesthesia. It must be emphasized that pentothal is not a drug with which liberties may be taken. This of course applies to all the barbiturates, especially when given intravenously; not only is pentothal a barbiturate but it is probably the most powerful yet produced. In experienced hands it seems to be as safe as evipan, and is certainly a great deal safer than chloroform and its mixtures which have the added risks of pulmonary complications and liver damage. Used with care in the selection of cases and technic of adminis-

tration there can be no possible doubt in the minds of those who have worked with it and considered it without bias that it is one of the most valuable advances in the science of anesthesia that has been made in recent times.—F. B. MALLINSON. *Lancet*, 233 (1937), 1070. (W. H. H.)

Prophylaxis of Benzopyrene Cancer by Organic Peroxides. The incidence of cancer in mice treated with benzopyrene solution was greatly decreased by one or more injections of 0.1 mg. or less of performic acid or the peroxide of diformaldehyde.—J. MAISEN and F. ROBERT. *Compt. rend. soc. biol.*, 123 (1936), 156–159; through *Chimie & Industrie*, 38 (1937), 932. (A. P.-C.)

Psoriasis—Treatment of, with Massive Doses of Crystalline Vitamin D and Irradiated Ergosterol. The authors while employing large doses of vitamin D averaging 300,000 units daily in the treatment of chronic arthritis observed a complete involution of a co-existing psoriasis. This led to the use of this substance in the treatment of fifteen cases of chronic widespread psoriasis. Of the total number eleven obtained a complete involution in a maximum of twelve weeks, while two obtained only a partial benefit and two showed no benefit. The results indicated furthermore that such massive doses appear to be relatively safe, inasmuch as in the few instances of hypervitaminosis produced, no extreme symptoms developed. The study surely indicates great promise in the treatment of psoriasis by this method.—E. T. CEDER and L. ZON. *Public Health Reports*, 52 (1937), 1580; through *Am. J. Pharm.*, 109 (1937), 601. (A. C. DeD.)

Remedial Agent for Adrenal Cortical Insufficiency. For making a remedy for adrenal cortical insufficiency capable of prolonging the life of adrenalectomized animals, interrenal tissue is triturated with glycerin, alcohol is added, the extractive-containing liquid is filtered, epinephrine is removed from the filtrate, and the alcohol is removed by evaporation.—JULIUS M. ROGOFF and GEO. N. STEWART. U. S. pat. 2,096,342, Oct. 19, 1937. (A. P.-C.)

Sodium Bromide and Atropine Sulfate in the Treatment of Gastric and Duodenal Ulcers. The authors found that an intravenous injection of this combination exercised a combined action: inhibitions of the arising excitations of the central nervous system by sodium bromide; action of atropine upon the vagus nerve endings and the gastric and duodenal mucosa. It resulted in a rupture of the viscid ring which contained autonomic instability. The combined action of sodium bromide and atropine sulfate introduced by the venous route caused the vegetative system to equilibrate itself. The new condition assisted the cicatrization of the ulcers, thus diminishing the vegetative instability. The sick tolerated the injections very well. They complain at times of drying of the mouth. The authors injected at one time, 10 cc. of a solution of ten per cent sodium bromide and 1 mg. of atropine sulfate.—A. LANDAU and W. HEJMAN. *Presse méd.*, No. 84 (1937), 1468. (W. H. H.)

Sodium Mandelate as a Urinary Antiseptic. Acute and chronic urinary infections in a series of 16 infants and children were treated with sodium mandelate in a daily dose of 6–12 grains, and ammonium chloride, in a dose of 2–6 grains. In 11 of the patients the urine became sterile in 3–10 days after institution of the treatment and remained sterile during the rest of the patient's stay in the hospital. Temporary sterility of the urine was observed in three additional patients. In four of the patients evidence of renal irritation, *i. e.*, casts and sometimes red blood cells, appeared after institution of the treatment and disappeared when sodium mandelate was omitted.—H. F. DIETRICH. *Am. J. Diseases Children*, 54 (1937), 496; through *Squibb Abstr. Bull.*, 10 (1937), A-1893. (F. J. S.)

Strophanthus. Review of strophanthus medication with seventeen references.—EDWARD PODOLSKY. *J. Am. Inst. Homeopathy*, 30 (1937), 609; through *Squibb. Abstr. Bull.*, 10 (1937), A-1940. (F. J. S.)

Sulfanilamide and Another Group of Diseases. The authors report the healing effect of sulfanilamide in the painful and generally stubborn illness due to infection of the urinary tract. Cases that had lasted for from five to seven years and in which all other forms of treatment had failed were cured by sulfanilamide. The drug is said to kill practically all of the germs which commonly infect the urinary tract. The important factor in treating these conditions is to obtain the proper concentration of the drug, that is, to get enough of it into the urinary tract to kill the germs. The amount necessary can be determined by laboratory tests. Laboratory tests can show whether or not sulfanilamide will cure cases of streptococcus infections, the conditions for which the drug was first tried. Group A and Group B hemolytic streptococcal infections in man can be cured by the drug. Good results have been obtained in treating Group C hemolytic streptococcal infections in dogs and horses. Group D hemolytic streptococcal infections in man are unaffected

by the drug. Alpha streptococcal infections, the kind found in the heart disease known as sub-acute bacterial endocarditis, are in general not affected by sulfanilamide treatment.—P. H. LONG and E. A. BLISS. *Science Supplement*, 86 (1937), 12; through *Am. J. Pharm.*, 109 (1937), 613. (A. C. DeD.)

Sulfanilamide in Puerperal Fever. One hundred and six cases of puerperal sepsis have been treated by sulfanilamide, usually by mouth alone: 100 of them were infected by hemolytic streptococci (92 belonging to group A Lancefield); 3 were infected by anaerobic streptococci; 3 by staphylococci. The clinical course of the 100 cases infected by hemolytic streptococci has been on the whole similar to that of the 64 cases previously treated by sulfamid-chrysoidine and P. S. (1936*b*), although resolution of the infective process has seemed a little less spectacular. The average stay in the hospital has been 19.7 days, as compared with 31.3 days in 1935. There were eight deaths among the 100 cases but only three of them can be regarded as deaths from straightforward sepsis in patients who lived long enough for chemotherapy to have a fair trial. The mortality rate for all cases (199) infected by hemolytic streptococci since the beginning of 1936 (when treatment by sulfamido-chrysoidine and P. S. was begun) has been 5.5% as compared with the average of 22.8% for the preceding five years. The significance of this change is discussed. "Drug fever" was suspected in several instances. Some degree of cyanosis developed in 58 cases and was usually associated with met- and sulfhemoglobinemia. Other toxic manifestations of the drug observed much less frequently have included prostration paraesthesia, headache, visual disturbances and joint pains. No generalized rashes have developed.—L. COLEBROOK, A. W. PURDIE, *et al.* *Lancet*, 233 (1937), 1291. (W. H. H.)

Sulfanilamide—Treatment of Pneumococcal Infections in Rabbits with. Sulfanilamide, when given orally to rabbits in adequate doses, early in the course of experimental dermal pneumococcal infection, eliminates this organism from the blood stream, reduces the fever, cures the local lesion and favors recovery in most of the treated animals.—WILLIAM A. KREIDLER. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 146. (A. E. M.)

Sulfanilamide—Use of, in the Treatment of Type XIV Pneumococcus Infection in Mice. Sulfanilamide is an effective therapeutic agent in type XIV pneumococcus infection.—L. H. SCHMIDT. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 205. (A. E. M.)

Suprarenal Cortex—Glycerol Extract of. The authors report the results of treating cases of suprarenal insufficiency with a glycerol extract of suprarenal cortex from which the adrenalin had been almost completely removed and which was of such concentration that 1 cc. of the extract corresponded to 1.5 Gm. of cortex. The advantages claimed for this extract are that it is less expensive than purified aqueous cortin, that glycerol is a good preservative and solvent of cortin, and that it can be given orally. The amount that can be administered is limited by the patient's tolerance for glycerol. The usual dosage was from 2 to 4 cc. three times a day, taken after food and followed by water, but as much as 20 cc. per day has been given. In nine cases of severe Addison's disease an attempt was made to substitute the glycerol extract for cortin injections; three cases are reported in detail. The authors conclude that glycerol extract therapy in Addison's disease should only be attempted when the patient's requirement is small. For a time glycerol extract may maintain a severe case under most favorable circumstances, but it will not compensate for strenuous activity or injury. Cases with less severe symptoms or early cases of Addison's disease may respond so well to glycerol extract therapy that under continued treatment they return to normal activity. Glycerol extract is also useful in the diagnosis and treatment of patients in whom two or more classical findings of Addison's disease are present with other symptoms which make the diagnosis doubtful. The symptomatic response in six such patients was good.—F. A. HARTMAN, G. W. THORN and R. R. DURANT. *Endocrinology* (July 1937), 516; through *Brit. Med. J.*, 4009 (1937), 948D. (W. H. H.)

Tannates—Anesthetic, for Treating Skin Lesions. Compounds such as 1-ethoxy-4-(β -diethylaminoethyl)-naphthalene tannate, diethylaminoethyl ester of *p*-aminobenzoic acid tannate, α -butyloxycinchonic acid diethylethylenediamine tannate, methylethyl (dimethylaminomethyl) carbinol benzoate tannate, ethylene-*p*-diethoxydiphenylamidine tannate, tropacocaine tannate, trimethylbenzoxypiperidine tannate (benzoxymethylaminomethyl) dimethylaminobutane tannate and *p*-aminobenzoyl γ -dibutylaminopropanol tannate (suitably in admixture with various ointment vehicles, etc.) are used for treating burns and other skin lesions.—RUSSELL HOPKINSON

and ALEXANDER V. TOLSTOOUHOV, assignors to OSTRO RESEARCH LABORATORIES, INC. U. S. pat. 2,100,054, Nov. 23, 1937. (A. P.-C.)

Testosterone—Menstruation Inhibiting Action of. Testosterone or testosterone propionate inhibits the onset of menstruation in the normally cyclic monkey, after castration and after cessation of estrin injection.—CARL A. HARTMAN. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 87. (A. E. M.)

Testosterone Propionate—Effect of, on a Post-Puberal Eunuch. A post-puberal eunuch has been treated with testosterone propionate. Sexual function and libido returned almost immediately. A total of 140 mg. testosterone propionate given over seven days was followed by persistent priapism. Full libido and ability to perform the sexual act was maintained by a weekly injection of 40 mg. A later increase in dosage did not cause a return of priapism. There was an increase in weight of 16 pounds in twelve weeks. Substitution dosage with testosterone propionate is probably between 100–140 mg. with smaller weekly maintenance doses. Treatment doses are likely to be greater in cases of senility or prostatic syndrome.—G. L. FOSS. *Lancet*, 233 (1937), 1307. (W. H. H.)

Therapeutic Composition Suitable for Application to the Skin for Local Anesthesia and Vasoconstriction. A preparation-producing analgesia and vasoconstriction when applied to the skin comprises a phenol aldehyde condensation product in which condensation was arrested while still in the alcohol-soluble state.—RIENHARD BEUTNER. U. S. pat. 2,097,439, Nov. 2, 1937. (A. P.-C.)

Tobacco as Cause of Cancer. Experiments demonstrate cancerigenic action on buccal cavity, lips, tongue and pulmonary tract. On rabbits, poison rests in products of combustion and distillation, smoke, resins, etc., not in nicotine. Action similar to phenanthracene. Resins produce papilomas and carcinomas on rabbits. Important to intensify anticancerous prophylaxis in connection with habit of smoking, especially against effect of resin on buccal respiratory tract.—A. ROFFO. *Boletín del Instituto de Med. Exper.*, 42 (1936); through *Rev. sud-americana endocrinol. Inmunol. quimioterap.*, 20 (1937), 550. (G. S. G.)

Vaccine Prophylaxis of Whooping Cough. The author reviews the literature and records his observations on seventy-five children, aged from one month to twelve years, who were inoculated against whooping cough during an epidemic in Naples in October 1935. A mixed vaccine was employed consisting of a suspension of various strains of Bordet-Gengou bacilli and other micro-organisms, 1 cc. of the suspension containing five milliards of Bordet-Gengou bacilli, 400 million *H. influenzae*, and 200 million each of staphylococci, streptococci, pneumococci and *M. catarrhalis*. Three doses varying from 0.5 to 1.5 cc. of the vaccine were given every other day. No appreciable disturbance, either local or general, resulted from the use of the vaccine apart from a slight rise in temperature. Forty-six of the children escaped infection entirely, and among the thirty-one who developed the disease the attack was short and uncomplicated, except for bronchopneumonia in two children who had bronchitis before the onset of the whooping cough.—F. MARTILLOTTI. *Pediatrics* (Aug. 1, 1937), 692; *Brit. Med. J.*, 4009 (1937), 948B. (W. H. H.)

Vitamin C Nutrition in Hematemesis and Melena. The state of vitamin C nutrition of fifteen cases of hematemesis and melena was investigated by the estimation of the excretion of ascorbic acid in the urine. Thirteen of the fifteen cases were found to be in a condition of vitamin C subnutrition or "subclinical scurvy." This was of a severe degree in seven of the cases. Three cases of peptic ulcer uncomplicated by hemorrhage were similarly found to be in state of vitamin C subnutrition. Estimations carried out on three healthy control subjects did not reveal any vitamin C subnutrition. The addition of 200 mg. of synthetic ascorbic acid to the puree diet given to the cases of hematemesis led to the correction of the nutritional defect in ten to fifteen days, and produced no untoward symptoms even when started four days after the actual bleeding. Ascorbic acid, 200 mg. daily by mouth for ten to fifteen days, is recommended to be followed by the liberal addition of orange juice (60 to 100 cc.) to the diet of these patients. The general indications for correcting this nutritional defect are discussed.—S. LAZARUS. *Brit. Med. J.*, 4011 (1937), 1011. (W. H. H.)

Ya Yan Tzu for Amœbic Dysentery. The author has been treating cases of amœbic dysentery for more than a year with the seeds of the plant known in China as Ya Yan Tzu—that is, *Brucea sumatrana* or *B. javanica*. The seeds, Ya Yan Tzu, were described in the Pen Tsao, the ancient Chinese pharmacopœia, in 1765 A.D., at which time they were used in the treatment of

diarrhoea, hemorrhoids and chronic dysentery. The active principle of the seed is not definitely known, but it has an amoebicidal action both *in vitro* and *in vivo*. Nineteen cases of acute and chronic amoebic dysentery were treated by this method, and over 80% of the patients benefited, disappearance of amoebæ from the stools occurring on the average in 2.6 days after the administration of the seed. Toxic symptoms produced by it were nausea, vomiting, abdominal pain and purging, but they were not severe and did not appear when the seed was given in divided doses. The adult dose was from twenty to fifty seeds, the shells being removed but the seeds remaining unbroken. They were given in capsule form in divided doses throughout one day, and a larger dose was given two or three days afterward if amoebæ were still present in the stools. The cost of treating one patient was only half a cent.—H. L. LIU. *China Med. J.* (July 1937), 89; through *Brit. Med. J.*, 4008 (1937), 888A. (W. H. H.)

NEW REMEDIES

SYNTHETICS

Abracide consists of a mixture of isomeric hydroxymethylbutylbenzenes having a high Rideal-Walker coefficient and low toxicity. It is recommended for the treatment of skin diseases caused by trichophyta and similar fungi, such as athlete's foot, and dhobie itch. Abracide is supplied in the form of lotion, dusting powder and ointment. The affected part should be bathed twice daily for ten to fifteen minutes in 1 part of the lotion diluted to 100 parts with cold or tepid water. The dusting powder should be used as a prophylactic to prevent reinfection from shoes. The ointment should be applied after bathing to prevent the skin from cracking, and ensure the continued presence of abracide on the skin so that any spores germinating will be at once killed. Abracide skin lotion is supplied in 12-oz. bottles; the powder in 6- to 8-oz. cartons, and the ointment in 4-oz. jars.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 603. (S. W. G.)

Acrosone is a non-poisonous antiseptic with a Rideal-Walker value of 13, thus being five times as strong as lysol. It is unperfumed and the slightly oily nature of the solution prevents gauze and dressings adhering to wounds. A 10% solution of acrosone can be safely used for the sterilization of metal and rubber surgical instruments. Solutions from 0.1 to 0.5% are recommended for douching, curettage, impetigo and septic skin conditions, and as a general antiseptic. A 5% solution can be used for the sterilization of hands and skin.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 603. (S. W. G.)

Amphyl is a solution of chlorhydroxymetaxylene which is used as a bactericide, both internally and externally. It is non-poisonous.—*Pharm. Weekblad*, 74 (1937), 958. (E. H. W.)

Aquocamphol "Silbe" (Dr. E. Silten, Berlin) is a solution of sodium camphosulfonic acid of which 1 cc. is therapeutically equivalent to 1 Gm. of camphor. It is furnished in ampuls which take the place of those containing camphor oil.—*Pharm. Weekblad*, 74 (1937), 792. (E. H. W.)

Bi-Citrol granules contain sodium acid citrate. It is claimed that this saline passes through the stomach without appreciable decomposition and the citrate ion is carried to the liver and the blood. Bi-citrol is suggested for the treatment of biliousness, morning headache, vomiting of pregnancy and dyspepsia. The dose is one teaspoonful in half a glass of warm water taken with the two principal meals. In milk dyspepsia in children a third of a teaspoonful can be added to each feed.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 604. (S. W. G.)

Decholin contains dehydrocholic acid, $C_{23}H_{35}COOH$, in tablet form, while the ampuls contain a 20% solution of its sodium salt. It is indicated as a cholagogue, and choleric, for catarrhal jaundice, cholecystitis, cholangitis and for cholelithiasis. Decholin given with arsphenamine has been found to enhance its spirochæticidal effect. As a diuretic it can be administered alone or with mercury diuretics. Favorable results have been obtained in the treatment of delirium tremens, melancholia, schizophrenia and migraine. The bitter taste which suddenly appears after the intravenous injection of decholin has been used for determining the circulation time of the blood. The injection can be given intravenously or intramuscularly, and from 5 to 10 cc. can be given daily. For post-operative treatment of gall-bladder diseases 1 or 2 tablets three times daily can be given for a comparatively long time. The choleric effect starts immediately when the 20% aqueous solution is used, and continues for more than twenty-four hours. Decholin tablets are supplied in tubes of 20, each containing 0.25 Gm. The ampuls contain 10 cc., and are supplied in boxes of 3.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 604. (S. W. G.)

Dontalol (Bayer, I. G. Farben.-A. G., Leverkusen a. Rheln) is an aromatic solution of a high molecular diammonium base. The solution is used in mouth infection and for the treatment of infections in the mouth and throat and of the mucous membrane. It is also employed for the hygienic keeping of false teeth.—*Pharm. Weekblad*, 74 (1937), 959. (E. H. W.)

Falipsoryl (Fahlberg List A. G.) is a mercury-phenol-tar solution in a volatile solvent which is used as an application in psoriasis, neurodermatitis, chronic eczema.—*Pharm. Weekblad*, 74 (1937), 959. (E. H. W.)

Gerulcine (Chinoin A. G., Budapest) is 1-histidinechlorhydrate in a 4% aqueous solution, sold in ampuls of 5 cc. Gerulcine is used in stomach and duodenal ulcer, the contents of one ampul being injected intramuscularly, daily for a period of three weeks.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

Medobis (Chinoin A. G., Budapest) is a solution in oil of bismuth heptadiencarbonic acid which contains 0.090 Gm. of metallic bismuth per cc. The liquid is colorless, fluid and transparent. Injections of 0.5 cc. are given 2 to 3 times a week in lues.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

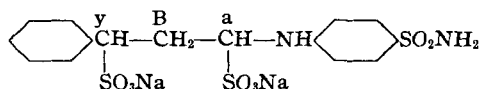
Navigan is a combination of 10 mg. of syntropan (antispasmodic) with 50 mg. of a mild sedative hypnotic in tablet form. Navigan suppositories contain 40 mg. of syntropan and 200 mg. of the sedative. The sedative is dihydroxydiethylpiperidine, and has a similar action to carbromal. It is recommended for sea and travel sickness; the dose suggested is 3 to 6 tablets at least half an hour before sickness is likely to occur. The suppositories are intended for cases in which oral medication is not likely to be of benefit. The dose may be repeated three hours later, preferably half an hour before a meal. A third dose of 2 tablets can be safely taken four hours later. Navigan tablets are supplied in bottles of 25 and 100. The suppositories are issued in boxes of 6.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 606. (S. W. G.)

Neurobore (Laboratories E. Bouteille, Paris) is supplied in solution and in cachets. The solution contains 1 Gm. potassium boro-tartrate per teaspoonful and is used in place of bromides. The cachets contain potassium boro-tartrate 1 Gm., phenylethylmalonylurea 0.05 Gm. and atropine sulfate 0.5 mg. per cachet.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

Ovostab is an oily solution of oestrone benzoate standardized to contain 10,000 and 50,000 international units per cc. It is suggested for the treatment of primary and secondary amenorrhoea and menopausal disorders. The injection is given deeply into the muscle in the upper arm or any other suitable muscle. The dose is from 10,000 to 50,000 units two or three times a week for four to six weeks. Ovostab is also supplied in tablet form for oral administration in mild cases. Tablets containing 10,000 units can be given 2 or 3 times a day, gradually decreasing the dose. Ovostab is supplied in 1.1-cc. ampuls containing 10,000 and 50,000 units per cc., singly and in boxes of 6. Ovostab tablets contain 1000 and 10,000 international units per tablet and are issued in bottles of 25.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 607. (S. W. G.)

Sedaphen Tablets (Curta & Co.), formerly known as Brocanal, contain calcium bromide-diethanolamine 0.4 Gm.; phenylethylbarbituric acid 0.025 Gm. and caffeine 0.015 Gm. They are used as sedatives, antispasmodics and antiepileptics.—*Pharm. Weekblad*, 74 (1937), 961. (E. H. W.)

Soluseptasine is disodium-*p*-(*y*-phenyl-propylamino)-benzene-sulfonamide-*x-y*-disulfonate having the structural formula



It is a white crystalline solid, readily soluble in water, giving an approximately neutral solution. It is issued for use as a 5% solution which is nearly isotonic with the blood, and is well tolerated by subcutaneous, intramuscular and intravenous injection. Soluseptasine is recommended as a streptococcicide for use in urgent cases of septicæmia where rapid action is necessary. Doses up to 80 cc. have been injected intravenously within twenty-four hours with beneficial results, and there is no risk of toxic reaction or shock. Subcutaneous or intramuscular injections can be given in less urgent cases. The unit intramuscular or subcutaneous dose for adults is 5 cc., which can be repeated at intervals of four to six hours, not more than 30 cc. being given in twenty-four hours.

The unit dose for children is 1 to 3 cc. By intravenous injection an initial dose of 5 cc. should be given as a tolerance test, followed some four hours later by 10 to 20 cc. Injections may be given twice, or even oftener, in twenty-four hours if necessary. Soluseptasine is supplied in boxes of 6 ampuls of 5 cc. or 10 cc.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 608. (S. W. G.)

Solvarsine (Bayer, I. G. Farben.-A. G., Leverkusen a. Rhein) is a pentavalent arsenic preparation for subcutaneous and intramuscular injection that resembles Spiroicide in composition and action. It is used in neurosyphilis and is used, like salvarsan, in syphilis.—*Pharm. Weekblad*, 74 (1937), 961. (E. H. W.)

Surparyl (Chinoin, A. G., Budapest) is an antispasmodic combination of 0.04 Gm. of perparine and 0.0015 Gm. novatropine per tablet or ampul. **Surparyl Forte** contains 0.04 Gm. perparine, 0.0015 Gm. novatropine, 0.015 phenylethylbarbituric acid and 0.15 Gm. dimethylamidoantipyrine.—*Pharm. Weekblad*, 74 (1937), 961. (E. H. W.)

Tenebryl (Guerbet & Co., Paris) is sodium diiodomethanesulfonate. It contains 68.6% iodine, is a white, stable powder having a bitter taste and is soluble in water (50 Gm. in 100 cc.). It is isotonic in 6% solution. Tenebryl does not respond to the usual iodine reactions, it is not oxidized by sodium nitrite and sulfuric acid and may be boiled a considerable time provided this takes place in the dark. Tenebryl is employed as an intravenous injection for urography and in radiological research, pyelography, arteriography, etc. As a rule a 30% solution is used. It is found on the market as a powder and in ampuls containing a 45% solution.—*Pharm. Weekblad*, 74 (1937), 794. (E. H. W.)

Trasentine Ciba (Gesellschaft für Chemische Industrie, Basel) is the hydrochloric acid salt of diphenylacetyldiethylaminoethanol ester. It is supplied in dragées containing 0.75 Gm., in suppositories containing 0.1 Gm. and in ampuls which contain a solution of 0.075 Gm. in 1.5 cc. and which may be used for subcutaneous or intramuscular injection. They are employed to combat spasm of the stomach and intestines and the genito-urinary system.—*Pharm. Weekblad*, 74 (1937), 961. (E. H. W.)

SPECIALITIES

Abscessine (Lab. Rego at Schwanden) is an anti-staphylococcus and anti-streptococcus preparation that according to Gehe's Codex contains various carminatives and aromatics, the identity of which, however, is not given. It is found on the market in tablets of 0.5 and 1 Gm.—*Pharm. Weekblad*, 74 (1937), 792. (E. H. W.)

Alpherin Tablets (Novopin-fabrik, Berlin) contain dimethylaminoantipyrine 0.15; paraacetphenetidine 0.2; trimethylxanthine 0.05; antipyrine 0.1 Gm. They are used in headache, rheumatism, migraine, etc.—*Pharm. Weekblad*, 74 (1937), 958. (E. H. W.)

Antostab is a gonadotropic hormone prepared from pregnant mares' serum, which stimulates ovulation and the secretion of the oestrogenic hormone by the ovary. It is standardized in mouse units, one unit being the amount of hormone necessary to double the weight of the ovary of an infantile mouse in three to four days. Antostab is indicated in the treatment of conditions associated with anterior pituitary and ovarian dysfunction. It is suggested for the treatment of primary and secondary amenorrhea, and metrorrhagia. A dosage of 6 injections of 100 mouse units intramuscularly twice a week is suitable for severe cases. Antostab is supplied in boxes containing ampuls of 100 mouse units, with 1-cc. ampuls of normal saline as a solvent. It is supplied in single ampuls and boxes of 6.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 603. (S. W. G.)

Betaxan is synthetic vitamin B₁, a crystalline substance of which 1 mg. is equivalent to 400 pigeon units. It is supplied for use in ampuls for intramuscular injection, and tablets for oral administration. Betaxan ampuls contain 2 mg. per cc. and are supplied in boxes of 3, 15 and 50 1-cc. ampuls. Betaxan Forte ampuls contain 10 mg. of synthetic vitamin B₁ per cc., and are supplied in boxes of 3 and 15 ampuls of 1-cc. Betaxan tablets contain 1 mg. and are supplied in tubes of 20, and bottles of 100 and 500 tablets. The 1-mg. ampuls are now discontinued.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 604. (S. W. G.)

Biocalcium (Dehaussy Laboratories, Lille) is calcium gluconate with biological amino compounds and sodium arsenate. The relative amounts are not given. Biocalcium is supplied in isotonic solution in ampuls of 5 cc.—*Pharm. Weekblad*, 74 (1937), 958. (E. H. W.)

Birobine (Chinoin, A. G., Budapest) is a preparation containing stomach mucosa (0.15), ferrous chloride (0.015), copper sulfate (0.0002) and manganese hypophosphite (0.001). It is found on

the market in dragées, of which 3 to 4 are used three times a day, after meals, in secondary anemia, etc.—*Pharm. Weekblad*, 74 (1937), 958. (E. H. W.)

Blennocur (Städtiches Serotherapeutisches Institut, Vienna) is a concentrated vaccine obtained by chemical solution from freshly grafted gonococci, the solution being freed from poisonous constituents by subsequent treatment. The vaccine is used in subacute and chronic gonorrhoea and complications resulting from this disease.—*Pharm. Weekblad*, 74 (1937), 792. (E. H. W.)

Bluevita (Unilever Concern, Rotterdam) is a concentrated vitamin preparation containing exclusively vitamin A and vitamin D. For many years cod liver oil was the only source of these vitamins which could be used for children. Researches in the biological laboratories of the Unilever Concern have covered the animal and vegetable kingdoms from the tropics to the poles attempting to find the most efficient source of a concentrate. Bluevita satisfies the highest requirement with respect to vitamin A and vitamin D content. This vitamin concentrate is also sold in capsules of 0.12 cc. which are obtainable exclusively in the pharmacies.—*Pharm. Weekblad*, 74 (1937), 792. (E. H. W.)

Calvitan Tablets contain 0.5 Gm. of calcium gluconate and 600 international units of vitamin D, prepared in tablet form with chocolate.—*Pharm. Weekblad*, 74 (1937), 958. (E. H. W.)

Cantine (E. Bouteille, Paris) is an elixir containing *Cratægus* 25 drops, passion flower 0.5 Gm., hamamelis 30 drops and *Salix alba* 0.025 Gm. per teaspoonful. It is used in doses of 2–4 teaspoonfuls per day, after meals, in heart affections.—*Pharm. Weekblad*, 74 (1937), 958. (E. H. W.)

Céréossine (Dehaussy Laboratories, Lille) is a preparation obtained from the bones of young animals which is assayed biologically and with the addition of wheat germ and vitamin D is used as a substitute for cod liver oil in rickets. Besides céréossine, céréossine irradiée survinaminée and céréossine methylarsinée are also found on the market in the granulated and ungranulated powder and in cachets.—*Pharm. Weekblad*, 74 (1937), 958. (E. H. W.)

Collotone is a tonic containing 65 mg. of iron equivalent to 210 mg. iron and ammonium citrate, vitamin B as yeast extract, 25 international units, sodium-, potassium- and calcium glycerophosphates, of each 0.8 Gm., nux vomica 2.5 mg. and citrated caffeine 0.13 Gm. besides small quantities of manganese and copper per 30 Gm. (2 dessert spoons).—*Pharm. Weekblad*, 74 (1937), 959. (E. H. W.)

Curtaquat (Curta & Co., Berlin-Britz) appears on the market in drops consisting of an extract from the leaves, flowers and fruits of *Cratægus oxyacantha*, and are used in cardiac weakness, angina pectoris, etc.—*Pharm. Weekblad*, 74 (1937), 959. (E. H. W.)

Disuril (Laboratories Bouteille, Paris) are granules containing hexamethylenetetramine, salol, sodium benzoate and methylene blue. They are used in doses of 4–6 in cystitis, gonorrhoea, etc.—*Pharm. Weekblad*, 74 (1937), 959. (E. H. W.)

Dohyfral Liquidum (Pharmaceutisches Producten Mij, Philips-van Houten) is a solution of vitamin D in oil. The vitamin D is the same as occurs in Dohyfral tablets. It is found on the market in 10-Gm. dropping bottles.—*Pharm. Weekblad*, 74 (1937), 792. (E. H. W.)

Dysentery-Serum, Behring (Behringwerke der I. G. Farbenindustrie) is obtained from horses treated with the Krus-Shiga bacillus.—*Pharm. Weekblad*, 74 (1927), 792. (E. H. W.)

Gluco-Fedrin contains ephedrine 1%; chloretone 0.5%; menthol 0.1%, in a solution of dextrose. It is recommended as a vasoconstrictor for use in all inflammatory conditions of the nasal mucous membrane, in sinus disease and hay fever. It can be applied by means of a spray, or directly by a dropper, or on gauze swabs. As the base of glucofedrin is miscible with the nasal secretion, it is claimed to penetrate to the surface of the mucous membrane more rapidly and in greater concentration than oily solutions. It is soothing to inflamed mucosa, and its use is accompanied by little or no discomfort. It is issued in bottles of 10 cc., with glass dropper.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 605. (S. W. G.)

Gonococcus Antitoxin is an unconcentrated antitoxin from horses immunized against the specific toxin of the gonococcus. It is supplied in 30-cc. rubber-capped bottles.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 605. (S. W. G.)

Helborside (Hoffmann-La Roche, Basel) is obtained from *Helleborus niger* and has an activity similar to that of strophanthin, Helborside occurs in solution containing 0.5% of the pure crystallized glucoside and has a strength of 1000 frog units.—*Pharm. Weekblad*, 74 (1937), 793. (E. H. W.)

Herbogrimon (Curta & Co., Berlin-Britz) is an extract of *Agrimonia eupatoria* obtained from the fresh blooming herb. Herbogrimon is a medicament for liver and gall bladder and is used in the treatment of gall-stones, jaundice and kidney stones.—*Pharm. Weekblad*, 74 (1937), 793. (E. H. W.)

Holadin (Fairchild Bros. and Foster, New York) is an extract of the pancreas occurring as a powder and in 3- and 5-grain capsules. It is used in affections of the pancreas.—*Pharm. Weekblad*, 74 (1937), 793. (E. H. W.)

Iodotab is a compound iodine tablet containing in each, iodine $\frac{1}{10}$ th grain and dried milk 4 grains, suitably flavored with orange. It is recommended as a prophylactic against colds and influenza, and for the treatment of rheumatism and hypothyroidism. Iodotab does not affect the digestion and can safely be given to children. The adult dose is 1 tablet two or three times a day; children 1 tablet per day. Iodotab is supplied in bottles of 28 tablets.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 605. (S. W. G.)

Katasuccin Byk. This is stated to be a preparation of succinic acid for peroral administration in diabetic acidosis. Owing to the unpleasantly persistent taste of succinic acid, the preparation is in the form of dragées. Packages contain 100 dragées of 0.25 Gm. each.—*Pharm. Ztg. Berl.*, 82 (1937), 804; *Quart. J. Pharm. Pharmacol.*, 10 (1937), 605. (S. W. G.)

Kolpon (N. V. Organon, Oss) contains 1000 international units of Menformon per tablet. Besides this it contains glucose to act as a food base for the lactic acid bacteria and a buffer that keeps the pH of the vagina at the physiological value 4.5–5.0. It thickens the vaginal epithelium and raises the acidity of the vaginal secretion.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

Lipo-Lutin (Progestin) is a standardized solution in oil of the hormone secreted by the corpus luteum. It is biologically standardized on immature female rabbits to contain 1 rabbit unit per cc. It is suggested for the treatment of secondary amenorrhea, menorrhagia and sterility. Lipolutin is administered by intramuscular injection in doses of 1 to 2 cc. daily or on alternate days for periods up to three weeks. It can also be given alternately with theelin, and antuitrin S. Lipo-lutin is issued in boxes of six ampuls of 1 cc. each.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 605. (S. W. G.)

Lobeton is a new name for Lobeline-Ingelheim, produced by C. H. Boehringer and Sons at Nieder-Ingelheim.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

Luteostab is an oily solution of the corpus luteum hormone, progesterone, containing 2 rabbit units per cc. It is recommended for the treatment of secondary amenorrhea, and other disorders due to a deficient functioning of the ovarian hormones. Luteostab is given by deep intramuscular injection chiefly in conjunction with ovostab (oestrone). Luteostab is supplied in single ampuls and boxes of 6 ampuls containing 1.1 cc., equivalent to 2 rabbit units per cc.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 606. (S. W. G.)

Lutocrescine (Dr. G. Henning, Berlin) is the gonadotropic hormone obtained from the anterior lobe of the hypophysis of mares at the period of gestation. The preparation is found on the market in suppositories containing 500 rat units. It is used in infantilism of the genitals in both sexes in amenorrhea and dysmenorrhea etc.—*Pharm. Weekblad*, 74 (1937), 793. (E. H. W.)

Lysanthine is an effervescent granular powder whose percentage composition is sodium iodopropanolsulfonate, 12; calcium gluconate, 12; lysidine bitartrate (methylglyoxaldine), 9; sodium bicarbonate, 37; tartaric acid, 15; citric acid, 6; sugar, 9; and oil of lemon, *q. s.* It is recommended for the treatment of chronic rheumatism, arthritis, gout, neuralgia and neuritis of rheumatic origin, and biliary and urinary lithiasis. Sodium iodopropanolsulfonate is described as hyperæmic and lymphogogue and combats sclerosis in the joint tissues. Lysidine bitartrate combines with uric acid to form a water-soluble salt which is eliminated in the urine. The dose is one teaspoonful in a tumblerful of water before breakfast for twenty consecutive days, followed by an interval of ten days. During an attack the dose may be increased to two teaspoonfuls. Lysanthine is supplied in bottles of 60 Gm.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 606. (S. W. G.)

New Remedies. Forty-six of the newer products are discussed.—RICHARD FIRBAS. *Pharm. Monatsh.*, 18 (1937), 215–219. (H. M. B.)

Orgatonicum (Organon, Oss; Orgachemia) is now also supplied in dragées.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

Oreptal is a tonic containing concentrated liver-extract 2.5 Gm.; ferric ammonium citrate 0.55 Gm.; cupric chloride 0.0025 Gm.; tincture of nux vomica 0.045 Gm., with sodium and manganese glycerophosphates, caffeine, quinine hydrochloride, extract of condurango, tinctures of orange, absinthe and gentian, made up with syrup, etc., to 100 Gm. It is recommended as a palatable oral tonic, in anemia following blood loss, in tuberculosis, convalescence and other conditions of weakness. The dose of oreptal for adults is one dessertspoonful three times daily, children one teaspoonful during or after meals. It is supplied in bottles containing about 180 Gm.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 607. (S. W. G.)

Pancrinol (Laboratories Dr. Debat, Paris) is a pluriglandular preparation obtained from extracts of liver, spleen, kidney and suprarenals. It is used in anemia and is found on the market in ampuls of 7 cc. for parenteral injection and also as a syrup.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

Parivitan is a vitamin and mineral tonic syrup containing vitamin A, 15,000 units; vitamin D, 3000 units; organic iron, 14 grains; calcium, sodium and potassium hypophosphites $2\frac{1}{2}$ grains; manganese and copper of each $\frac{1}{26}$ grain; syrup of glucose to 1 fluidounce. It is a palatable syrup with a pineapple flavor, suggested as a tonic in anemia, debility and convalescence. Each teaspoonful is equivalent in vitamin to more than one teaspoonful of cod liver oil. The dose is from half to two teaspoonfuls three times daily. Parivitan is supplied in 4-, 16-, 40- and 80-fluidounce bottles.—*Quart. J. Pharm. Pharmacol.*, 10 (1937), 607. (S. W. G.)

Perphyllon (Chemiewerk Homburg, Frankfurt) consists of deriphylline, adonigen, phenylethylbarbituric acid and perparine hydrochloride. One ampul contains 0.2 Gm. deriphylline, an amount of adonigen equivalent to 100 frog units besides phenylethylbarbituric acid and eumydrine-Bayer. The suppositories contain 0.45 Gm. deriphylline and 150 frog units of adonigen besides phenylethyl barbituric acid and perparine hydrochloride. The capsules contain 0.225 Gm. deriphylline, adonigen constituents equivalent to 45 frog units, phenylethylbarbituric acid eumydrine and perparine hydrochloride. It is used for bronchial asthma.—*Pharm. Weekblad*, 74 (1937), 960. (E. H. W.)

Pollen Case of Urbach contains small quantities of various pollens which are applied to the mucous membrane of the nose and produce sneezing and rhinitis. After the antigen has been discovered one of the three pollen preparations of Urbach (Polysemine, Polyfrumine or Polyflorine) is used. They are tablets, of which four are taken four times a day.—*Pharm. Weekblad*, 74 (1937), 961. (E. H. W.)

Raphabil (Sandoz) is a preparation made from the radish. The radish is known as an old folk remedy for gall-stones and occasion was taken to test the sap of the radish clinically. It was found that the radish juice, because of its laxative action favored the passing of the gall-stones. The active constituents are retained by concentrating the juice by a special method. Raphabil is found on the market in dragées which also contain carbon dioxide and specifically relieve choleric symptoms. Dose, 1-2 dragées, 3 times a day.—*Pharm. Weekblad*, 74 (1937), 793. (E. H. W.)

Salyrgan (Bayer, I. G. Farben.-A. G., Leverkusen a. Rhein) is now also supplied in suppositories.—*Pharm. Weekblad*, 74 (1937), 961. (E. H. W.)

Vaccinovules (Laboratories E. Bouteille, Paris) are ovules containing attenuated cultures of gonococcus. They are used in metritis, etc.—*Pharm. Weekblad*, 74 (1937), 961. (E. H. W.)

Viperine (Stadliches Institut, Vienna) is an ointment containing snake poison which is used in vasomotor rhinitis and in acute and chronic affections of the mucous membranes of the nose.—*Pharm. Weekblad*, 74 (1937), 794. (E. H. W.)

Vitalever (Unilever Concern, Rotterdam) is a concentrate containing vitamin A exclusively. It is derived from natural sources. Vitalever is found on the market in capsules containing 0.12 cc. obtainable exclusively in the pharmacies.—*Pharm. Weekblad*, 74 (1937), 794. (E. H. W.)

Wybert Syrup contains according to the prospectus, sodium benzoate, ephedrine hydrochloride, oil of peppermint, oil of anise, extract of licorice and gum arabic, as active constituents.—*Pharm. Weekblad*, 74 (1937), 794. (E. H. W.)

BACTERIOLOGY

Alcohol—Sterile. In preparing sterile alcohol by the method of K. E. Jensen (*Norsk. Med. Tids.*, 10 (1937); *Dansk Tids. Farm.*, 9 (1937)) it is noted that the filtration through

a Seitz filter is not infallible. There may be pores in the filter which will pass bacteria. A sterility control is hence advisable.—L. E. WALBUM. *Dansk. Tids. Farm.*, 11 (1937), 241. (C. S. L.)

Aminobenzenesulfonamides—Anti-Streptococcal Activity of. A number of derivatives of *p*-aminobenzenesulfonamide, substituted in the amide group, and a series of Schiff's bases have been prepared, together with some related compounds. A total of eighteen of these substances has been tested for their ability to protect mice after infection with the "Richards" strain of *Streptococcus hemolyticus*. Four of the substances appear to be very slightly more effective than *p*-aminobenzenesulfonamide itself, the best being 2'-pyrrolidone-5'-carboxy-4-aminobenzene sulfonamide. *p*-Benzylaminobenzenesulfonamide, which has been recommended, was found in these experiments slightly less effective than *p*-aminobenzenesulfonamide. A number of the substances are better tolerated by the mice than aminobenzenesulfonamide, among these being 2'-pyrrolidone-5'-carboxy-4-aminobenzenesulfonamide. This substance, when administered in a 4-Gm. dose to a monkey, conferred a slighter but more lasting bactericidal activity to the blood than the same dose of *p*-aminobenzenesulfonamide.—W. H. GRAY, G. A. H. BUTTLE and D. STEVENSON. *Biochem. J.*, 31 (1937), 724; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 586. (S. W. G.)

Ascorbic Acid—Effect of, on Toxin Produced by C. Diphtheriae in Culture Media. Ascorbic acid (I) in 0.05–0.1% concentration in *C. diphtheriae* culture media renders the filtrates much less toxic ($1/20$ as toxic as controls). Glutathione does not have this effect. Incubation of 0.1–0.2% I with diphtheria toxin (II) at 30° renders II atoxic in 2–3 days under aerobic and anaerobic conditions. *In vivo*, II toxin decreases the I-content of the adrenals. I may destroy II by an oxidation-reduction reaction similar to that produced by aldehydes in general.—I. J. KLIGER, L. LEIBOWITZ and M. BERMAN. *J. Path. Bact.*, 45 (1937), 415; through *Squibb Abstr. Bull.*, 10 (1937), A-1872. (F. J. S.)

Bacteria—Studies on Cultural Requirements of. IX. Tissue Extractives in the Growth of the Diphtheria Bacillus. This study was an attempt to further purify the organic substances present in a liver extract which are essential for the growth of a strain of *Diphtheria bacillus* [*J. Bact.*, 30, 513 (1935)]. The liver eluate described in the article mentioned may not be very satisfactorily purified by further adsorption or by precipitating with heavy metal salts. The active materials may be extracted from strongly acidified aqueous solution by butyl alcohol but not from an alkaline one. The materials so extracted can be separated into two fractions by repeated extractions with ether from acid solution only. Neither of these fractions alone shows the full effect of the combination of the two in stimulating growth of the *Diphtheria bacillus*. These fractions are being studied further.—J. HOWARD MUELLER and Y. SUBBAROW. *J. Bact.*, 34 (1937), 153; through *Squibb Abstr. Bull.*, 10 (1937), A-1892–1893. (F. J. S.)

Bacterial Spores—Resistant, Temperature and Time of Killing of. The killing of resistant spores of soil bacteria by heat sterilization is studied. Sealed ampuls containing contaminated, aqueous buffered solutions at various p_H (Sørensen phosphate buffers in 10% dilution) are heated in a glycerol bath for various periods of time at five temperatures between 80° and 120° C. The time necessary for killing is shown in the following table:

p_H	Hours Necessary for Killing the Spores				
	120°	110°	100°	90°	80°
5.3	0.07	1.17	23	139	624
7.0	0.07	1.17	23	145	672
8.0	0.10	1.45	26	139	672

It is evident that the spores are less resistant at p_H of 5.3 and 7.0 than at 8.0. The usual pharmacopœial requirement of sterilization at 80° or 100° C. for 1–2 hours is inadequate.—K. A. KJÆR. *Dansk Tids. Farm.*, 11 (1937), 290. (C. S. L.)

Chemistry and Immunity. Immunity to infection is accompanied by certain changes in the properties of the serum of the immune person or animal. Such a serum exhibits a variety of so-called immunological reactions which are not given by the serum of a susceptible person. Reactions given by the immune serum have been shown to be due to the presence in the serum of substances called antibodies. The suspension of bacteria which provoked the formation of the antibody is called the antigen. Until comparatively recently very little was known about the chemistry of immunity reactions. As yet, we know very little about the chemical nature of antibodies. They all seem to be colloidal and in all probability are proteins, since they always accom-

pany the globulin fraction of an immune serum; that is, they are precipitated from serum by half saturation with ammonium sulfate or by dilution with distilled water and the passage of carbon dioxide. The author discusses the great practical value of the apparently purely academic and unimportant experiments of the laboratory worker on problems of immunity.—C. G. ANDERSON. *Pharm. J.*, 140 (1938), 97. (W. B. B.)

Disinfectant or Antiseptic Action of Some Compounds in the Dry or Slightly Moist State.

The investigation was carried out by Nyberg's method. For salicylic acid, airol, eucophene, β -naphthol, vioform, resorcinol, 10% was sufficient to completely destroy *Staphylococcus aureus* in talc in 24 hours. For quinine hydrochloride and sulfate and for magnesia, 25% was required; for bismuthate subsalicylate and zinc oxide, 50%; for bismuth subgallate and sodium salicylate, 75%; for boric acid, arsenious oxide, antimonious anhydride, titanium oxide, zinc stearate, 100%. Tannic acid, basic bismuth carbonate and nitrate, calcium carbonate, kaolin, minium, sulfur, xeroform are incapable of destroying *Staphylococcus aureus* completely. *B. coli* and *B. pyocyaneus* are more sensitive than staphylococcus.—T. E. OLIN. *Zentr. Bakt. Parasitenk.*, 137 (1936), 283–287; through *Chimie & Industrie*, 38 (1937), 105. (A. P.-C.)

Disinfectants—New Method for Testing. Peas or hazelnuts are better test objects to be inoculated and placed in test solutions than are inorganic objects as glass beads or granite chips.—K. H. BLAAS. *Zentr. Bakt. Parasitenk., I Abl., Orig.*, 140 (1937), 51–67; through *Chem. Abstr.*, 32 (1938), 303. (F. J. S.)

Gangrene—Gas. Its Prevention and Treatment. In the treatment of gas gangrene, the polyvalent sera marketed in this country are not reliable. M. prefers a larger dose of a *Bacillus Welchii* antitoxin in conjunction with tetanus antitoxin and appropriate surgical and X-ray procedures.—BATTLE MALONE. *J. Tennessee M. A.*, 30 (1937), 402; through *Squibb Abstr. Bull.*, 10 (1937), A-2044. (F. J. S.)

Hemolytic Streptococci—Serological Grouping and Typing of. The results agree with what is now generally accepted, that human streptococcal infections are caused by Group A strains. The percentage of puerperal fever strains which agglutinated with Griffith's type sera is definitely lower than that obtained by D. Colebrook (1935), who typed 70.2% of 121 strains tested by this method. This lower percentage may perhaps have been due to the fact that some of the strains isolated by Congdon (1935) had lost their type-specificity, as they had been subcultured for two or three years before typing. The percentage of freshly isolated strains that agglutinated (66.7) was higher than the percentage (54.5) of older strains. The incidence of types in puerperal fever is somewhat different from that found by Colebrook (1935), although Types 2 and 25 are among the most frequent in both collections. It seems probable, therefore, that this incidence is influenced by the distribution of types among the general population and that when these strains were collected this distribution in the Manchester district was not the same as in the London area, where Colebrook's investigation was made. Type 2 is also apparently a common cause of other streptococcal infections, but is not represented among the nose or throat strains that have been typed.—C. SHAW. *Lancet*, 233 (1937), 1193. (W. H. H.)

Methylene Blue—Photodynamic Action of, on Poliomyelitis Virus. Methylene blue in concentrations from 1:50,000 to 1:100,000 will inactivate poliomyelitis virus when exposed for 60 minutes to the light of a 100-watt bulb under experimental conditions.—L. A. ROSENBLUM, B. HOSKWITH and S. D. KRAMER. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 166. (A. E. M.)

Microorganisms—Cultivation, Nutritive Value of Rice Bran Extract for. The extract was found to be equal or better than meat infusion broth for growing many microorganisms.—SAM C. WONG. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 13. (A. E. M.)

Pneumococcic Pneumonia—Serum Treatment of, Community Provision for. The report covers pneumonia statistics, the history of pneumonia research, organization of pneumonia control in Massachusetts and New York, serum production in New York City and recommendations for further steps by the community to control the disease. The variation in the prevalence of pneumococcus types from year to year makes it difficult for health laboratories always to have adequate amounts of the different serums. Type I is consistently most prevalent. Second place has been held at various times by types III, VII and VIII.—R. L. CECIL, J. G. M. BULLOWA, H. T. CHICKERING and E. H. L. CROWIN. *Bull. N. Y. Acad. Med.*, 13 (1937), 557; through *Am. J. Pharm.*, 109 (1937), 611. (A. C. DeD.)

Psoriasis—Polyvalent Vaccine for the Treatment of. Papules of psoriasis are treated with a sterilizing medium. There are secured from the papules a filamentous microorganism (designated as *Actinomyces psoriaticum*) capable of reproducing in culture media having a pH of 6.4 at temperatures of 20° to 40° C. and forming round dark green colonies 3 to 5 microns in diameter, the colonies increasing in size and acquiring a white powdery surface when fructification occurs; the microorganisms have ellipsoidal spores measuring from 0.5 to 1.3 microns in diameter and also contain bodies having close sinistral spirals of 2 of 4 turns and corkscrew-shaped bodies having 2 to 4 loops and 1 to 3 knobs when 1% phosphate is added to the medium containing the microorganisms. The organism is propagated in a culture medium; sub-cultures are prepared therefrom; the spore-free filamentous germinating form of the organism is separated from the sub-culture medium; the spore-free filamentous germinating form is mixed with other strains of the same form of microorganism from other sources; these mixed strains are mixed in a liquid vehicle, and the suspension is homogenized and sterilized.—MARY A. MARCUS. U. S. pat. 2,099,696, Nov. 23, 1937. (A. P.-C.)

Small Pox—Simultaneous Immunization against. Use of convalescent serum together with subcutaneous vaccination on rabbits exposed to small pox. Convalescent serum from goats. Produces more rapid formation of antibodies. Used combination of 0.3 cc. virus and 0.3 cc. serum.—HIDETAKE YAOI. *Japanese J. Exptl. Med.*, 15 (1937), 155; through *Rev. Filipina de Med. Y. Farm.*, 28 (1937), 322. (G. S. G.)

Sodium Citrate—Inhibiting Action of, on the Bactericidal Power of Human Blood. *Es. coli* cannot grow in human blood containing 2% or less of trisodium citrate, but they multiply readily in blood containing 3%. The sodium citrate acts by inhibiting the alexic action of the plasma.—A. GRIMBERT, S. MUTERMILCH and E. AGASSE-LAFONT. *Compt. rend. soc. biol.*, 123 (1936), 1045-1048; through *Chimie & Industrie*, 38 (1937), 935. (A. P.-C.)

Sodium Metaphosphate—Sanitary Value of. A bacteriologic study is presented of the relative sanitational value of a film-preventing detergent, alone and in conjunction with an auxillary germicide (sodium hypochlorite), and of detergents lacking specific film-preventing properties, alone and in conjunction with sodium hypochlorite. The results indicate that, although the use of sodium hypochlorite is definitely beneficial in conjunction with film-forming detergents, the presence of alkaline earth soap film prevents the realization of the complete effectiveness of this efficient germicide. The necessity for the use of an auxiliary germicide with a film-preventing detergent is shown to be questionable.—G. O. HALL and C. SCHWARTZ. *Ind. Eng. Chem.*, 30 (1938), 23. (E. G. V.)

Spermatocic Vaccine—Nonspecific. A spermatocic vaccine containing mammalian spermatozoa is rendered nonspecific by heat.—MORRIS J. BASKIN. U. S. pat. 2,103,240, Dec. 28, 1937. (A. P.-C.)

Whooping Cough Vaccine. A mixture of stocks of Bordet-Gengou bacillus each having constant cultural properties after long cultivation, is subjected to the action of a physiologic salt solution. The suspension is alternately frozen and thawed until the remains of the bacteria appear under the microscope as an amorphous mass. The insoluble matter is separated from the toxin solution and the former is utilized for making up the vaccine.—HANS LANGER and ERICH PUTTER, assignors to SCHERING-KAHLBAUM A. G. U. S. pat. 2,105,486, Jan. 18, 1938. (A. P.-C.)

Zephirol—the Disinfectant. A review of the properties of zephirol, stating its advantages over other disinfectants, is given.—ANON. *Scientia Pharm.*, 8 (1937), 127. (M. F. W. D.)

BOTANY

Drugs and Drug Powders—Cork, Cuticula, Fat and Slime Staining in. For the examination of cork, cuticula and fat, the dyestuff Scharlach R in its chloral hydrate preparation is suggested, while for slimes the metachromatic dyes thionin and toluidin blue are proposed. With Scharlach R permanent mounts of colored powders and sections can be made with addition of glycerol, while those with thionin and toluidin blue are preserved in Canada balsam or sugar syrup.—ULRICH WEBER. *Süddeut. Apoth.-Ztg.*, 77 (1937), 729-731; through *Chem. Abstr.*, 32 (1938), 302. (F. J. S.)

Osmic "Acid"—a Substitute For. The main objection to the use of osmic "acid" for killing and fixing plant and animal material is its high cost. Uranium trioxide gives excellent re-

sults as a substitute for osmic "acid." Since the former is only slightly soluble in water it must be employed in conjunction with aqueous chromic acid. When used in this manner it gives a fixative picture practically identical with osmic acid. Modified formulas are given for the following solutions: Strong Flemming, Medium Flemming, Benda and Semmens Carnoy. In cytological work uranium trioxide improves the staining qualities of the material, especially when the gentian violet-iodine technic is used.—C. S. SEMMENS. *Microscope*, 1 (1937), 29-31; through *Chem. Abstr.*, 32 (1938), 962. (F. J. S.)

Plants—Cell Wall Structure of Higher. Both the primary and secondary walls of typical cells of the higher plants are composed of a porous but firmly coherent matrix of anisotropic cellulose, whose finer structural details grade down to the limits of microscopic visibility—for example, 0.1μ or less. Lignin and other noncellulosic constituents may be deposited in the elongated, intercommunicating interstices of the cellulose, thus resulting in two continuous interpenetrating systems. In heavily lignified forms, either system may be dissolved without seriously modifying the continuity or the structural pattern of the remaining system. The visible structural patterns of the secondary wall are extremely complex and variable, and are due (a) to varying porosities in different parts of the cellulosic matrix, (b) to varying orientations of aggregates of chain molecules in successively formed parts of the wall, (c) to cellulosic substances and (d) in some cases to the presence of noncellulosic layers. Well-defined planes of structural weakness exist in the cellulosic matrix. Thus, the secondary wall may be dissected by various mechanical and chemical treatments into layers, fibrils, fusiform bodies, dermatosomes and other fragments of different shapes and sizes. Each of these fragments is heterogeneous and much larger than the finer visible structural details of the cellulosic matrix.—I. W. BAILEY. *Ind. Eng. Chem.*, 30 (1938), 40. (E. G. V.)

CHEMISTRY

GENERAL AND PHYSICAL

Angular Constants of Microcrystalline Profiles and Silhouettes in the Conclusive Identification of Substances. The work indicates the validity of a corollary law of the constancy of profile or silhouetted angles, corresponding to that of interfacial angles and applicable to chemically precipitated or sublimed crystals with appreciable extensions in two dimensions and restricted extension in the third; the facility with which microcrystals suitable for profile angular measurements may be prepared; the simplicity for profile angular mensuration; the value of profile angular data as constants in cases where the ordinary cases do not exist because of decomposition or sublimation of the compound under examination; the simplicity of profiles and silhouettes produced by the ordinary rapid analytical methods; the comparatively simple numerical and geometrical relationships existing even on complex crystals formed by slower preparational methods; the possibility of individual differentiation by profile angular studies on lots of chemical having a nominal average chemical purity; and the value of photomicrographs of single crystals having adequate size, in the presentation of quantitative ocular proof.—A. C. SHEAD. *Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 496. (E. G. V.)

Boiling. The mechanism of boiling is considered and it is pointed out that above a critical temperature difference (usually between 30° and 50°) the production of discrete "chains" of bubbles from scattered nuclei gives place to the formation of a complete film of vapor between the liquid and the heating surface. This latter state is compared with the "spheroidal" state which occurs when drops of liquid are brought in contact with surfaces which are sufficiently hot. It is shown that, whereas below the critical temperature difference the heat transfer coefficient (H) increases proportionately to the increasing temperature difference raised to a power between 2.4 and 2.5, above it, H decreases at an even greater rate. The practical application of these observations occurs in all evaporators where the heating medium may be supplied at a temperature 50° greater than the actual boiling temperature of the liquid being evaporated.—T. B. DREW and A. C. MUELLER. *Trans. Amer. Inst. Chem. Eng.*, 33 (1937), 449-473; through *J. Soc. Chem. Ind.*, 56 (1937), 1286. (E. G. V.)

Charcoal—Activated. Various sources of charcoal are mentioned together with the different kinds official in the Dutch, Italian, Belgian and German Pharmacopœias. Vegetable and animal charcoals are discussed as to source and properties. Activating processes are described.

In order to increase the adsorptive surface, the non-homogeneous matter is burned away, thus leaving a sort of mountain-scape of molecular proportions. The valleys will adsorb foreign molecules more rapidly than the carbon atoms at the peaks. Activation by means of gas, zinc chloride, phosphoric acid and alkalis is discussed. A method for making the charcoal ash-free is given. Methods for the determination of adsorptive property in water solution are discussed; one using methylene blue and the other quinine. One gram of charcoal adsorbs between 150 and 500 mg. of methylene blue and between 100 and 200 mg. of quinine. Adsorption of gases is discussed and the formulæ of Freundlich, Langmuir and Titoff and Homfray are given. The paper concludes with a discussion of colloidal chemical behavior.—EUG. O. K. VERSTRAETE. *Pharm. Tijdschr.*, 14 (1936), 152. (E. H. W.)

Colloids—Pharmaceutical, Chemistry of. The methods of preparation and chemical properties of various colloids are discussed.—G. CORAZZA. *Farm. ital.*, 14 (1936), 350, 413. (A. C. DeD.)

Electrodialyzer—Simple. The apparatus described consists of a central glass cylinder, A, 46-mm. diameter and 60 mm. in length, and two outside cylinders, B, 49-mm. diameter and same length. The ends of A are covered with cellophane, held in place with rubber bands; B cylinders carry the electrodes and cooling coils; the three cylinders are connected together with rubber tubing. Liquid is introduced through a T-tube connected to A. Dialysis of a sodium sulfate solution of protein was complete in 6 to 8 hours at 220 volts.—D. B. ROXBURGH and M. H. POWER. *Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 578. (E. G. V.)

Emulsion Particles—Size Frequency Distribution of. As part of an investigation into the design and operation of emulsifying machinery, size frequency analyses were carried out on sixty oil-in-water emulsions of the same chemical composition, but treated in a colloidal mill under different conditions of rotor speed, gap and time of action. The emulsions were prepared from a fine paraffin oil of d^{25} 0.8735, and viscosity 0.291 poise at 25° (the temperature of the experiments). This was emulsified with an equal volume of potassium oleate solution, prepared from "oleine B. P." neutralized with caustic potash, and containing 2% weight to weight of fatty acid. The size-frequency distributions of the emulsions were determined to see how their form was affected by conditions of manufacture. The paper is divided into four sections, dealing with (1) the method used to determine the size-frequency distributions, (2) the statistical methods used to describe and classify the distributions, (3) the results found in practice and (4) consideration of a general equation for the distributions.—F. A. COOPER. *J. Soc. Chem. Ind.*, 56 (1937), 447T. (E. G. V.)

Freezing Point Determinations—Apparatus for. The apparatus described maintains a constant temperature difference between the sample and its surroundings; air is excluded from the sample, eliminating condensation of moisture; it is made of metal to do away with any fire hazard due to breaking if it were made of glass, when using liquid air as the cooling medium.—D. QUIGGLE, C. O. TONBERY and E. M. FRY. *Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 579. (E. G. V.)

Immiscible Liquids—Devices for Extraction of. The device consists of an emulsification chamber and a settling chamber, connected by two ducts which permit the continuous cycling of the emulsion. Of these two ducts, the first continuously bleeds the emulsified solutions into the settling chamber, where partial separation takes place. That portion which has not clarified is continuously recycled through the second duct back to the emulsification chamber. The clarified extracted solution (previously dispersed phase) is bled off the separating chamber at the same rate at which the unextracted original solution enters the emulsification chamber from a previous reservoir. Inasmuch as the separation is largely a function of the relative densities of the two liquids and the relative densities of the two phases may vary, it was necessary to design two modifications of the device—one for extracting solvents of the lower density than the dispersed phase, and the other vice versa.—H. J. WOLLNER and J. R. MATCHETT. *Ind. Eng. Chem., Anal. Ed.*, 30 (1938), 31-32. (E. G. V.)

Mie Effect—Application of, in Determination of Particle Size of White Aerosols, Especially of Coarsely Dispersed White Aerosols. Irradiation diagrams of six fogs were made and compared after determination of the particle size in the ultramicroscope and by the sedimentation method. The Mie effect (irradiation diagrams) was found applicable to the determination of particle size within the limits of 50 and 500-600 μ .—H. ENGELHARD and H. FRIESS. *Kolloid-Z.*, 81 (1937), 129; through *Squibb Abstr. Bull.*, 10 (1937), A-2192. (F. J. S.)

Molecular Weight—Experiments on an Isotonic Method for Determining. Isotonic solutions of two substances in the same solvent have equal vapor pressures at the same temperature. If equal weights of two substances of molecular weight m_1 and m_2 are dissolved in the solvent of volumes v_1 and v_2 , the state of equilibrium is represented by the equation $\frac{m_1}{m_2} = \frac{v_2}{v_1}$. According to one method equal weights of the two substances are dissolved in a small equal volume of the same solvent, in short, calibrated test-tubes which are placed side by side in a wide tube, which was then closed and placed in a cooling mixture for 24 hours or more, with frequent stirring to promote uniformity in the concentrations, until no further change in the ratio v_1/v_2 is noticeable. In another method solvent is first introduced into the outside tube in order to condense vapors from the solvent into the solutions until equilibrium is reached. In a third method a flask containing solvent is connected to the tube and the solvent heated slightly while the tube is cooled. Results for a number of determinations give molecular weights within ± 8 , ± 20 and $\pm 4\%$ for the three respective methods.—P. BLACKMAN. *Chemistry & Industry*, 56 (1937), 999. (E. G. V.)

Molecules—Man-Made. A lecture.—T. MIDGELY, JR. *Ind. Eng. Chem.*, 30 (1938), 120. (E. G. V.)

Plasticity—Evaluation of. A review of some methods of evaluation is given, including the relation between plasticity and drying shrinkage and dry strength, mobility and yield-value equations, softness—extensibility diagrams.—A. E. DODD. *Refractories J.*, 13 (1937), 573–575; through *J. Soc. Chem. Ind.*, 56 (1937), 1285. (E. G. V.)

Sugars and Caramel—Effect of Humidity on Hygroscopic Properties of. The experiments showed that, when the specimens were kept a certain length of time, the greatest hygroscopicity was exhibited by levulose and the least by lactose. After crystalline sugars absorbed 16–18% moisture, they became liquids. Maltose absorbed a large quantity of moisture within the first few days, and became moldy at the same time. Caramel is highly hygroscopic and attracts moisture even at low relative humidity. The hygroscopicity of caramel is higher than that of its different ingredients. The composition of the caramel has little effect upon its hygroscopicity.—A. SOKOLOVSKY. *Ind. Eng. Chem.*, 29 (1937), 1422. (E. G. V.)

Suspensions and Solutions—Viscosity of, Investigations of. 8. Inertia Effects of Suspended Globules. Einstein's law of viscosity in its extended form was confirmed in the Couette apparatus with the aid of suspensions of macroscopic glass globules up to 6%. The model, however, gave a smaller viscosity than the theoretical when tested in the capillary viscosimeter. This effect was shown to be due to inertia.—F. EIRICH and O. GOLDSCHMID. *Kolloid-Z.*, 81 (1937), 7; through *Squibb Abstr. Bull.*, 10 (1937), A-2054. (F. J. S.)

Viscometer—New Capillary-Type. The viscometer permits viscosity determinations over a wide range, and is designed with a view to reducing to minimum deviations originating from the difference in the capillary action of liquids. The viscometer is U-shaped. One side is a wide glass tube; the other side, the capillary side, is divided by the bulb into an upper tube and a lower capillary tube. The wide tube has an annular red mark at the bottom and millimeter division downward. A thermometer, the mercury bulb of which has the same diameter (7.5 mm.) as the stem, is placed axially in the tube, sliding in a cork stopper with lateral slit. The thermometer serves partly to measure the temperature of the sample and partly to adjust the heights of liquid before the measurement commences.—P. E. RAASCHOU. *Ind. Eng. Chem., Anal. Ed.*, 30 (1938), 35–39. (E. G. V.)

INORGANIC

Acid—Accumulator. There are dangers attached to the extemporaneous dilution of strong sulfuric acid and the delay caused by waiting until the diluted acid cools sufficiently to enable a hydrometer reading to be taken. In addition, if the hot acid is poured into an accumulator there is a likelihood that this would be damaged and perhaps rendered useless. For these reasons it is suggested that stocks should be kept of accumulator acid having specific gravities of 1.2 and of 1.4, and that other dilutions should be prepared from them. A table is given to show the amounts of 1.2 and 1.4 that should be added together to obtain desired specific gravities; the corresponding percentages, w/w and w/v, of sulfuric acid are also given. It is suggested that in view of the fact that even dilutions of sulfuric acid are somewhat hygroscopic, it is advisable always to check the specific gravity of the mixed acids with a hydrometer.—ANON. *Pharm. J.*, 139 (1937), 469. (W. B. B.)

Aluminum Sulfate—New Process for. Production of aluminum sulfate comprises two types of fabrication. One requires product almost free of iron, for the making of paper, etc.; the other, with variable quantities of ferric sulfate, for purification of water. Extracted from clay rich in aluminum, kaolin, bauxite, etc. Used various methods, sulfuric acid and steam extraction. Developed method most satisfactory economically: pulverized bauxite treated with live steam, compressed air and sulfuric acid, has advantage of rapid reduction with minimum of insoluble residue, low consumption of electric power and no external heat.—EDUARDO D. GARCIA. *Rev. chim. ind.*, 6 (1937), 18. (G. S. G.)

Borax, Boric Acid and Their Less Known Applications. A review. A. L. CURTIS. *Sands, Clays and Min.*, 3 (1937), 115–118; through *J. Soc. Chem. Ind.*, 56 (1937), 1199. (E. G. V.)

ORGANIC

Alkaloids

Aconitum Napellus—New Alkaloids in. Napelline and neoline, two new alkaloids have been isolated from *Aconitum napellus*, also traces of *l*-ephedrine and sparteine. All four alkaloids must be considered as genuine aconitum alkaloids.—W. FREUDENBERG and E. F. ROGERS. *J. Am. Chem. Soc.*, 59 (1937), 2572. (E. B. S.)

Alkaloids of Fumariaceous Plants. XV. Dicentra Chrysantha Walp and Dicentra Ochroleuga Engelm. Bicutulline, protopine and cryptopine have been isolated from both of the species mentioned in the title. In addition, *Dicentra chrysantha* was found to contain two new alkaloids, namely, $-v$, $C_{19}H_{17}O_6N$, phenolic, and chrycentrine, $C_{18}H_{16}O_3N$, non-phenolic. Neither alkaloid contains methoxyl groups. A very small quantity of a sixth alkaloid, as yet not characterized from *D. chrysantha*, proved to be identical with a base recently isolated from *Corydalis ochotensis*.—RICHARD H. F. MANSKE. *Can. J. Research*, 15 (1937), 274; through *Squibb Abstr. Bull.*, 10 (1937), A-1962. (F. J. S.)

Cinchona—Alkaloids of the Leaves of. The alkaloids were purified by evaporating their solutions in organic solvents (which should have a higher density and lower boiling point than water) under dilute acid solution. Such treatment yielded a solution of the alkaloids in the acid solution, leaving tar admixtures in the precipitate. The leaves of *Cinchona succirubra* contain the same alkaloid groups (vinyl and ethyl bases) and in the same proportion by weight as the bark. These compounds can be easily crystallized, in the form of salts from water solutions, or in the form of bases from organic solvents. The best solvent for crystallization is benzene. The alkaloids which are not separated in the vinyl and ethyl groups cannot be crystallized from organic solvents in the form of bases; however, after careful purification, they yield in aqueous solution after treatment with suitable reagents, a crystalline precipitate. The alkaloids not separated into the groups also can be purified and obtained in crystalline state also by vacuum sublimation. The impure amorphous alkaloids are very sensitive to drying, which decreases their solubility. Experimental methods are described. Twenty-four references.—R. I. TATARSKAYA and V. YA. SOLOMKO. *J. Applied Chem. (U. S. S. R.)*, 10 (1937), 1586–1597 (in German 1597); through *Chem. Abstr.*, 32 (1938), 1866. (F. J. S.)

Cinchona Barks—Formosan, Important Constituents in. Cinchona barks produced in Formosa contained about 3–7% of quinine sulfate.—TADAO ARAKI and SEIICHI YATSUKA. *J. Soc. Trop. Agr. Taihoku Imp. Univ.*, 9 (1937), 119–135; through *Chem. Abstr.*, 32 (1938), 1403. (F. J. S.)

Cinchona Barks—Vertical Distribution of the Important Constituents in. The bark grown at higher altitudes contained more quinine than that grown at lower altitudes. The content of quinine was maximum in the lower quarter of the stem, while the quantity of total alkaloids and the content of cinchonidine were maximum in the roots.—TADAO ARAKI and SEIICHI YATSUKA. *J. Soc. Trop. Agr. Taihoku Imp. Univ.*, 9 (1937), 136–149; through *Chem. Abstr.*, 32 (1938), 1403. (F. J. S.)

Cinchona Ledgeriana Bark—Quinine Content of, from Cameron Highlands. The findings indicate the presence of a large proportion of trees with bark of a high quinine content. The results confirm those previously obtained as regards the absence of any correlation between situation of trees and quinine content, the distribution within the groups being of approximately the same order in each case.—C. D. V. GEORGI and GUNN LAY TEIK. *Malayan Agr. J.*, 25 (1937), 421–424; through *Chem. Abstr.*, 32 (1938), 1400. (F. J. S.)

Ergonine—Alkaloids Derived from, Rotatory Power of Some. The rotatory power as a function of the p_H permits the determination of minute ionizations. It is possible to measure accurately the P_K of the various groups attached to the nucleus, *viz.*, methyl, methylimino, imino, carboxyl and phenyl ester. The relationship between specific molecular rotatory power and the P_K of a neighbor chemical group, as discovered by Betti (*Chem. Abstr.*, 24, 4968) has been confirmed. The asymmetry of active carbon atoms changes under the influence of these groups in a complicated manner but the changes produced by ionization varies in a simple manner with the P_K .—CH. LAPP and A. LÉVY. *Bull. sci. pharmacol.*, 44 (1937), 305–325; through *Chem. Abstr.*, 31 (1937), 7062. (F. J. S.)

Ergocristine and Ergocristinine, a New Alkaloid Pair from Ergot. A molecular compound of ergosinine, m. p. 172–175°, $[\alpha]_D^{20}$, 105°, $[\alpha]_{5461}^{20}$, 136° and ergocristine (I) has been isolated from the mother liquors after crystallization of ergotoxine. On treatment with methyl alcohol or acid the compound decomposes to yield the new alkaloid I m. p. 155–157° (decompn.) $[\alpha]_D^{20}$ –383°, I.HCl has $[\alpha]_D^{20}$ 105.7°, $[\alpha]_{5461}^{20}$, 126.5°. I is isometric with ergotoxine. Crystallized from dimethyl ketone it carries a molecule of dimethyl ketone of crystallization which requires a high temperature *in vacuo* to remove. The dimethyl ketone compound has $[\alpha]_D^{20}$, –174°, $[\alpha]_{5461}^{20}$, –206°. Ergocristinine (II) m. p. 214°, $[\alpha]_D^{20}$, 366°, $[\alpha]_{5461}^{20}$, 460°, is formed by isomerization of I in boiling methyl alcohol. II is reconverted to I by boiling in alcohol containing 1% phosphoric acid. The phosphate of I precipitates.—ARTHUR STOLL and ERNST BURCKHARDT. *Z. Physiol. Chem.*, 250 (1937), 1–6; through *Chem. Abstr.*, 32 (1938), 1047. (F. J. S.)

Geissospermum Laeve (Vellosii) Baillon—Alkaloids of, and Their Color Reactions. An extensive review on data published by other authors is given. Geissospermine (I) m. p. 146° and is soluble in sulfuric acid without color. If a crystal of ferric sulfate is added, a dark blue color is developed. This changes after ten minutes to green and finally to black-green. The alkaloid gives with Froede's reagent a blue color, with sulfuric acid and lead oxide blue, with sulfuric acid and sucrose solution violet. These reactions are obtained also with yohimbine (II). The solution in nitric acid can be differentiated, being red with (I) and yellow with (II). The colorization with chloral hydrate and sulfuric acid, very characteristic with (II), is between yellow and brown with (I). Both alkaloids give with Winkler's reagent an identical blue. The drug, called *paô pereira* in Brazil, contains, besides, two other alkaloids of not studied characteristics. Vellosine reported by Hesse, is not identical with (I) and probably is extracted from a similar drug.—RAYMOND-HAMET. *Bull. sci. pharmacol.*, 44 (1937), 449–470; through *Chem. Abstr.*, 32 (1938), 1047–1048. (F. J. S.)

Morphine and Its Dihydrogenated Derivative—Production of Ethers of. Morphine-OMe.CH₂ ether gives a crystalline *N*-oxide, plus acetone, which with diethyl sulfate-sodium hydroxide, followed by treatment with sulfur dioxide and sulfuric acid, gives morphine 6-ethyl ether, plus water, melting point 110–112°, $[\alpha]_D^{23}$ –178.8° in ethyl alcohol. Hydrogenation (palladium-barium sulfate) of the hydrochloride (melting point 241–243°, $[\alpha]_D^{24}$ –134.9° in water), in water gives dihydromorphine 6-ethyl ether, crystalline (hydrochloride), also obtained by ethylation, etc., of the oxides of dihydromorphine 3-OMe.CH₂, melting point 102–104°, $[\alpha]_D^{20}$ –155.8° in ethyl alcohol, or 3-CH₂Ph ether, melting point 95–97°, $[\alpha]_D^{24}$ –88.1° in ethyl alcohol. Morphine 6-methyl ether gives dihydromorphine 6-methyl ether, melting point 216–217°, $[\alpha]_D^{26}$ –178° in ethyl alcohol, also obtained from the 3-ethers mentioned above.—L. F. SMALL. U. S. pat. 2,058,521; through *J. Soc. Chem. Ind.*, 56 (1937), 1408. (E. G. V.)

Morphine—Loss of, in India Opium on Storage. Moist opium does not lose morphine (I) on storage. Opium (II) dried at 60° and stored in contact with air suffers a rapid loss of I which is not completely prevented by storage in corked and paraffined bottles. II dried at 98–100° and stored out of contact with air does not lose I to any appreciable extent. There is no evidence of the formation of ammonium salts as the result of the oxidation. An enzyme (peroxidase) has been isolated from Malwa opium which may be the factors responsible for the loss of I. Fresh Malwa opium (500 Gm.) was extracted by shaking with 1.5 liters of distilled water for 3–4 hours. The mixture was left over night, shaken for 2–3 hours more, and filtered under slight suction. The extract was neutralized with calcium carbonate and refiltered. The filtrate was concentrated to 150 cc. at 35–40° *in vacuo* and treated with 600–750 cc. alcohol. The precipitate was dissolved in water and reprecipitated in alcohol. This purification was repeated 3–4 times and the final product was dried *in vacuo*. The powder was dissolved in water and dialyzed from a collodion

thimble for 10 days in running water, concentrated and reprecipitated with alcohol. The enzyme solution gave color tests with guaiacum, pyrogallol and resorcinol in the presence of hydrogen peroxide. It is almost certain that pseudomorphine is not necessarily an oxidation product in the degradation of I. A fungoid growth noticeable on moist II was identified as that of *Scopulariopsis brevicavitis*, var. *glabra* Thom. When this fungus grows in a dilute hydrochloric solution of I in a suitable nutrient medium, a slight fall in the concentration of I is observed, but the specific rotation of the solution does not change appreciably. Thirteen references.—HORACE B. DUNNICLIFF, JNANENDRA N. RAY and GURCHARAN SINGH. *Proc. Natl. Inst. Sci. India*, 1 (1935), 107-114; through *Chem. Abstr.*, 32 (1938), 2285. (F. J. S.)

Nicotine—Secondary Alkaloid of, as the Cause of the Slow Splitting Off by Steam Distillation. Steam distillation residues in the case of different kinds of tobacco, after the addition of sodium hydroxide or by standing in the air in the presence of strong alkali, always again give up nicotine on distillation. This phenomenon depends on the extra nicotine which distills over being formed during the distillation or is formed in the distillation residues on standing, whereby the strong alkali has an oxidizing action through the entrance of air. The addition of hydrogen peroxide on the one hand can hasten and bring this oxidation completely to an end and on the other hand it can be almost completely avoided by the exclusion of atmospheric oxygen. This leads to the conclusion that tobacco contains a secondary alkaloid which can be oxidized with the formation of nicotine. For the determination of the total nicotine value obtained by distillation a new method is proposed. This total nicotine value is made up in part of the nicotine existing as such in tobacco and the remainder of the nicotine formed presumably through oxidation of the secondary alkaloid. On the assumption that the true nicotine value is obtained by the magnesium oxide distillation method of Pfyl and Schmitt (*Chem. Abstr.*, 22, 1214), the amount of secondary alkaloid in cigarette tobacco is about 10%, in cigars and pipe tobacco about 20% of the nicotine value as determined by the Pfyl and Schmitt method. The significance of this phenomenon in tobacco investigation especially in nicotine-poor samples, is discussed.—W. PREISS. *Z. Untersuch. Lebensm.*, 74 (1937), 304-314; through *Chem. Abstr.*, 32 (1938), 1398-1399. (F. J. S.)

Papaver Somniferum—Qualitative Composition of the Alkaloids in the Subspecies of, Variability of. It had been suggested that, within a species, the chemical components are the same qualitatively, and differ only quantitatively in the various subspecies. This rule does not apply to the Chinese variety of *Papaver somniferum*, which, unlike the other opium subspecies, contains no papaverine and narcotine.—K. A. CHASOVNIKOVA. *Biokhimiya*, 2 (1937), 701-704; through *Chem. Abstr.*, 32 (1938), 1861. (F. J. S.)

Peas—New Method for the Determination of the Alkaloid Content of. The alkaloids, sparteine and lupinine, of yellow peas were determined as follows. The finely ground material rubbed up with sodium hydroxide and gypsum was extracted with a mixture of ether and chloroform. The alkaloids were then transformed to the water-soluble hydrochloride compounds and precipitated with 10% silico-tungstic acid. The filtered-off precipitate was dissolved in sodium hydroxide, the alkaloids were again extracted with chloroform and changed to the hydrochloride compounds. The solution was exactly neutralized and the sparteine precipitated with an acetone solution of picrolonic acid. The weight of the dry picrolonate $\times 0.3072 =$ sparteine. The lupinine contained in the filtrate was set free with ammonium hydroxide, extracted with chloroform, and changed to the soluble hydrochloride salt. The acidity was properly adjusted and the lupinine was precipitated with 10% silicotungstic acid. The weight of the dry and ashed precipitate $\times 0.2376 =$ lupinine.—ZENON WIERZCHOWSKI. *Biochem. Z.*, 293 (1937), 192-206; through *Chem. Abstr.*, 32 (1938), 620. (F. J. S.)

Picrates, Picrolonates and Styphnates of Alkaloids—Microchemical Studies of the Melting Temperatures of. The alkaloids are precipitated from aqueous solution by the suitable reagent (saturated aqueous solution of picric or styphnic acid, or saturated solution of picrolonic acid in 20% alcohol). After washing and drying, the precipitate is subjected to a microdetermination of its melting point. The determination is repeated successively with the two other reagents, and the results are compared with those tabulated for practically all the well-known alkaloids.—L. KOFLER and F. A. MÜLLER. *Mikrochem.*, 22 (1937), 43-77; through *Chimie & Industrie*, 38 (1937), 929. (A. P.-C.)

Potassium Permanganate—Action of, on Sparteine. If potassium permanganate in sulfuric acid solution is used to destroy the impurities contained in sparteine sulfate preceding its precipitation with silicotungstic acid, it is essential to add not more than is decolorized immediately. By using an excess (0.5 Gm. potassium permanganate on 0.2 Gm. sparteine) the alkaloid is destroyed to a considerable extent. The loss is 56.8% after one hour and 74.5% after twenty-four hours.—A. GUILLAUME and A. PROESCHELL. *Bull. sci. pharmacol.*, 44 (1937), 475–478; through *Chem. Abstr.*, 32 (1938), 1048. (F. J. S.)

Secale Cornutum—Alkaloids of. The known alkaloids of ergot are listed. Sensibamine, recently produced at the Hungarian Chinoin factory (cf. *Chem. Abstr.*, 27, 3779, 4630), was particularly studied. It is more complex than the ergot alkaloids previously known. Its analysis corresponds to $C_{31}H_{39}O_6N_5$. Decomposition by acetone gives ergotaminine and ergotamine, both of which have the formula $C_{29}H_{37}O_6N_5$; this observation disagrees with the above formula. Sensibamine seems to be similar to ergoclavine (Merck), but the two compounds are not identical.—SÁNDOR HOFFMANN. *Vegyeszet*, 1, No. 5, 1–3; No. 6, 4–5 (1937); through *Chem. Abstr.*, 32 (1938), 1863. (F. J. S.)

Tylose—Application of, in Chemical-Pharmaceutical Laboratories. In extracting the alkaloids from the extracts of belladonna and cinchona, instead of tragacanth ordinarily employed in the D. A. B. VI procedure, tylose (methyl ether of cellulose) is recommended.—DIETER SCHMALTZ. *Pharm. Zentralhalle*, 78 (1937), 767; through *Chem. Abstr.*, 32 (1938), 2287. (F. J. S.)

Essential Oils and Related Products

Atalantia Monophylla—Essential Oil from. An essential oil was prepared by the steam distillation of 600 pounds of *Atalantia monophylla* (wild lime) leaves. The yield from fresh leaves varied from 0.4 to 0.6%, dry basis, while dried leaves gave an appreciably lower yield. The quantity of oil coming over per unit of steam at 100° was doubled for every 10° rise in temperature up to 140°. The oil was stable brown liquid, $d_{30}^{30} = 0.8561$, $n_D^{30} = 1.4600$, $[\alpha_D^{30}] = -33.2^\circ$, acid value = 0.8, saponification number = 79.3, acetyl value = 34.2 and soluble in one volume of 90% alcohol.—M. T. CHOWE and B. SANJIVA RAO. *Proc. Soc. Biol. Chemists, India*, 2 (1937), 16–17; through *Chem. Abstr.*, 32 (1938), 1864. (F. J. S.)

Black Tea—Essential Oil of. III. Formosan black tea was steam distilled. The essential oil was extracted from the distillate with ether. From the acid fraction of the essential oil, propionic, isovaleric, caproic, hexenoic and caprylic acids were isolated as the *p*-iodophenacyl esters or acid anilides. Palmitic acid was obtained in crystalline form. Caproic acid ester and a very small amount of benzoic acid were also separated. Salicylic acid and cresol were isolated as 3,5-dinitrobenzoates. In the base fraction quinoline was separated as picrate. Caproaldehyde and benzaldehyde were isolated as 2,4-dinitrophenylhydrazones and semicarbazones. A sulfur compound was identified, though it could not be obtained in pure condition. It was a neutral colorless liquid boiling at 102–112°, but when it was exposed in the air at room temperature, it changed to a bluish brown color and finally deposited to a brown-black precipitate. Hexanol, hexanal and octanal were isolated from the distillate under 40 mm. as *p*-iodophenylurethans. Linalool, phenethyl alcohol, citronellol and geraniol were also found in the distillates under 4 mm.—RYO YAMAMOTO and KEN ITO. *J. Agr. Chem. Soc. Japan*, 13 (1937), 736–750; through *Chem. Abstr.*, 32 (1938), 1865. (F. J. S.)

Citronella Oil—Java. A survey of the market position, including production, course of prices, exports and prospects is given.—R. F. HACCOU. *Perfumery Essent. Oil Rec.*, 29 (1938), 95. (A. C. DeD.)

Helichrysum Oil. The fresh herb upon steam distillation yielded 0.2 of a bright yellow oil, $[\alpha] -5.5^\circ$ to 5.8° , $d_{20} 0.89$. The following fractions are obtained (1) 25% b. p. 10 mm. 55–65°, (2) about 50%, b. p. 5 mm. 125–130°, $[\alpha]d_{20} 22.3^\circ$, $d_{20} 0.889$, possesses a characteristic tea-rose odor, does not acetylate, (3) b. p. 5 mm. 130–135°. Valeric ester was shown to be the chief aromatic constituent.—ALFONS M. BURGER. *Riechstoff-Ind. Kosmetik*, 13 (1938), 10–11. (H. M. B.)

Longoza Oil—Madagascan. The natives of Madagascar apply the name "longoza" to a number of autochthonous and introduced plants, all of which belong to the family Zingiberaceæ; among these are found chiefly several varieties of *Hedychium*, and *Aframomum angustifolium*, K. Schumann or *Amomum Madagascariense*, Lamk. (*Madagascan cardamoms*). The essential

oil of "longoza" studied was obtained at Nossi-Bé, from the flowers of cultivated plants of *Hedy-chium flavosum* or *flavum*. The flowering period is in February to March, and the gathering takes place at intervals during about a month. The yield of concrete otto from the flowers was exceedingly small. The concrete is obtained as a semi-solid mass fairly soft to the touch. The mass softens around 30–32° C., and melts around 37° C. The color is a dark orange brown. The absolute otto of longoza is a liquid of slightly oily consistency, and of a very dark orange-brown color; it is completely soluble in 90% alcohol. In concrete and absolutes the perfume substances proper are associated with materials extracted by alcohol of high concentration, and with pigmentary substances which are sometimes an obstacle to their use in perfumery. The examination of such perfumery materials must be carried out on the odoriferous fraction isolated by means of steam distillation. In this process the waxy and coloring matters are eliminated in the form of residues, while the perfume substances proper are carried over in the form of an essential oil with little color. A number of color reactions and constants are given for the oil.—L. TRABAUD and S. SABETAY. *Perfumery Essent. Oil Rec.*, 29 (1938), 142. (A. C. DeD.)

Ocimum Basilicum of North India—Volatile Oil of. The oil obtained from *Ocimum basilicum* consists of a mixture of *l*-linalool (45%) and methyl cinnamate (52%). The physical and chemical constants of this oil are given. The following method was used for the separation of *l*-linalool and methyl cinnamate. The dry oil (36 cc.), after washing with sodium carbonate solution to remove free acids, was mixed with freshly fused and finely powdered calcium chloride (40 Gm.) and kept in a desiccator for 48 hours. Ether (250 cc.) was added, the mixture well shaken, the ether separated and the process repeated four times, using each time ether (100 cc.), the combined ether extracts being reserved. The calcium chloride compound was decomposed by water (200 cc.) and the oil which separated distilled in steam. After a small quantity of oil (1 cc.) had passed over the distillate contained pure methyl cinnamate, m. p. 36°, b. p. 254–255°, d_{15}^{15} , 1.0672, n_D^{20} , 1.56704. It was characterized by the preparation of the bromo-derivative, m. p. 114° and by hydrolysis to cinnamic acid. The formation of an additive compound of methyl cinnamate and calcium chloride does not appear to have been observed previously. Its composition was not determined. The oil, soluble in ether, had b. p. 198–200°, d_{20}^{20} 0.8782, n_D^{20} 1.4658, α_D^{20} –16.5°. It was identified as linalool by oxidation with chromic acid or citral. The sodium carbonate washings gave on acidification an oil which was sparingly soluble in water. Analysis of the silver salt suggested that it was caproic acid.—J. N. RAKSHIT. *Perfumery Essent. Oil Rec.*, 29 (1938), 89. (A. C. DeD.)

Pittosporum Monticolum—Volatile Oil from. The investigation of the volatile oil obtained from the fruits of trees growing in two localities in the neighborhood of Poedjon and from a single tree near Nongkodjar is described. The fruits of the former yielded 0.6% of volatile oil while those from the single tree yielded only 0.02%. The oil was colorless and possessed a turpentine-like odor. It was miscible with one-half its volume of 96% alcohol but became cloudy when more alcohol was added. It was not miscible with 80% alcohol. The oils had the following constants:

	d_{21}	n_D^{21}	$[\alpha]_D^{21}$
Poedjon oil (1)	0.8684	1.4725	1.51
Poedjon oil (2)	0.8611	1.4735	–38.02
Nongkodjar oil	0.9131	1.4811	–33.99

The acid number was 0; the saponification number 5 and the saponification number after acetylation 9; thus showing only minute quantities of esters and alcohols. α -Pinene and β -pinene were identified in the oil.—A. J. ULTEE. *Pharm. Weekblad*, 74 (1937), 666. (E. H. W.)

Pittosporum Resiniferum Hemsl. or "Amuyong"—Essential Oil of. Samples examined gave the average values d_{20} 0.8723, n_D^{20} 1.4560, $[\alpha]_D^{20}$ + 31.63°, saponification number 97.71, acid number 3.71, ester number 94 and ester number after acetylation 158.46.—ISABEL GARCIA-REYES. *Rev. filipina med. farm.*, 28 (1937), 448–449; through *Chem. Abstr.*, 32 (1938), 2289. (F. J. S.)

Seychelles—Some Points from. Experimental work on various oils including cinnamon leaf oil, cinnamon bark oil, patchouli, vanilla, a number of species of *Eucalyptus* and *Ocimum*, palmarosa, citronella and clove leaves oil is described.—ANON. *Perfumery Essent. Oil Rec.*, 29 (1938), 124. (A. C. DeD.)

Glycosides, Ferments and Carbohydrates

Ascorbic Acid—Enzymic Determination of. Experimental conditions for estimation of tissue ascorbic acid with the aid of its oxidase prepared according to the method of Srinivasan (*S. A. B.*, 10 (1937), A-43) have been determined as follows: 1 cc. of the enzyme solution was found to oxidize in five minutes and at room temperature (approximately 25°) 0.5 mg. of ascorbic acid present in a total volume of 5 cc. of reaction mixture buffered at p_H 5.3. The specificity of the substrate oxidation by the enzyme was demonstrated with the juice of the sour lime, so that in subsequent experiments the diminution in the indophenol titre of an extract after its treatment with the enzyme was taken as a measure of the ascorbic acid content of the extract. On applying this new technic to a few sources of ascorbic acid, the presence therein of small quantities of indophenol-reducing impurities, in addition to ascorbic acid, was detected by the resistance of these impurities to enzymic oxidation. It was also found that mercuric acetate did not precipitate these impurities. The correct amount of ascorbic acid present in a few of its previously known sources, *e. g.*, Indian gooseberry, drumstick pods, Agati leaf and Sautgar orange juice, was determined. It is expected that in materials like urine and tumor extracts, believed to abound in indophenol impurities, the enzymic method will demonstrate the difference between the true ascorbic acid value and that obtained by the usual Tillmans' titration.—MUDAMBI SRINIVASAN. *Biochem. J.*, 31 (1937), 1524; through *Squibb Abstr. Bull.*, 10 (1937), A-2033.

(F. J. S.)

Cardiac Glucosides—Effect of Copper and Iron on the Formation of, in the Leaves of *Digitalis Purpurea*. Neither copper nor iron, nor the combination of both, have any appreciable influence on the cardiac action of *Digitalis purpurea*.—RICHARD WASICKY and HELLA HOERTLEHNER *Biochem. Z.*, 293 (1937), 390-395; through *Chem. Abstr.*, 32 (1938), 621. (F. J. S.)

Carpotroside—a Glycoside of the Seeds of *Carpotriche Brasiliensis*. Carpotroside is a crystalline, sweetish smelling substance which is very soluble in water, but insoluble in most organic solvents. On heating it decomposes without melting. On acid hydrolysis an unidentified sugar, two aldehydes—one of which was shown to be benzaldehyde, and a nitrogen compound which appears to be an indole derivative of the formula $C_6H_{10}NO_2$, are obtained.—RUBEN DESCARTES DE C. PAULA. *Tribrina farmaceutica*, Nr. 1 (1937); through *Pharm. Ztg.*, 82 (1937), 707.

(N. L.)

Glucose—Manufacture of Sorbitol from, by Electrolytic Reduction. Sorbitol and mannitol are manufactured by the electrolytic reduction of glucose (lead anode in dilute sulfuric acid; lead-mercury cathode in aqueous glucose containing sodium hydroxide and sodium sulfate), and separated by crystallization from ethyl alcohol. The process is outlined, and photographs of plant and a flowsheet are given.—R. L. TAYLOR. *Chem. Met. Eng.*, 44 (1937), 588-591; through *J. Soc. Chem. Ind.*, 56 (1937), 1393.

(E. G. V.)

Glucosides—Natural. I. Constitution of the Glucoside Present in *Murraya Exotica*. Scopolin was isolated from the flowers of *Murraya exotica* by extraction with alcohol in 1.3% yield. It yielded scopoletin on hydrolysis with diluted sulfuric acid, which gave the dimethyl-ether of esculein on methylation. The glucoside, isolated previously by de Vry and Blas and called murrayin, was considered to be impure scopolin.—P. K. BOSE and A. MOOKERJEE. *J. Indian Chem. Soc.*, 14 (1937), 489; through *Squibb Abstr. Bull.*, 10 (1937), A-2290. (F. J. S.)

Gossypitrin—Constitution of. An Attempt to Define the Position of the Glucose Residue. Gossypitrin, from the Indian and Egyptian cotton flowers, is a monoglucoside of the flavanol gossypetin; color reactions, rate of hydrolysis and behavior with mordants indicate that it is a 7-glucoside. In an attempt to define the position of the glucose residue by methylation, it is found that the reaction with diazo methane in methyl alcohol is incomplete, giving an amorphous pale yellow solid. Hydrolysis of the methylated glucoside yields a tetra-methyl ether of gossypetin, $C_{19}H_{18}O_8$, yellow, m. p. 227-230°, whose diacetyl derivative m. p. 142-143°. Methylation of the tetra-methyl ether yields the known hexamethyl ether, m. p. 170°. The new ether probably has two hydroxyl groups in the five and seven positions.—K. NEELAKANTAM and T. R. SESHADRI. *Proc. Indian Acad. Sci.*, 6 (1937), 12-15; through *Chem. Abstr.*, 32 (1938), 163. (F. J. S.)

Pepsin, Trypsin and Bacteriophage—Chemical Nature and Mode of Formation of. Northrop reviews the isolation and crystallization of pepsin (I), trypsin (II), chymo-trypsin (III) and the nucleoprotein believed to be bacteriophage (IV), and discusses the formation of enzymes from their inactive precursors. Enzymes which have been found to be simple proteins are I-III,

urease, carboxypeptidase, amylase, a proteolytic enzyme from *Ficis* and a proteolytic enzyme from papain. Enzymes which have been found to be conjugated proteins, containing prosthetic groups, are Warburg's respiratory ferment and catalase. Northrop's work on bacteriophage indicates that it is a protein producing itself autocatalytically from a precursor present in normal cells. No bibliography is appended to this review.—J. H. NORTHROP. *Science*, 86 (1937), 479; through *Squibb Abstr. Bull.*, 10 (1937), A-2268. (F. J. S.)

Quercitin Glucoside of White Clover Flowers. The glucoside was found to be isoquercitrin. This is identical with trifoliin and isotrifoliin, and it is suggested that the latter terms be dropped.—S. HATTORI, M. HASEGAWA and K. HAYASHI. *Acta Phytochim.* (Japan), 10, 147-153; through *Chem. Abstr.*, 32 (1938), 219. (F. J. S.)

Saponins—Distribution of, in Plant Drugs. In this article the author refers to the importance of investigating the entire plant and not only single organs when determining the saponin content of the plant, for only through a knowledge of the distribution of the saponin in the entire plant can conclusions be drawn as to the origin and physiological rôle of these glycosides. The author has gone to considerable trouble to assemble the information as far as known on the plants at the head of the various species of saponin containing plants. The table includes the drug name, the species and family and saponin content of the various parts of the plant for 23 roots and rhizomes, 6 barks, 10 leaves, 5 flowers, 35 herbs, 3 fruits and 15 seeds. The tables which allow interesting conclusions about the saponin drugs should prove of value in the therapeutic study of these drugs.—MAX ROBERG. *Ber. deut. bot. Ges.*, 55 (1937), 299; through *Scientia Pharm.*, 8 (1937), 151. (M. F. W. D.)

Scoparoside (Scoparine) from *Sarothamnus Scoparius* Koch. Scoparine was prepared either by the method of Stenhouse, or by extraction with acetic acid and precipitation with ether. Fresh flowers give a better yield than the dry drug. Scoparine melts at 228-230° decomposition. It is of very low solubility in cold water, insoluble in ether, chloroform and benzene, easily soluble in alcohols and acetone. It reduces Fehling's solution at 100°. When dried at 100° or at 60° *in vacuo*, it loses 7.22% equivalent to 2H₂O. The formula C₂₂H₂₂O₁₁·2H₂O was confirmed. Hydrolysis with 10% potassium hydroxide forms the following cleavage products: acetovanillone, 4-acetyl-C₆H₅OH-2-MeO, vanillic acid and protocatechuic acid. Acid hydrolysis does not attack the molecule sufficiently to produce identifiable split products. Methylfurfurole was formed in small quantities. The action of rhamnodiastase from the seeds of *Rhamnus utilis*, splits off a sugar, supposed to be rhamnose. Scoparine is considered to be a heteroside and a change of the name to scoparoside is suggested. After the separation of rhamnose, scoparol, C₁₆H₁₂O₇, the methyl ether of quercetol would be formed. The substance is of very low toxicity; exact determination is impossible because of insufficient solubility. The pure substance produces in the anesthetized dog a temporary drop in blood pressure, a slight decrease in size of the kidney, and a passing decrease of diuresis. The crude drug, which is far more soluble, produces secondarily an increase in kidney size and increased diuresis. The difference in action can be due either to the higher solubility or to the impurities.—M. MASCRÉ and R. PARIS. *Bull. sci. pharmacol.*, 44 (1937), 401-415; through *Chem. Abstr.*, 32 (1938), 726. (F. J. S.)

Sorbose from Sorbitol. Studies on the effect of air flow, agitation and air pressure on the production of *l*-sorbose from *d*-sorbitol by submerged growths of *Acetobacter suboxydans* in rotary drum fermenters have revealed conditions under which this conversion can be rapidly and efficiently carried out. Under the best conditions found, using 15% sorbitol solutions, a yield of *l*-sorbose in excess of 93% based on the sorbitol available, was obtained in 24 hours from the time of inoculation. Sorbitol in concentrations up to 20% was satisfactorily fermented. A method of preparation of a highly active inoculum suitable for use in large scale operation of the process was developed.—P. A. WELLS, J. J. STUBBS, L. B. LOCKWOOD and E. T. ROE. *Ind. Eng. Chem.*, 29 (1937), 1385. (E. G. V.)

Stevia Rebaudiana. Stevioside, C₂₈H₅₀O₁₃, obtained from this plant, gives upon hydrolysis with the juice of *Helix pomatia* three molecules of glucose and one of steviol, C₂₀H₃₀O₈. Hydrolysis with 5% sulfuric acid, first produces steviol, which is gradually converted into isosteviol, an isomer of steviol. Stevioside is a light, colorless and odorless powder, consisting of long silky needles arranged in tufts. From ethyl alcohol and methyl alcohol it crystallizes in long prisms, m. p. 238 [α]_D -31.81°, soluble in ethyl alcohol and ethyl acetate, slightly soluble in methyl alcohol and acetone, almost insoluble in petroleum ether and chloroform. It is three hundred times as

sweet as sucrose and nontoxic. With concentrated sulfuric acid, it gives slowly in the cold, and more rapidly on heating, a yellow color changing to red and to purple. With acetic acid and a few drops of sulfuric acid a golden-yellow color is produced upon heating on the water-bath. Data are given on the occurrence, botanical characteristics and the possible cultivation of *Stevia rebaudiana*.—EMILE THOMAS. *Bull. assoc. chim.*, 54 (1937), 844-847; through *Chem. Abstr.*, 32 (1938), 944-945. (F. J. S.)

Other Plant Principles

Anisaldehyde—Preparation of. A review of the methods of the synthesis of anisaldehyde (I) by oxidation of anethole or methylchavicol, from para-hydroxy benzaldehyde by methylation, from para-cresol by methylation and oxidation or from phosphorus hydroxide by the Gattermann reaction is given. The importance of a high degree of purity in I for the perfume industry is stressed.—H. HUNGER. *Seifens.-Ztg.*, 64 (1937), 476-477, 497-498; through *J. Soc. Chem. Ind.*, 56 (1937), 1308. (E. G. V.)

Camphor from Borneol and Isborneol—Catalytic Preparation of. Camphor is obtained in 92-97% yield by passing borneol over carbon-nickel catalyst (prepared by precipitating nickel hydroxide on carbon, and reducing in hydrogen at 385-395°), at 240-250°, or in 75-82% yield from isborneol (I) with the same catalyst. Higher yields are obtained from I by adding 0.1% of sodium hydroxide to the catalyst.—V. TISCHTSCHENKO and M. GRECHNEV. *Prom. Org. Khim.*, 3 (1937), 481-483; through *J. Soc. Chem. Ind.*, 56 (1937), 1308. (E. G. V.)

Glycyrrhizin—Purified, Process of Preparing. Raw glycyrrhizic acid is treated with an alcohol capable of partially dissolving water, but which is not homogeneously miscible in all proportions with water. The alcoholic solution is treated with an absorbent medium; it is then treated under strong agitation with a dilute solution of ammonium hydroxide, and the resultant ammonium salt of glycyrrhizic acid is separated.—SIMON H. BERTRAM. U. S. pat. 2,104,968, Jan. 11, 1938. (A. P.-C.)

α -Phellandrene—Identification of, and the Occurrence of d - α -Phellandrene in Star Aniseed Oil. The authors have investigated the compounds formed between maleic anhydride and l - and d - α -phellandrene and have found that the formation of this derivative can be employed with advantage in the diagnosis of the hydrocarbon. The compound prepared from l - α -phellandrene had melting point 125-126°, $[\alpha]_D -8.9^\circ$ in chloroform; that from d - α -phellandrene had melting point 125-126°, $[\alpha]_D +9.4^\circ$ in chloroform. The solutions showed only a very slow downward mutarotation. The preparation of the maleic anhydride derivative from phellandrene fractions obtained from star aniseed oil has shown the presence of d - α -phellandrene.—N. F. GOODWAY and T. F. WEST. *J. Soc. Chem. Ind.*, 56 (1937), 472T. (E. G. V.)

Phellandrenes—Determination of, by Means of Maleic Anhydride. The diene values of l - β -phellandrene (obtained from Canada balsam oil) and of l - α -phellandrene (obtained from the oil of *E. dives*) were 31.8 and 85.8, respectively, while the hydrogen absorptions were 76 and 72% of the theoretical values.—N. F. GOODWAY and T. F. WEST. *J. Soc. Chem. Ind.*, 57 (1938), 37. (E. G. V.)

Fixed Oils, Fats and Waxes

Andá Assú—Oil of. Plant of family Euphorbiaceae, similar to tung nuts and with similar oil. Oil is greenish yellow, slightly acid, used as purgative instead of castor oil. Physical characteristics: saponification number 192.70, iodine number 138.03, Hehner number 93.27, glycerine 10.28. Experiments proved its value with dyes and varnish, dries quickly, is resistant to hot water, but it is of doubtful use in soaps, pharmaceuticals or for illumination.—MOACYR SILVA. *Rev. chim. ind.*, 6 (1937), 21. (C. S. G.)

Castor Oil—Refining and Hydrogenation of. Castor oil treated with 50% excess of 18° Baumé sodium hydroxide and then hydrogenated with 0.28% nickel on kieselguhr (7%) at 200° for 45 minutes gave a fat mixture, m. p. 68-70°; titer, 56.9; iodine number 67.9; and acetylation number 99.1. Nickel carbonate without carrier and undecomposed nickel formate gave inferior results.—E. VOL'FSON and M. LEVIT. *Maslobožno Zhirovoe Delo*, 13 (1937), No. 4, 30-31; through *Chem. Abstr.*, 32 (1938), 821. (F. J. S.)

Cod Liver Oils—Reputed, Characteristics of Some. A table of constants determined on eighteen samples of cod liver oils sold for stock feeding purposes showed several samples adul-

terated with mineral oil and others with other marine oils. Methods of detecting these adulterants are described.—R. H. COMMON. *Analyst*, 62 (1937), 784. (G. L. W.)

Emulsifiable Oil Suitable for Insecticidal Plant Sprays. An emulsifiable oil comprises a hydrocarbon oil mixed with about 0.1 to 10% of Koeme oil, etc.—ARTHUR G. KAUFMANN, assignor to TIDE WATER ASSOCIATED OIL Co. U. S. pat. 2,099,894, Nov. 23, 1937. (A. P.-C.)

Fish Oils—Separation of the Highly Unsaturated Acids of, by Molecular Distillation. Molecular distillation affords a satisfactory and expeditious method for separating the groups of acids of different chain lengths contained in mixed acids of fish oils without promoting isomerization or polymerization. The ratio of refractive index to iodine value furnishes an apparently reliable criterion for distinguishing between the original acids and their heat-altered derivatives. The principal acid of cod liver oil (and with little doubt that of Japanese sardine oil) is shown to be a hexene C₂₂ acid and not a pentene acid (Clupanodonic acid). This particular component of the mixed acids, as directly fractionated out, was homogeneous as regards the degree of unsaturation, but not necessarily so as regards the position of the double linkings; on the other hand the C₂₀, C₁₈ and C₁₆ components were all mixtures of two or more acids of different degrees of unsaturation, so that only the average number of double linkings per molecule is given by the hydrogen or iodine value. Clupanodonic acid is regarded as a heat-alteration product of the hexene acid, one double linking per molecule having presumably been lost by cyclization, as frequently occurs in polyene acids.—ERNEST HAROLD FARMER and FRANTZ AIME VAN DEN HEUVEL. *J. Soc. Chem. Ind.*, 57 (1938), 24. (E. G. V.)

Olive Oil—Separation of, by Centrifuging. The practicability and advantages of the method are pointed out.—HENRI BLIN. *Mat. grasses*, 29 (1937), 250-251; through *Chem. Abstr.*, 32 (1938), 1128. (F. J. S.)

Olive Oils of Sassari Province. Numerous analyses of oil produced in the 1934-1935 season are reported. The unfavorable character of the crop year is reflected by a high percentage of unsaturated glycerides and a somewhat high acid number; the saponification number is about normal.—C. GASTALDI. *Atti V Congr. naz. chim. pura applicata, Rome*, 1935, Pt. I (1936), 215-221; through *Chem. Abstr.*, 32 (1938), 377. (F. J. S.)

Rancidity. Rancidity of the oxidation type which occurs as long as air comes in contact with fats and oils is discussed. It may be eliminated to some extent by avoiding the use of compounds which are apt to be catalysts and by protection from light. The use of antioxidants is limited because of their toxicity.—H. HILFER. *Drug and Cosmetic Ind.*, 42 (1938), 38-39. (H. M. B.)

Safflower Oil. Edible safflower oil and the press cake or meal suitable for cattle feeding can be obtained by crushing the seeds and removing the hulls. The oil possesses a more agreeable taste than sunflower oil, resembling the taste of peanut oil. In the content of the unsaturated acids it is related to the oils of the type of poppyseed oil. Factory tests in crushing and husking the seeds in the Grechanic apparatus are described.—K. LEONT'EVSKII. *Maslobojno Zhirovoe Delo*, 13 (1937), 15-17; through *Chem. Abstr.*, 32 (1938), 820. (F. J. S.)

Wool Fat—Voluminously Swellable Product from. Wool fat is saponified at atmospheric temperature with a mixture of alcoholic potash and petroleum ether, and the solution obtained is separated from insoluble substances and treated with water, whereby a new conversion product of wool fat is precipitated. The product swells in water and is useful as a constituent of pharmaceutical or cosmetic salves and creams.—HENRYK COHN and CONRAD SIEBERT. U. S. pat. 2,100,067, Nov. 23, 1937. (A. P.-C.)

Unclassified

Acetaldehyde—Condensation of. Acetaldehyde is polymerized with 10-20% aqueous sodium hydroxide to a soft tar, which on heating to 180-200° yields resins. The influence of added substances is described. The resin gives good films with (C₆H₄CH₃)₃PO₄.—S. N. USCHAKOV and I. G. SCHANTNIKO. *Plastmassy*, 1 (1935), 309-342; through *J. Soc. Chem. Ind.*, 56 (1937), 1370. (E. G. V.)

Allostigmasterols and Allositosterols. Sitostenone and stigmasténone upon reduction with aluminum isopropylate in isopropyl alcohol gives allositosterol and *epi*-allositosterol and allostigmasterol and *epi*-allostigmasterol, respectively. *epi*-Allostigmasterol could not be obtained in a pure form.—R. E. MARKER and T. S. OAKWOOD. *J. Am. Chem. Soc.*, 59 (1937), 2708. (E. B. S.)

4-Aminobiphenyl Compounds. Crystalline addition compounds of 4-aminobiphenyl and benzoic and salicylic acids, with melting points of about 67° and 122° C., respectively, may be used as antioxidants, disinfectants and preservatives.—MORTON HARRIS, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,100,803, Nov. 30, 1937. (A. P.-C.)

Androstenediols—Production of. Androstenedione and $\text{Al(OPr}^\beta)_3$ give $\Delta^{4:5}$ -androstenediols, melting point 150–155°. Other diones and reducing agents may be used.—W. P. WILLIAMS. Brit. pat. 472,294; through *J. Soc. Chem. Ind.*, 56 (1937), 1408. (E. G. V.)

Anesthetic Compound—New. A new compound, *p*-amino-benzoic ether salt of oxyethyl-triethyl-ethylene-diamine, having a very strong anesthetic action has been obtained.—E. GRYSKIEWICZ-TROCHIMOWSKI and S. OTOLSKI. *Arch. Chem. Farm.*, 3 (1937), 215. (A. C. DeD.)

Barbituric Acid—New Derivatives of. In order to obtain a barbituric acid derivative with a linear diether substituent, β -ethoxyethylpropylether- γ,γ -diethyldicarboxylate was alkylated by sodium ethylate and ethyl bromide to give diethyl ethyl- β,β' -diethoxyethylmalonate (I), which boils 173° to 175.5° C. under a pressure of 10 mm. Hydrolysis by potassium hydroxide and acidification gave a syrupy malonic acid derivative from which the barium salt and the monocarboxylic acid were prepared. With urea, I gave ethyl- β,β' -diethoxyethylbarbituric acid (II) (melting point 96.5° to 97° C.), and with *N*-methyl urea I gave ethyl- β,β' -diethoxyethyl-*N*-methylbarbituric acid (III). Tests with white mice showed that the diether linkage decreased both the toxicity and the hypnotic action. II required 1000 mg. per kilo to show hypnotic action. Instead of showing hypnotic action III in doses of 140 to 560 mg. per kilo greatly increased reflex hyperexcitability, much like strychnine, with recovery within 5 hours.—V. PRELOG and V. HAHN. *Coll. Trav. Chim. Tchécoslov.*, 8 (1936), 219–222; through *Chimie & Industrie*, 38 (1937), 529. (A. P.-C.)

Bile Acids—Conjugated, Synthesis of. IV. The Bondi and Mueller Procedure. The preparation of ethyl cholate, methyl cholate, ethyl deoxycholate, cholyl hydrazide, deoxycholyl hydrazide, cholyl and deoxycholyl azides, sodium taurocholate, sodium taurodeoxycholate, glycocholic acid, sodium glycocholate, glycodeoxycholic acid and sodium glycodeoxycholate is given.—F. CORTESE. *J. Am. Chem. Soc.*, 59 (1937), 2532. (E. B. S.)

Carcinolytic Preparations—Production of Therapeutically Active. Intestinal bacteria of healthy persons are grown on fatty nutrient media and from the mixture the fatty acids of high molecular weight are isolated and fractionated. Suitable fractions are those which in 1% solution are capable of dissolving, in 1 cc. not less than 100 added carcinoma cells within 24 hours. Extracts of normal animal organs may be added to the acids.—E. FREUND and F. F. A. PEARSON. Brit. pat. 466,778; through *J. Soc. Chem. Ind.*, 56 (1937), 1409. (E. G. V.)

Carenes. The preparation, structural formula, derivatives and occurrence of Δ^3 and Δ^4 -carene are discussed. The occurrence of sylvestrene is also given.—T. F. West. *Perfumery Essent. Oil Rec.*, 29 (1938), 98. (A. C. DeD.)

Cinchophen Compounds—Complex. Complex compounds which may be used as therapeutic agents are obtained by the interaction of one molecule of neocinchophen, cinchophen or an alkali-forming metal salt of cinchophen, with at least one molecule of hexamethylenetetramine and at least one molecule of 1-phenyl-2,3-dimethyl-5-pyrazolone or 1-phenyl-2,3-dimethyl-4-dimethylamino-5-pyrazolone.—FRITZ W. BRAMIGK. U. S. pat. 2,098,448, Nov. 9, 1937. (A. P.-C.)

Cyclohexylamine and Dicyclohexylamine. Cyclohexylamine and dicyclohexylamine, two alicyclic amines, are now being produced commercially for the first time in the United States. The physical and chemical properties of the purified amines are summarized. Numerous derivatives of these amines have been prepared and tested for possible uses. Cyclohexylamine, dicyclohexylamine and their derivatives are finding applications in organic synthesis, as insecticides, plasticizers, corrosion inhibitors, rubber chemicals, dyestuffs, emulsifying agents, dry cleaning soaps, acid gas absorbents, and for a variety of miscellaneous uses.—T. S. CARSWELL and H. L. MORRILL. *Ind. Eng. Chem.*, 29 (1937), 1247. (E. G. V.)

1:2-Diaminoethane—Symmetrical Secondary Diamines Derived from. Symmetrical 1:2-disubstituted diamines derived from 1:2-diaminoethane, have been prepared by condensing the latter with the appropriate aldehyde and reducing the Schiff's base so formed. The disubstituted 1:2-diamines, so obtained, were more closely investigated. With aldehydes, for ex-

ample, they form 1:2:3-substituted tetrahydroimidazoles.—J. TH. L. B. RAMEAU. *Rec. trav. chim.*, 57 (1938), 194. (A. C. DeD.)

Diphenylamine—Preparation of. Previous preparation of synthetic diphenylamine from anilin and anilin chlorhydrate have proved that the condensation of the finished product can be hastened by the use of certain catalytic agents. The following catalytic agents are listed according to their catalytic importance: AlCl_3 , ZnCl_2 , SbCl_3 , HgI_2 , C_6H_5 $\begin{matrix} \text{SO}_3\text{H} \\ \diagup \\ \text{NH}_2 \end{matrix}$ (1:4), CuCl and

others. The yield of diphenylamine which can be obtained, as well as the course of the reaction, depends on the number of catalytic agents used. As a by-product during the reaction $(\text{C}_6\text{H}_5\text{NH}_2\text{Cl})_3\text{Al}$ forms, in which the NH_2 group is more easily removed than in the anilin compound. In the presence of aluminum chloride and anilin, diphenylamine can also be produced; the yield obtained in this manner is from 15–20% smaller than the yield obtained, when anilin and anilin salts are used.—G. I. GERSCHSSON and R. P. LASSTOWSKI. *Chem. Zentralb.*, 108 (1937), 332. (G. B.)

Enolic Compounds—New, Possessing a Sterol Structure. 3-Ketone compounds possessing a sterol structure are treated with acylating agents (*e. g.*, halides or anhydrides of organic or inorganic acids) to obtain therapeutically useful compounds.—SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 421,374, June 30, 1937. (A. P.-C.)

Follicular Hormone Series—Some New Compounds of. The methods described in the previous work (*Helv. Chim. Acta*, 20 (1937), 263), treatment of estron with acid chlorides or anhydrides in the presence of pyridine, were used. The following esters were thus prepared: isobutyrate, m. p. 120–121°; *n*-capronate, m. p. 94.5–95°; stearate, m. p. 81.5–82.5°. The 3,17-diisobutyrate, m. p. 100.5–101.5° and 3,17-di-palmitate, m. p. 63–65° were prepared from estradiol. Estradiol-3-mono-*n*-butyrate, m. p. 98–99°, was prepared by catalytic reduction of estron-*n*-butyrate. Estradiol-3-mono-stearate, m. p. 78–79°, was prepared in a similar manner. Estradiol-17-mono-isobutyrate, m. p. 183–183.5° was prepared by treating estradiol-3,17-di-isobutyrate with potassium carbonate. In a similar manner, estradiol-17-mono-*n*-valerianate, m. p. 144–145° was prepared from the di-valerianate; the 17-mono-caprinate, m. p. 112–112.5° from the di-caprinate and the 17-mono-benzoate, m. p. 92.5–94° from estradiol-3-*n*-butyrate-17-benzoate. Estradiol-3-benzoate-17-valerianate, m. p. 133–133.5° was obtained by treating the benzoate with *n*-valerianic acid anhydride. The 3-propionate-17-benzoate, m. p. 165–166° was prepared by benzoylation of the 3-propionate. The 3-*n*-butyrate-17-benzoate, m. p. 141.5–142° was prepared in a similar manner. By treating a cold solution of estradiol in dioxane with phosgene, and esterifying the resulting product with methyl alcohol, estradiol-17-mono-methyl carbonic ester, m. p. 216.5–218° was obtained. The ethyl ester prepared in a similar manner melted at 171–172°. By treating estradiol in dioxane with ethyl chloroformate and pyridine, the estradiol-3,17-diethyl carbonic ester, m. p. 138–139° was obtained. Estron-allyl ether, m. p. 108–109° and estron-cinnamyl ether, m. p. 149–149.5° were obtained by treating estron in sodium ethylate with the corresponding bromide. *C*-allyl-estron-benzoate, m. p. 155–156° was obtained by esterifying the product produced on refluxing estron-allyl ether with diethylaniline.—K. MIESCHER and C. SCHOLZ. *Helv. Chim. Acta*, 20 (1937), 1237. (G. W. H.)

Formaldehyde—Process for the Production of, from Methane. A gaseous reaction mixture containing methane and oxygen, together with less than 1% of nitrogen oxides (calculated as NO) is passed at 600° to 700° C. over a hot oxidation-controlling catalyst mixture comprising an alkaline-earth metal oxide in conjunction with a metal oxide catalyst which, when used alone, accelerates oxidation of methane.—PAUL NASHAN, assignor to GUTEHOFFNUNGSHUTTE OBERHAUSEN AKTIENGESELLSCHAFT. U. S. pat. 2,102,160, Dec. 14, 1937. (A. P.-C.)

Fungicidal and Insecticidal Sprays. A soluble polysulfide, such as that of calcium, is used with a catalytic proportion (which may be about 0.01 to about 0.08%) of a manganese compound, such as the sulfate, acting as a sulfur-film forming catalyst, and may contain milk, lead arsenate, etc.—PAUL D. PETERSON, assignor to FREEPORT SULPHUR Co. U. S. pat. 2,098,257, Nov. 9, 1937. (A. P.-C.)

Furfural—Pharmaceutical Applications of. As a first step in the systematic investigation of furfural derivatives, α -furyl-8-methyl-, -7-methyl and -6-methylcinchonic acids were prepared by the condensation of furfural and pyruvic acid with *o*-, *m*- and *p*-toluidine. The condensations were carried out in alkaline solution; the compounds separated on cooling. They were

decolorized by boiling with bone black and recrystallizing from alcohol; they melt at 248°, 272° and 253°, respectively. These compounds are all less toxic than atophan. The sodium salts are readily prepared by dissolving the acids in 10% sodium carbonate solution and concentrating the resultant solutions. The physiological properties of these compounds will be investigated further.—ANGELO MANGINI. *Ann. chim. Applicata*, 27 (1937), 386-392; through *Chem. Abstr.*, 32 (1938), 2287. (F. J. S.)

Glycerides—Preparation of Some Phenylaliphatic, and Their Reduction to the Corresponding Alcohols. Application to the Preparation of Phenylethyl Alcohol. To prepare the glycerides of phenylacetic acid, a mixture of the acid and glycerin, to which a few drops of concentrated hydrochloric acid are added, is heated at 145-150°. The product is dissolved in benzene, the glycerides are obtained in excellent yields. The mono- and tri-glycerides are colorless oily liquids. The diglyceride melts at 62.5°. The three glycerides, particularly the triglyceride, are easily reduced to phenylethyl alcohol by dissolving in amyl alcohol and gradually adding metallic sodium. By this method, a 70-75% yield of pure alcohol can be obtained. The triglycerides of phenyl propionic acid, a colorless oil, and cinnamic acid, white crystals m. p. 111°, can be prepared by this method and both upon reduction yield phenylpropyl alcohol.—GEORGES DARZENS. *Compt. rend.*, 205 (1937), 682. (G. W. H.)

Hormones—Follicle, Hydrogenation Products of. Follicle hormones obtained from animal or vegetable sources or synthetically are subjected to the action of agents (such as hydrogen in the presence of nickel) which are capable of reducing the keto group of the hormone to the secondary alcohol group without affecting the benzene ring present in the hormone molecule, thus producing isomeric products of the formula $C_{18}H_{24}O_2$ containing a phenolic hydroxy group and a secondary alcohol group, which form benzoates that melt at 193° C. and 150° to 151° C.—FRIEDRICH HILDEBRANDT and ERWIN SCHWENK, assignors to SCHERING CORP. U. S. pat. 2,096,744, Oct. 26, 1937. (A. P.-C.)

Hydrouracil Compounds (Soporifics). Derivatives of hydrouracil, substituted in the 5-position with two hydrocarbon radicals and possibly substituted in the 1-, 3- and (or) 6-positions with hydrocarbon radicals, are prepared by condensing esters of carbonic acids with β -amino-propionic acids or their esters or amides, substituted in the α -position with two hydrocarbon radicals and possibly substituted in the β -position and on the nitrogen atom with hydrocarbon radicals. The same hydrouracil derivatives are also obtainable by condensing the specified amino acids or their derivatives with cyanic acid or its salts or esters, or with cyanamide, alkyl isothiocyanates, *S*-alkylisothioureas or chlorocarbonic esters. The resultant intermediates are then subjected to ring closure combined, in cases where a —CS or —C:NH group is present, with treatment with a desulfurizing or saponifying agent, whereby —CS or —C:NH is replaced by CO. The products are useful as soporifics; they are of the same order of effectiveness as veronal and like barbituric acid derivatives but are more soluble in water.—OTTO DALMER and HARTMANN PIEPER, assignors to MERCK & Co. U. S. pat. 2,098,954, Nov. 16, 1937. (A. P.-C.)

Hypochlorite Composition—Soluble. A composition suitable for disinfecting and bleaching comprises calcium hypochlorite and sodium metaphosphate (and suitably also soap), the metaphosphate being in such proportion as to render the composition soluble in alkaline solutions.—CHARLES B. DURGIN, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,097,517, Nov. 2, 1937. (A. P.-C.)

Inositolphosphoric Compounds—Research on. IV. Bismuth Inositolphosphate. The bismuth salt of inositolphosphoric acid has been obtained in the form of a pharmaceutical product which has not yet been described in the chemical literature.—S. OTOLSKI. *Arch. Chem. Farm.*, 3 (1937), 231. (A. C. DeD.)

Inositolphosphoric Compounds—Research on. V. The inositolphosphate of copper was examined and it was determined as a tetracupric salt. An addition compound of copper inositolphosphate and ethylene diamine partially soluble in water was likewise obtained. The following chemical formula was proposed for the latter compound: $C_6H_{10}O_2P_6Cu_4 \cdot 6NH_2 - CH_2 - CH_2 - NH_2$ + water.—S. OTOLSKI. *Arch. Chem. Farm.*, 3 (1937), 255. (A. C. DeD.)

Inositolphosphoric Compounds—Research on. VI. A hexamanganese salt of inositolphosphoric acid insoluble in water has been obtained.—S. OTOLSKI. *Arch. Chem. Farm.*, 3 (1937), 258. (A. C. DeD.)

Insecticides Containing Aryl Aminoazo Compounds. Insecticides suitable for use on foliage, in aqueous solutions or in dusting powders, with kerosene, etc., contain as active ingredients compounds such as 4-phenylazo-*o*-toluidine, 4-phenylazo-*m*-toluidine, *p*-(*o*-tolylazo)-aniline, *p*-(*m*-tolylazo)-aniline, *p*-(*p*-tolylazo)-aniline, 1-(*o*-tolylazo)-2-naphthylamine, 4-(*o*-tolylazo)-1-naphthylamine, 1-(*m*-tolylazo)-2-naphthylamine, 4-(*p*-tolylazo)-1-naphthylamine and 4-(*o*-tolylazo)-*o*-toluidine.—DONALD L. VIVIAN and HERBERT L. J. HALLER, dedicated to the public for free use. U. S. pat. 2,096,414, Oct. 19, 1937. (A. P.-C.)

Iron—Complex Compounds of, with Aliphatic Polyhydroxy Monocarboxylic Acids. Whitish approximately neutral therapeutic powders, soluble in water and suitable for subcutaneous injection, comprise complex compounds of iron with acids such as arabonic, gluconic, galactonic and lactobionic acids rendered neutral by a content of calcium or strontium, such as may be formed by the reaction of calcium carbonate or calcium hydroxide used in forming the product.—HANS SCHMIDT and HEINRICH JUNG, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,097,235, Oct. 26, 1937. (A. P.-C.)

Iron—Metallic, Process for the Manufacture of, for Medical Use. Metallic iron is left in contact with another metal for a prolonged period. The metallic catalyst is reduced on pulverized metallic iron.—SOC. ANON. PRODUITS ROCHE. Belg. pat. 420,710, April 10, 1937. (A. P.-C.)

Iso-Nitroso-Thio-Barbituric Acid and Its Inorganic and Organic Salts—Color and Chemical Constitution of. This acid (also called thiovioluric acid) is prepared by passing a continuous stream of nitrous acid gas into a fresh ice cold suspension of thiobarbituric acid in water. A deep yellow pasty mass results which when quickly dried, may be recrystallized from absolute alcohol as yellow lustrous needles, from dry acetone as rectangular thin plates with saw-like edges, or from a 1:5 mixture of petroleum ether and acetone as large well-defined transparent hexagonal pyramids, bright lemon yellow, melting with decomposition at 210° C., sparingly soluble in cold water and gradually on warming, easily soluble in alcohol, methyl alcohol, acetone, ethyl acetate, sparingly soluble in ether, amyl alcohol, insoluble in benzene, chloroform, carbon tetrachloride, carbon disulfide and petroleum ether. A fairly strong acid with a dissociation constant = 6.73×10^{-5} , turns blue litmus red, gives a dark red color with ferric chloride solution, combines with organic and inorganic bases yielding salts characteristically colored and fluorescent violet solutions; most of the inorganic salts are insoluble in water, quite stable, decomposing when heated. Above 85° C. solutions show absorption bands at 4400–6025 Å.; alkaloidal salts are optically active. Thirty-three salts with alkalis, aliphatic amines and aromatic bases and seven alkaloidal salts are prepared and in tables the following for the same are reported: (1) color in solid state and in solution, (2) absorption maxima, (3) dissociation constants, (4) % sulfur and (5) rotations of the alkaloids and alkaloidal salts. A theoretical discussion concerning the colored salts is offered.—RATAN LAL and SIKHIBHUSHAN DUTT. *Proc. Natl. Inst. Sci. India*, 3 (1937), 377–385. (H. M. B.)

Jasmone—Synthesis of. A short survey of the synthesis of jasmone, and a review of the more important synthetic jasmone substitutes in use in the perfume industry, are given.—O. GERHARDT. *Seifens. Ztg*, 64 (1937), 475–476, 497; through *J. Soc. Chem. Ind.*, 56 (1937), 1308. (E. G. V.)

Mercury Compounds—Mixed Substituted Organic. Organic compounds containing a hydrogen atom combined directly to a carbon atom and activated by adjacent groups are made to react with organic mercury compounds. The resultant products are suitable for the immunization of seeds.—SCHERING-KAHLBAUM A.-G. Belg. pat. 421,824, June 30, 1937. (A. P.-C.)

Mercury Compounds—Organic. Germicidal compounds suitable for use in aqueous solution, in mouth washes, tooth pastes, soaps, ointments, etc., and which have the general formula (RHg)_xR₁, are prepared from numerous listed sulfonic acid dyes, carboxylic acid dyes, alcoholic or phenolic dyes, imide dyes, sulfonamide dyes, etc., by treating the dye with an aromatic mercury compound such as phenylmercury hydroxide by heating in a solvent such as water. In the above general formula: R represents an aromatic structure to a carbon atom of which the mercury is directly attached and in which none of the carbon atoms has direct linkage with any element other than hydrogen, carbon and mercury; R₁ represents the radical of a dye having at least one hydrogen-containing group the hydrogen of which is replaceable by the RHg group, the replaceable hydrogen being other than hydrogen attached to carbon and the radical R₁ being linked to the RHg group by the replacement of this replaceable hydrogen; and *x* represents the number of

RHg groups in the compound and is an integer having a value of at least one and not more than the number replaceable hydrogens in the hydrogen-containing groups in the dye. 2,096,721—relates more particularly to phenylmercury sulfonates of dyes such as Benzo Fast Orange WSD, Chromoxane Cyanine RA Ext., Quinoline Yellow, and the like; 2,096,722, to phenylmercury carboxylates of dyes such as Alizarine Yellow, Rhodamine B, Fastusol Yellow GGA, and the like; 2,096,723, to phenylmercury imines of dyes such as Wool Fast Blue, Indanthrene Red Violet RRN, Fast Acid Violet B, etc.; 2,096,724, to phenylmercury alcoholates of Chrysamine L, Benzo Fast Red, Diamond Red, etc.—CARL N. ANDERSEN, assignor to LEVER BROS. CO. U. S. pats. 2,096,721 to 2,096,724, incl., Oct. 26, 1937. (A. P.-C.)

Methylcholanthrene—3-Substituted Derivatives of, Synthesis of. The method developed for the synthesis of cholanthrene and certain of its alkyl derivatives has been found satisfactory for the synthesis of the 3-methoxy and 3-chloro derivatives of methylcholanthrene.—L. FIBSER and B. RIEGEL. *J. Am. Chem. Soc.*, 59 (1937), 2561. (E. B. S.)

Miscible Oil—Preparation of. The oil consists of 15–20% of a naphthenic acid soap, 3–5% of a blending agent in the form of a high-boiling solvent, such as glycol, 3–5% of free rosin and 75–82% of a mineral oil. The naphthenates may be prepared by saponifying the petroleum sludge.—O. W. NEUKOM. U. S. pat. 2,060,425; through *J. Soc. Chem. Ind.*, 56 (1937), 1304. (E. G. V.)

Monoalkyl Carbonates—Studies of. VI. The Alkylcarbonate of Lactic Acid. An alkyl carbonate of lactic acid may be made by leading carbon dioxide into a solution of sodium lactate and sodium hydroxide at 0° C. If sodium bicarbonate is dissolved in a sodium lactate solution a little is converted to the alkyl carbonate (2% in a 2-molar lactate solution). In basic solution the alkyl carbonate of lactic acid is practically wholly decomposed into carbonate. The rates and constants of this conversion with different proportions of the reactants at 0° C. are determined. The decomposition is not a simple saponification by the hydroxyl ion, it takes place in two stages: $\text{Alkyl CO}_3^- \rightarrow \text{Alkylate} + \text{CO}_2$, and $\text{CO}_2 + \text{OH}^- \rightarrow \text{HCO}_3^-$. From the known reaction speeds of each stage, the reaction speed of the whole process at p_H above 10, is calculated for the presence of various molar strengths of lactate.—C. FAURHOLT, K. NOESEN and F. RATH. *Dansk Tids. Farm.*, 11 (1937), 267. (C. S. L.)

β -Oestradiol. When an alkaline aqueous solution of oestrone is reduced with Raney's nickel-aluminum alloy the main product is the well-known oestradiol (α -oestradiol), but 10 to 20% of β -oestradiol is also formed. The isomers differ in the configuration of carbon atom 17. They can be separated by fractional crystallization or better by taking advantage of the fact that only the α -isomer is precipitated by digitonin in 80% alcohol. β -Oestradiol crystallizes in needles from dilute alcohol; m. p. 220° to 223° C. The 3-monobenzoate has m. p. 156° to 157° C. and the diacetate has m. p. 139° to 141.5° C. The Allen-Doisy method applied to the ovariectomized rat showed α -oestradiol to be twelve times as potent as oestrone which is higher than the ratio reported by other workers. β -Oestradiol on the other hand had only 30% of the activity of oestrone. Benzoylation at the 3-carbon atom halves the activity of both isomers.—B. WHITMAN, O. WINTERSTEINER and E. SCHWENK. *J. Biol. Chem.*, 118 (1937), 789; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 571. (S. W. G.)

Parasiticide Suitable for Mothproofing Fabrics, Etc. A parasiticide such as salicylanilide is used as a dispersion in an aqueous solution of an acetate of deacetylated chitin.—MERLIN M. BRUBAKER, assignor to E. I. DU PONT DE NEMOURS AND CO. U. S. pat. 2,098,942, Nov. 16, 1937. (A. P.-C.)

Piperidine—Purification of, a Further Note on. Piperidine obtained by the catalytic reduction of pyridine has been found to be of higher purity than that prepared by electrolytic reduction.—E. S. COOK. *J. Am. Chem. Soc.*, 59 (1937), 2661. (E. B. S.)

Pyridine—Grignard Compounds Derived from. The reaction between magnesium and the bromopyridines has been studied and it is shown that the compounds obtained react like pyridylmagnesium bromides. The reaction mechanism of the method of preparation is discussed.—J. OVERHOFF and W. PROOST. *Rec. trav. chim.*, 57 (1938), 179. (A. C. DeD.)

Quassin. II. Neoquassin. Similar reactions as those made on quassin were made on neoquassin, and the results are recorded. There is a close structural relationship between the two isomers and the reactions of neoquassin are similar to those of quassin. A comparison of the results obtained with the two substances is given. Both quassin and neoquassin contain two

methoxyl groups and give values corresponding to one active hydrogen. Nequassin, when treated with a 4% ethanolic hydrochloric acid solution, gives a compound which has one ethoxyl group which indicates the presence of an alcoholic hydroxyl group.—E. P. CLARK. *J. Am. Chem. Soc.*, 59 (1937), 2511. (E. B. S.)

Sex Hormones—Addition of Acetylene to the Keto-Group in the 17-Position in trans-Androsterone and Δ -trans-Dehydroandrosterone. By treating trans-dehydro-androsterone with a solution obtained by saturating liquid ammonia containing metallic potassium with acetylene, Δ^6 -17-ethinyl-androstene-3-trans, 17-diol, m. p. 240–242° was obtained. The 3-monoacetate sinters at 170° and melts at 175–176°. The diacetate, prepared by long refluxing with acetic anhydride and pyridine, melts at 169–169.5°. Trans-androsterone, treated in a similar manner, yielded 17-ethinyl-androstan-3-trans, 17-diol, m. p. 255–257°. The 3-monoacetate melts at 205–207° and the diacetate at 199–200°.—L. RUZICKA and K. HOFMANN. *Helv. Chim. Acta*, 20 (1937), 1280. (G. W. H.)

Sex Hormones—Oxidation of Cholesterin Acetate-Dibromide with Chromium Trioxide. From the debrominated neutral fraction of the oxidation of cholesterin-acetate-dibromide with chromium trioxide in glacial acetic acid at 28–30°, the principal amount was separated as the semicarbazone of the acetate of trans-dehydro-androsterone. From the mother liquor, was obtained a mixture of carbazones melting unsharply at about 220°. By treatment with acid and alkali, and hydroxy-ketone $C_{26}H_{44}O_2$, m. p. 125–127°, was obtained. This was proved to be Δ^6 -nor-cholesten-3-trans-ol-25-one by conversion into a monoacetate and benzoate, oxidation (by way of the bromide) to a diketone $C_{26}H_{40}O_2$ and by catalytic hydrogenation. Both the hydroxy-ketone and diketone were inactive in the capon and rat tests as well as the Corner-Clauberg test. From the mother liquor of the hydroxy-ketone, some Δ^6 -pregnanolone was obtained.—L. RUZICKA and WERNER H. FISCHER. *Helv. Chim. Acta*, 20 (1937), 1291. (G. W. H.)

Sex Hormones—Oxidation of Saturated Stearin Derivatives with Chromium Trioxide. Oxidation of *epi*-cholestanol-acetate with chromium trioxide at 90° yielded a mixture of neutral products giving crystalline semicarbazones. Besides androsterone acetate, a small amount of semicarbazone, m. p. 224.5–225.5°, was isolated; which is thought to be that of 3-*epi*-acetoxy-allocholanaldehyde-acetate. In addition, the semicarbazone of a new keto-compound was isolated. Oxidation at 20–30° gave a greater yield of the latter product which, obtained from its semicarbazone, melts at 181–182.5° and has the formula $C_{26}H_{44}O_2$. It is a ketone alcohol which may be designated as *epi*-nor-cholestan-3-ol-25-one or methyl-(3-*epi*-hydroxy-homo-allo-cholanyl)-ketone. Tested by the cock's comb test it was only very slightly active. No action could be observed in the Allen-Doisy or in the Corner-Clauberg tests. The diketone melting at 140°, obtained by oxidation of the ketone alcohol, was inactive in the three tests.—L. RUZICKA, M. OBERLIN, H. WIRZ and JULES MEYER. *Helv. Chim. Acta*, 20 (1937), 1283. (G. W. H.)

Sitostenone and Stigmastenone. Stigmasterol and sitosterol, upon dehydrogenation with copper powder at 200° under reduced pressure, yield stigmastenone and sitostenone, respectively. These ketones upon catalytic hydrogenation yielded 24-ethyl-*epi*-coprostanol, which upon oxidation gives 24-ethylcoprostanone, this upon reduction gives a mixture of 24-ethyl-*epi*-coprostanol and 24-ethylcoprostanol. The latter is epimerized by sodium in boiling xylene, yielding 24-ethyl-*epi*-coprostanol. 24-Ethylcoprostanone forms a monobromo derivative which under the action of pyridine, may be converted into sitostenone.—R. E. MARKER and E. L. WITTLE. *J. Am. Chem. Soc.*, 59 (1937), 2704. (E. B. S.)

***epi*-Sitosterol and *epi*-Stigmasterol.** *epi*-Sitosterol and *epi*-stigmasterol have been prepared by the oxidation of the corresponding Grignard reagents prepared from the chlorides. *epi*-Sitosterol and *epi*-stigmasterol are readily dehydrated.—R. E. MARKER, E. J. LAWSON, E. L. WITTLE and T. S. OAKWOOD. *J. Am. Chem. Soc.*, 59 (1937), 2714. (E. B. S.)

Sitosteryl Chloride, Stigmasteryl Chloride and Related Compounds. Sitosterol and stigmasterol when treated with phosphorus pentachloride, give sitosteryl chloride and stigmasteryl chloride, respectively. The catalytic hydrogenation of these chlorides yields α -sitosteryl chloride, which may also be prepared by the action of thionyl chloride on stigmasterol or by the action of phosphorus pentachloride on *epi*-stigmasterol. Stigmasterol gives α -stigmasteryl chloride, when treated with phosphorus pentachloride.—R. E. MARKER and E. J. LAWSON. *J. Am. Chem. Soc.*, 59 (1937), 2711. (E. B. S.)

Tertiary Butylacetic Acid—Preparation of Substituted Amides of. Tertiary butylacet-methyl-, boiling point 93°/5 mm., ethyl-, boiling point 98°/6 mm., -*n*-amyl-, boiling point 130°/7 mm., -allyl-, boiling point 105°/7 mm., -cyclohexyl-, melting point 146–147°, -Tertiary-amyl-, melting point 147–148°, -dimethyl-, boiling point 63–65°/6 mm., and -diethyl-amide, boiling point 69°/3 mm., and -anilide, melting point 131°, and -methylanilide, boiling point 110°/5 mm., and α -bromo- Tertiary-butylacet-methyl-, melting point 113–114°, -ethyl-, melting point 110–111°, -*n*-amyl-, boiling point 143°/6 mm., -allyl-, boiling point 126°/6 mm., -cyclohexyl-, melting point 183–184°, Tertiary-amyl-, melting point 166–167°, -dimethyl-, boiling point 95°/5 mm., and -diethyl-amide, melting point 35–36°, boiling point 106–109°/5 mm., and -analide, melting point 151.5–152.5°, and -methyl-anilide, boiling point 140°/6 mm., are described. They are said to be of value as hypnotics and sedatives.—F. C. WHITMORE and A. H. HOMEYER. U. S. pat. 2,060,154; through *J. Soc. Chem. Ind.*, 56 (1937), 1408. (E. G. V.)

Ureas, Isomeric Amyl, and Derived Barbitals. A complete series of eight amyl ureas and eight *l*-amyl barbitals have been prepared. Both types are hypnotics. The effects of variations in the structure of the amyl groups can be observed by keeping the pharmacologically active groups constant. The series will give a direct comparison between the hypnotic effects of the ureas and barbituric acids, in pairs. A table containing the minimum hypnotic and minimum lethal doses of the *l*-amyl barbitals is given.—J. S. BUCK and A. M. HJORT. *J. Am. Chem. Soc.*, 59 (1937), 2567. (E. B. S.)

Vinyl- and Allyl-Testosterone. These compounds were prepared starting from dehydro-testosterone by means of vinyl- or allyl-magnesium-bromide. Physiological tests showed that each of these derivatives had an activity corresponding to a rat unit of 30 to 40 γ .—S. KUWADA and M. YAGO. *J. Pharm. Soc. Japan*, 9 (1936), 109–110; through *Chimie & Industrie*, 38 (1937), 937. (A. P.-C.)

BIOCHEMISTRY

Acetone—Determination of, in Blood and Urine. The formation of a cream-white precipitate by the reaction of acetone, absorbed in sodium bisulfite solution, with Nessler's solution is used quantitatively for the detection of a minimum of 0.002 mg. of acetone in 0.5 cc. of blood or urine by comparison with the turbidity produced in standards. Urine samples are first made acid to Congo-red with 50% v/v solution of sulfuric acid; blood needs no acidification. The blood or acidified urine, 0.5 cc., is absorbed on to a compressed cotton roll suspended from the cork of an 80-cc. flask containing 0.5 cc. of 5% sodium bisulfite solution, in such a manner that the roll is about 1 cm. from the surface of the solution. The flask is heated in a boiling water-bath for fifteen minutes, allowed to cool, 1 cc. of water and 1 cc. of Nessler's solution are added, and the turbidity produced is compared with standard turbidities prepared from 0.0; 0.002; 0.004. . . to 0.010 mg. of acetone, 1 cc. of water, 0.5 cc. of sodium bisulfite solution and 1 cc. of Nessler's solution. Full development of the turbidity requires fifteen minutes, during which time the tubes should be occasionally shaken. The method is not specific for acetone, as other ketones, volatile under these conditions, give similar precipitates with Nessler's solution. Ammonia in urine interferes unless the sample is sufficiently acidified; the presence of aldehydes is also undesirable. In these determinations fresh blood or urine should be employed, since 20% of the ketone is destroyed by bacterial decomposition in one day; but specimens may be preserved with toluene, an excess of which should be avoided.—J. C. ABELS. *J. Biol. Chem.*, 119 (1937), 663; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 574. (S. W. G.)

Adrenaline—Modifications Contributing to the Hyperglycemic Action of, by Addition of Zinc Salts. Rabbits weighing 2–3 Kg. maintained without food for 12 hours were given 0.25 mg. of adrenaline per Kg. and 0.15 mg. of zinc chloride per Kg. subcutaneously. With adrenaline alone, the maximum of the hyperglycemia is generally attained 2 hours after the injection and amounts to 2.5 Gm. of glucose per liter, for adrenaline with zinc chloride the maximum is reached after 3 hours and amounts to 3.5 Gm. per liter. The return to normal for adrenaline alone is generally 5 hours after the start of the experiment and 6–7 hours when the adrenaline is associated with zinc.—HENRY SCHWAB. *Compt. rend.*, 205 (1937), 629. (G. W. H.)

Adrenaline and Adrenochrome. The lactic and malic dehydrogenases of animal tissues can react with oxygen only in presence of coenzyme I, a carrier and a ketone fixative. The transfer of hydrogen from the substrate to the coenzyme is catalyzed by the dehydrogenase. The re-

duced coenzyme reduces the carrier which is finally reoxidized by molecular oxygen. Oxidation of the substrate gives rise to a keto acid which inhibits the reactions unless removed by the ketone reagent, preferably cyanide. The function of flavin, flavoprotein and methylene blue as carriers is readily understandable, since these substances can be reduced to leuco derivatives reoxidizable by molecular oxygen. Adrenaline, however, also acts as a carrier, but in this case the mechanism is complex. Experiments with adsorbing agents proved that some additional factor was involved. Similarly, malic dehydrogenase preparations prepared from different tissues were not all positive for adrenaline. With decrease in p_H from 9 toward 7 an increasing lag in the oxygen uptake was observed. Cytochrome *c* or hydrogen peroxide eliminated this lag. These experiments suggest that the adrenaline factor is one of the cytochromes or a similar compound. This acts by oxidizing the adrenaline to a red compound, for which the name adrenochrome is suggested, which is the actual carrier. Hydrogen peroxide itself cannot oxidize adrenaline but functions by oxidizing reduced cytochrome, which then reacts with the adrenaline to form the carrier. Reducing agents such as glutathione or ascorbic acid, which are known to stabilize adrenaline, inhibit the oxidation. Adrenochrome itself could not be prepared by chemical oxidation of adrenaline. It was, however, prepared in the form of a red crystalline hydrate by oxidation with highly active catechol oxidase. The chemical and spectroscopic behavior of adrenochrome indicates that it is N-methyl-2:3-dihydro-3-hydroxyindole-5; 6-quinone. It is an exceptionally unstable substance but gives a more stable quinoneoxime, m. p. 278° C. Oxidation of adrenaline with potassium iodate or bromine produced adrenochrome containing an atom of iodine or bromine in the indole ring. Besides adrenaline, a number of related compounds can act as carriers in this enzyme system but some of them show considerably smaller activity than adrenaline itself. It is concluded that, in addition to the normal physiological action of adrenaline, sufficiently high concentrations of adrenochrome may be reached *in vivo* for it to act as an effective oxygen carrier.—D. E. GREEN and D. RICHTER. *Biochem. J.*, 31 (1937), 596; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 568. (S. W. G.)

Alcohol—Microdetermination of, in Blood and Other Biological Fluids. Nicloux' method (*Compt. rend. soc. biol.*, 120 (1935), 1301-1309) is considered preferable to that of Widmarckas modified by Heiduschka and Flotow (*Pharm. Zentralhalle*, 74 (1933), 329-333).—R. CERNATESCU and I. ORNSTEIN. *Compt. rend. soc. biol.*, 124 (1937), 389-391; through *Chimie & Industrie*, 38 (1937), 870. (A. P.-C.)

Androgens—Additional Sources of. Stallion urine contained one bird unit in 560 cc., dog urine, in 652 cc. Rooster feces assayed one unit in 77 Gm., capon feces, in one Kg.—M. D. KRITZER and B. CUNNINGHAM. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 143. (A. E. M.)

Antirachitic Vitamin. 7-Dehydrocholesterol is antirachitically activated by irradiation. ADOLF WINDAUS and FRIEDRICH SCHENCK, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,099,550, Nov. 16, 1937. (A. P.-C.)

Arsenic in Human Tissues and Excreta. Arsenic is present in human tissues and excreta. The liver contains the largest amount (2 mg. per Kg.); bone and teeth come next; the amount in the blood is almost negligible. Foetal tissues contain no arsenic, but the placenta is fairly rich in it. The placenta appears to have the power of holding back arsenic when it is present in the mother's blood in appreciable quantity. Persons taking arsenic orally or intravenously for treatment or other purposes show from 4 to 6 times more arsenic than normal in the viscera. In cases of fatal arsenic poisoning the amount in the viscera is enormous; it may be as much as 1500 times the normal. In urine, the arsenic content varies from 0.02 to 0.03 mg. per liter. The amount in the faeces is about 10 times the average limit in the urine. The total amount of arsenic eliminated in the urine is about 0.03 mg. in twenty-four hours.—KN. N. BAGCHI and H. D. GANGULY. *Ind. Med. Gaz.*, 172 (1937), 477; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 566. (S. W. G.)

Ascorbic Acid Content of Fruits and Vegetables. A micro method is described. The extracting solvent was a mixture of a 20% solution of trichloroacetic acid (A) and a 20% solution of a metaphosphoric acid (B) in such proportion and sufficient quantity that the final extract contained 5% of A and 2% of B. The weighed sample (not over 20 Gm.) was ground rapidly and thoroughly into a paste with 5-10 Gm. of sand and approximately 0.2 of the total amount of acid to be used, then mixed with 0.5 of the remaining acid and pressed through fine muslin by means of a glass rod. The mass was returned to the mortar and extracted again with the remainder of the acid. Finally, the residue was well washed with water and the solution was made up to the re-

quired volume. The extract was then filtered through paper and titrated with 2,6-dichlorophenol-indophenol reagent. For colored extracts a modification of the method is described. The ascorbic acid (C) content of black currants (D), gooseberries (E), strawberries (F), peas (G) and potatoes was determined with relation to the size, degree of ripeness, season and variety. The average concentration of C in E and D rises in the initial stages of development then falls as the season progresses. In F the average content of C falls during the early stages of development and increases as the color change takes place. The average total amount of C per berry in D, E and F increases with the development of the fruit to a steady level. This level is lower at the end of the season for F than at the beginning. A high concentration of C has been found in very small peas, but this decreases with increase in weight of the seed. Potatoes were found to contain an approximately constant concentration of C independent of the size and stage of development of the tuber. Variety may be an important factor in some cases but the evidence is not clear on this point for all samples taken.—M. OLLIVER. *Analyst*, 63 (1938), 2. (G. L. W.)

Ascorbic Acid Content of Fruits and Vegetables. The ascorbic acid content of the following fruits and vegetables are recorded: Black currants, gooseberries, strawberries, peas, potatoes, asparagus.—ANON. *Pharm. J.*, 140 (1938), 75. (W. B. B.)

Ascorbic Acid—Spectrophotometric Method for Determining, in Tissues. Extract 1 Gm. of tissue with 20 cc. of alcohol containing a little hydrogen sulfide; evaporate the alcohol in an atmosphere of nitrogen and take up the residue in a 1:50,000 aqueous solution of potassium cyanide (the cyanide prevents oxidation by the air). Determine the absorption of the solution at 265μ and then irradiate the solution until the absorption at 265μ shows no further decrease. The ascorbic acid content is calculated from the difference in absorption before and after irradiation.—A. CHEVALLIER and YVONNE CHORON. *Compt. rend. soc. biol.*, 124 (1937), 453-455; through *Chimie & Industrie*, 38 (1937), 869-870. (A. P.-C.)

Bile—White. It is evident that there are degrees of whiteness of the bile draining from the common duct after operation. There is no criterion yet established of the stage during complete obstructive jaundice at which the liver ceases to function. After three weeks or more of apparently complete blocking of the common duct, with jaundice of a deep green tint and severe itching, removal of the obstruction is not invariably followed by discharge of "white bile." Where the bile has been deprived of all color and is clear, colorless and limpid, recovery is still possible. Death is probably due in the main to post-operative shock and inadequate after-treatment rather than to an inability of the liver to resume its functions.—H. H. GREENWOOD. *Lancet*, 233 (1937), 1310. (W. H. H.)

Blood—Iodine Content of. The iodine content of the blood may be fractionated by ultrafiltration into the protein-bound and non-protein iodine. The latter, in the ultrafiltrate, may be further fractionated by silver sulfate precipitation into the inorganic and organic iodine. In horse and beef blood the protein, inorganic and organic iodine, respectively, were 1.1-3.8, 3.0-6.5 and 1.6-3.2%.—T. LEIPERT. *Biochem. Z.*, 293 (1937), 99; through *Squibb Abstr. Bull.*, 10 (1937), A-1923. (F. J. S.)

Blood—New Method for the Determination of Iodine in. 50 cc. of oxalate blood and 0.2-cc. silver nitrate solution (1 Gm. + 1 cc.) are treated with red fuming nitric acid in a sealed tube, by the Carius method. The silver halogens thus formed are collected, washed and warmed with zinc and a little water on the water-bath. The difficultly soluble silver halogens go over into the readily soluble zinc halogens: $2 \text{AgHal} + \text{Zn} \rightarrow \text{ZnHal}_2 + 2\text{Ag}$, where Hal = Cl, Br or I. The solution of the zinc halides is filtered from the excess zinc and silver, boiled with bromine water and then treated with potassium iodide, the iodate formed being titrated with thiosulfate.—H. DOERING. *Klin. Wochschr.* (1936), 1010; through *Pharm. Weekblad*, 74 (1937), 496. (E. H. W.)

Blood Serum—Determination of the Vitamin D Content of. The method depends upon feeding rats, which have been made rachitic on the Steenbock diet (modified by Bills), variable amounts of the serum mixed with 50 Gm. of food. The line test is then performed after a ten-day period. The smallest amount of serum which secures 2^+ healing contains 2.7 I. U. The vitamin D content per 100 cc. serum is calculated on this basis. Results of a number of determinations made on animals and human subjects are reported.—JOSEF WARKANY. *Biochem. Z.*, 293 (1937), 415-426; through *Chem. Abstr.*, 32 (1938), 967. (F. J. S.)

Bromides—Separation of, from Chlorides by Means of Iodic Acid. The method of separating chlorides from bromides by means of iodic acid as perfected by Kolthoff has been found to be satisfactory when at least 7 to 8 mg. of bromine are present, but fails for lower bromine contents, so that the method is inapplicable in biological tests.—L. MARTINI. *Ann. chim. applicata*, 26 (1936), 102–105; through *Chimie & Industrie*, 38 (1937), 444–445. (A. P.-C.)

Bromine—Determination of, in Biological Substances. The method of Dixon has been modified to give quantitative results when applied to blood and other biological substances. Organic material is destroyed by three heatings to 480° C. for half-an-hour with alkali and sucrose in a nickel crucible. Bromide is extracted with hot water from the ash, and the residue is extracted five times with *N*/10 potassium carbonate. The filtered extracts are evaporated and ignited to destroy residual organic matter. The ash is dissolved in alkali and again ignited. Bromide is extracted from the ash with alcohol (90 to 95%), and the alcoholic solution is evaporated and ignited. The residue is dissolved in water and treated with potassium hypochlorite in presence of borate buffer and half saturation with sodium chloride at 85° C. for twenty minutes, and then boiled for eight minutes with hydrogen peroxide to oxidize the bromide to bromate. The latter is estimated iodometrically, using *N*/500 sodium thiosulfate which has been standardized against pure potassium bromide so that 1 cc. is equivalent to 26.7 micrograms of bromine. Blank determinations must be carried out with all the reagents at the same time and under the same conditions as the actual determination. Using 2 to 10 Gm. of blood, and similar quantities of other materials, to which were added known amounts of bromine ranging from 5 to 100 micrograms, the error of the method was found to range from 0 to 10%.—P. S. WINNEK and A. H. SMITH. *J. Biol. Chem.*, 119 (1937), 93; through *Quart. J. Pharm. Pharmacol.*, 10 (1937), 575.

(S. W. G.)

Bromine—Studies on the Rôle of, in Nutrition. A synthetic diet containing less than 5 parts bromine per 10,000,000 supported growth in rats 21–100 days of age. No significant difference was found in the general appearance, food intake, rate of growth or reproduction record between the animals on the synthetic low-bromine diet and the synthetic diet supplemented with 200 γ bromine/10 Gm. of diet in the form of potassium bromide. The bromine contents of various dietary factors, including vitamin concentrates, are given as well as methods for removing bromine from the diet.—PHILIP S. WINNEK and ARTHUR H. SMITH. *J. Biol. Chem.*, 121 (1937), 345; through *Squibb Abstr. Bull.*, 10 (1937), A-2037.

(F. J. S.)

Calcium and Nutrition. Deficiency in "Poorer-Class" Diet. It is said that it is clearly evident that there is a shortage of bone-forming elements in the ordinary diet of the poorer classes, and that this shortage can be fully made up by giving inorganic salts, or a fairly liberal allowance of milk. A calculation of the amount of calcium received by a child fed on this diet and drinking about two pints of water a day, showed that he would get about 430 mg. of calcium a day.—ANON. *Pharm. J.*, 140 (1938), 48.

(W. B. B.)

Camomile as a Substitute for Hops. A sample of Roman camomile and one of ordinary camomile had the following composition: Water 13.0, 10.4; ash 5.03, 9.6; tannin 6.37, 9.09; bitter acids (Lintner-Adler Method) 142, —; ether-soluble resins 6.2, 4.2; hexane-soluble resins 3.16, 1.98%; resins precipitable by lead subacetate none, none. Tests were carried out in which 10–90% of the hops were replaced by camomile. The wort boiled with camomile showed a marked increase in acidity, was slightly darker in color and exhibited a persistent opalescence. Its fermentation was normal.—A. FRANKIGNOULLE. *Ann. zymol.* [3], 4 (1937), 143–144; through *Chem. Abstr.*, 32 (1938), 719.

(F. J. S.)

Carotene Content of Some Indian Vegetable Foodstuffs. Variation Due to Storage. I, II. The carotene (I) contents of a number of foodstuffs are given. Storage of roots, pulses and fruits results in increase of I, synthesis of which continues for some time after harvesting or plucking, deterioration ultimately occurring. I is not appreciably affected by storage in some non-leafy vegetables that are generally consumed fresh. Leafy vegetables show rapid loss of I on storage, particularly at higher temperature.—N. K. DE. *Indian J. Med. Research*, 23 (1936), 937–948; through *J. Soc. Chem. Ind.*, 56 (1937), 976.

(E. G. V.)

Carotene in Oranges. Carotene determinations on 164 samples are given. California oranges show higher carotene content than Florida, particularly five Valencias, where the ratio is three to one. Variations due to seasonal trend are but slight and non-inclusive.—A. L. TAYLOR and P. J. WITTE. *Ind. Eng. Chem.*, 30 (1938), 110.

(E. G. V.)

Cathepsin—Heptic, Action of Ionizable or Complex Metallic Elements on the Activation of, by Vitamin C. Zinc, calcium and ferrous and ferric iron promote the action of ascorbic acid as an activator; barium, magnesium, lead and tetravalent titanium have no effect, while cupric copper has an inhibiting action. Any of the above metals, present as ascorbic or dehydroascorbic acid complexes, increases the action of ascorbic acid as an activator.—A. BADINAND. *Compt. rend. soc. biol.*, 122 (1936), 1097–1099; through *Chimie & Industrie*, 38 (1937), 320.

(A. P.-C.)

Citrate and Tartrate—Effect of, on Experimental Rickets. Sodium citrate, sodium tartrate and sodium bitartrate, incorporated in a rachitogenic diet in amounts of 0.4 mol, 0.8 and 0.8 mol/Kg. diet, furnished protection against the development of rickets. When equivalent quantities of the acids and salts were fed, it was found that the salts were slightly more effective than the corresponding acids. The administration of 0.4 mol/Kg. diet of each of these salts produced 4+ healing in rats in which experimental rickets had been developed. Calcium carbonate, calcium citrate and tartrate did not exhibit this antirachitic effect. In this study the degree of rickets was determined by measuring the width of the epiphyseal space on roentgenograms.—HAMILTON, BENGT and MARGARET M. DEWAR. *Am. J. Diseases Children*, 54 (1937), 548; through *Squibb Abstr. Bull.*, 10 (1937), A-1899.

(F. J. S.)

Cod Liver Oil—Vitamin A Content of. Comparison of Spectrophotometric and Chemical Methods. The vitamin A potency of thirty-two samples of cod liver oils was determined by the Hilger vitameter E value and the antimony trichloride Blue methods. A comparison of the results obtained by the two methods indicated that in general they were of the same order. The oils that give high E values also gave high Blue values, while those with the lowest E values also gave the lowest Blue values. The Blue value to E value ratio was between 9.0:1 and 11.0:1 for the majority of the samples under consideration. The fatty acid content of an oil has no direct relationship to the amount of red color or yellow color produced by the action of the antimony trichloride solution on the oil. The result obtained for free fatty acid and unsaponifiable material present in an oil is not correlated with its E value or Blue value; there is no consistent relationship between the vitamin A potency and the free fatty acid or unsaponifiable material present in cod liver oils.—A. D. HOLMES, F. TRIPP and G. H. SATTERFIELD. *Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 456.

(E. G. V.)

Diastase—Pharmaceutical, Determination of the Activity of. The author studied the effect of (1) time of reaction; (2) temperature; (3) p_H of reagents and (4) source of starch on the diastase assay. Curves and tables are given illustrating the results of the experiments. The author concludes that two hours are necessary for the reaction; that 37° is the logical temperature; that a p_H of 5.2 is the most favorable acidity and that soluble starch prepared after the method of Schering-Kahlbaum should be employed. The following method of assay is suggested for pharmaceutical diastases: Weigh a quantity of starch (amylum-soluble Schering-Kahlbaum) equivalent to 37.5 Gm. of the product dried at 110° C. and dilute with 50 cc. of water; add to this 400 cc. of boiling water and let the mixture boil for 1 minute with constant stirring. Cool to room temperature and transfer to a liter flask and dilute to 1 liter with water. Pipette 100 cc. of the starch solution into a conical flask holding 250 cc. To this add 10 cc. of a buffer solution consisting of 99 cc. of 1.5M KH_2PO_4 and 1 cc. of Na_2HPO_4 . Warm this mixture on a water-bath with the thermostat set at 37° C. Add 5 cc. of diastase solution (0.75 Gm. per 25 cc.), also warmed to 37° C. Allow the diastase to react during two hours at 37° C. The hydrolysis is brought to a close by transferring 10 cc. of the mixture to 50 cc. of boiling Fehling's solution; this is boiled during 3 minutes and then filtered through Gooch crucibles. The cuprous oxide is then reduced into cupric oxide and the amylase activity is calculated from the cupric oxide.—MARG. VAN HAUWAERT. *Pharm. Tijdschr.*, 14 (1936), 165.

(E. H. W.)

Dinitrophenol—Effect of, on Experimental Diabetes. The administration of dinitrophenol and its sodium salt was without effect on the fasting total respiratory quotient, urinary sugar, organic acids, total nitrogen and creatinine of a depancreatized dog maintained on a constant diet with insulin.—A. HUGHES BRYAN, HENRY T. RICKETTS and WILLIAM C. DINE. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 4.

(A. E. M.)

Eggs of Bombyx Mori L.—Action of Camphor upon. The eggs of the *Bombyx mori* L., when kept in incubation and treated with alcoholic solutions of camphor ($C_{10}H_{16}O$), or in surroundings where this substance sublimes, undergo phenomena of intoxication, which can be seen

by observing the course of the hatchings and the total number hatched. Although a slackening in the embryogenic rhythm can be noticed, the organisms die at the last stage of intra-ovarian life (phases T and U of the standard embryonal stages of Grandori), just before coming out of the eggs.—E. MASERA. *Biochim. terap. sper.*, 16 (1938), 13. (A. C. DeD.)

Flavoring Materials and Essences—Natural. The natural fruit products of to-day are a considerable advance upon their predecessors in that the aim is to preserve the flavors to a maximum degree while retaining as great a proportion as possible of the vitamins which exist in the fruit. It has been shown that black-currant juice contains nearly three times as much ascorbic acid as lemon and orange juices, with other juices arranged in the descending order strawberry, red currant, gooseberry, raspberry, whortleberry, cherry and blackberry. The natural fruit essence in its simplest form may be prepared by macerating the fruit in alcohol for some weeks, after which the liquid is drawn off, the pulp pressed and the combined liquors filtered. In case of the citrus fruits the peel only is used for this purpose. Such an essence prepared from one of the more acid fruits has the disadvantage of instability, since upon storage the fruit acids esterify with the alcohol with the production of a vinous character which eventually masks the fruit flavor almost completely. First-class essences can only be produced by a judicious blending of fruit extracts with products from the natural sources and small amounts of the finest synthetics. Essences of natural origin discussed include vanilla, saffron, bitters, tonquin beans, liquorice, coffee, tea, guarana and cocoa. A brief description of various essential oils used in flavoring is given, including, citrus, mint, clove, ginger, aniseed and other spices.—S. W. BRADLEY and G. R. A. SHORT. *Chemistry and Industry*, 56 (1937), 1018. (E. G. V.)

Fluorine in Food Products. The author summarizes his work as follows: The fluorine is steam distilled at 135° C. to 150° C. in an apparatus of special design having ground-glass joints and containing glass wool and sulfuric acid; a slow stream of carbon dioxide is used to prevent bumping until a temperature of 140° C. has been attained. Distillation is complete in 45 minutes, and the fluorine-content is determined by "fading" zirconium-alizarin reagent in a similar way to that described by Barr and Thorogood. The use of sodium nitrite is recommended for nullifying the bleaching effect of free chlorine, which is liable to be obtained with foodstuffs containing manganese, owing to the formation of permanganate on ashing. The volumetric method of Willard, *et al.*, is discussed; it was found suitable for foodstuffs containing more than 5 p. p. m. of fluorine, but the use of 25 cc. of glycerin gave a much better end-point than 25 cc. of ethyl alcohol. Results are given showing that a satisfactory recovery of added fluorine is obtained by the method referred to above; the fluorine contents of 17 different foodstuffs and 7 chemical substances are recorded. The fluorine content of the foodstuffs examined did not, as a rule, exceed 2 p. p. m., but the important observation of Reid, that tea contains considerably larger amounts of fluorine, is confirmed.—H. C. LOCKWOOD. *Analyst*, 62 (1937), 775. (G. L. W.)

Food Fats—Determination of Butyric Acid in. This article embraces a discussion of the various methods for the analysis of food fats with special reference to the adulteration of butter. Physical, chemical and biological methods are considered. Of the various physical methods, the determination of the refractive index is especially useful. Refractive indices are given for butter fat, palm oil, palmseed oil, cocobutter and whale oil. It is not possible, however, to detect the adulteration of butter with $\approx 10\%$ of a hydrogenated oil. Hydrogenated oils are interesting products in adulteration. They have a Reichert-Meisl number of 0.5–2 and may thus be used to adulterate a butter with a RM number of 32. Such a sample would fall within the normal limits for refractive index and iodine number. The Microscope (UV capillary) and the Hanau lamp are useful but cannot be relied upon to detect a 10% adulteration of butter. Butter with a RM number of 28 can be mixed with 10% of a neutral fat and upon the addition of 5% of triacetine will still show a RM of 28. Two methods are described for the detection of triacetine, one micro-chemical and one a color reaction. Acetic acid (triacetine) should be determined along with butyric, capryonic and caprylic acids in the Reichert-Meisl distillate. Shaking out the acids with xylene, petroleum ether and other immiscible solvents is discussed and tables are given for butyric and caprylic acids in several solvents. The determination of the average molecular weight of the volatile acids by forming potassium, sodium and barium salts is discussed and a table showing the weight of the sodium salts of the volatile acids with butter adulterated with from 10 to 50% of tallow is given. A colorimetric method for the determination of butyric acid using cuprous chloride is also discussed. The paper concludes with a table of results of various determinations

on pure butter and butter containing 10% tallow and 5% triacetine.—A. E. DE CLERCQ. *Pharm. Tijdschr.*, 14 (1936), 145. (E. H. W.)

From Food to Medicine: Placenta. When mother rats are fed exclusively on unconcentrated milk containing 40% added sugar, they cannot rear all their young; the latter lose weight, some of them die and not more than 4 survive. Addition of small quantities of hydro-alcoholic placenta extract reduces the mortality to 0 and enables the young to gain weight. If the addition of placenta is stopped, so does the increase in weight of the young. Clinical tests showed that placental extract produces a marked increase in milk secretion and also acts as though it contained a hormone or vitamin favoring the utilization of the milk ration.—A. ARTHUS, S. DEJUST and R. DAUNAY. *Bull. soc. sci. hyg. aliment.*, 25 (1937), 261-283. (A. P.-C.)

Glycogen—Liver Modification of the Bierry-Gruzewska Method for the Determination of. The modified method is as follows: Add 25 cc. of 60% potassium hydroxide to 25 Gm. of liver in a beaker; heat the mixture on the water-bath for 2 hours agitating occasionally during the first 30 minutes and then place a rubber stopper on the receptacle; let cool, add 40 cc. of distilled water, neutralize to litmus with concentrated hydrochloric acid and then add 5.5 cc. of hydrochloric acid to make a concentration of 5%; heat the mixture in an autoclave for 30 minutes at 120° C., cool, neutralize to litmus with 30% potassium hydroxide, transfer to a 300-cc. volumetric flask and add 50 cc. of a 50% zinc sulfate solution; neutralize the liquid with sodium hydroxide and then add 20 drops of sodium hydroxide to make the solution distinctly alkaline; make up the solution to 300 cc. with distilled water, mix, heat on the water-bath to 80° C. for 5 minutes, filter and cool; add a few drops of hydrochloric acid, and determine glucose by Bertrand's method. The modification is claimed to be more rapid and economical than the original procedure.—F. VACIRCA. *Boll. Soc. Med. Chir. Pavia* (1936), 865-878; through *Chimie & Industrie*, 38 (1937), 451. (A. P.-C.)

Histidine—Effect of, on Gastric Secretion. Histidine does not seem to exert any influence on gastric acidity and the rate of gastric secretion.—HSIAO-CH'EN CHANG. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 155. (A. E. M.)

Lactalbumin—Nutritive Value of, Versus Casein. Lactalbumin at an 8% and a 12% level of protein intake showed better growth and better nitrogen retention in rats than did casein at those levels, and it had the same or slightly better nutritive value as casein supplemented with cystine.—M. C. KIK. *Proc. Soc. Exptl. Biol. Med.*, 37 (1937), 129. (A. E. M.)

Lactic Acid in Bordeaux Wines. Lactic acid determined by oxidation with potassium permanganate to acetaldehyde (cf. Espil, *C. A.*, 30, 8516¹) and titration of the latter with iodine (cf. Jaulmes and Espezel, *C. A.*, 29, 7008⁶) in 31 samples of red and 28 samples of white Bordeaux wines of known genuineness gave: red 0.58-3.82, white 0.36-2.45 Gm. per liter.—J. RIBEREAU-GAYON and E. PEYNAUD. *Ann. fals.*, 30 (1937), 339-344; through *Chem. Abstr.*, 32 (1938), 718. (F. J. S.)

Lactose—Determination of, in the Presence of Sucrose. The author describes a method in which sucrase is employed to invert sucrose. The actual determination of the inverted sugar follows the method of Bertrand. A table of results is given including mixtures of lactose and sucrose from 70-30 to 99-1.—GODFRIED HOUBAERT. *Pharm. Tijdschr.*, 14 (1937), 209. (E. H. W.)

Lead—Detection of, in Urine and Feces. The method heretofore followed under Fischer's procedure (*Süddeut. Apoth.-Ztg.*, 71 (1931), 603-604) has been improved as follows: carefully evaporate to dryness 50 cc. of urine in a porcelain crucible over a free flame after addition of 2 Gm. of sodium nitrate and 1 Gm. of sodium carbonate; ignite the residue to complete whiteness; dissolve the residue in hot water with addition of 2 or 3 drops of normal potassium cyanide solution and 2 or 3 drops of ammonium hydroxide, then about 1 cc. of a solution of 3 mg. of dithizone in 100 cc. of chloroform. In the presence of lead a beautiful red color develops. In the detection of lead in stools, ignite about 10 Gm. of a fresh sample and then apply the double amount of soda-salt peter mixture as given above.—FISCHER and H. STRALLER. *Deut. Apoth.-Ztg.*, 51 (1936), 1718; through *Chimie & Industrie*, 38 (1937), 453. (A. P.-C.)