VOL. VI, No. 2 FEBRUARY 1940

# PHARMACEUTICAL ABSTRACTS

Published by the American Pharmaceutical Association,
2215 Constitution Ave., Washington, D. C.

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

## ABSTRACTORS



## CONTENTS

BACTERIOLOGY (*Continued*)

**Pathogenic Fungi—Chemical Studies of Certain. I. The Lipids of Blastomyces Dermatiditis.** The lipid fraction of *Blastomyces dermatiditis* makes up about eight to ten per cent of the weight of the whole dried cells. The lipids were separated into approximately one-third phosphatide and two-thirds acetone-soluble fat. The phosphatide on hydrolysis gave glycerophosphoric acid, choline, ethanolamine and fatty acids. The acetone-soluble fat gave on saponification glycerol, ergosterol and palmitic, oleic, linoleic and possibly stearic acids. **II.** These results are compared with the data on tubercle bacilli and certain striking differences are noted.—R. L. PECK and C. R. HAUSER. *J. Am. Chem. Soc.*, 60 (1938), 2599. (E. B. S.)

**Peptone on the Resistance of Staphylococcus Aureus—Effect of.** It is known that commercial peptones vary in chemical composition. Growth-promoting value is not the only important consideration. In preparing diphtheria toxin for example, certain peptones will give toxins of higher potency than others. In testing disinfectants and antiseptics the condition of the organism is of great importance. In the original Hygienic Laboratory Method published in 1912 the peptone was not specified. In 1921 a peptone made by Armour was specified. In the present study ten brands of peptone were used. Details of experimental work are reported and results tabulated. It was found that Armour's peptone is best suited "for use in media employed for growing *Staphylococcus aureus* for use in testing antiseptics and disinfectants."—GEORGE F. REDDISH and ELLA M. BURLINGAME. *J. Am. Pharm. Assoc.*, 27 (1938), 331. (Z. M. C.)

**Prophylaxis in Syphilis—An Experimental Resurvey of the Basic Factors Concerned in.** Through extended experimental methods a resurvey of the basic factors has been conducted. The so-called contact method of experimental infection has been found to be entirely suitable and the actual depth to which the syphilis organism may penetrate the intact mucosa of the rabbit in three hours after being placed upon the unbroken surface has been shown with the photomicrograph. The time limit in which thorough chemical disinfection of the exposed area may exert a protective influence has been established. Mechanical cleansing of the exposed area with white soap and water afforded a high degree of protection after 1.5 hours exposure but its effectiveness decreased after two hours. The efficiency of calomel ointment has been demonstrated and the factors to be considered in the use of mercury when supplied to the human body are discussed.—J. F. MAHONEY. *Bull. Natl. Formulary Committee*, 7 (1939), 207–215. (H. M. B.)

**Protein Viruses.** The author gives the following conclusions: The apparent analogies between the protein viruses isolated from diseased vegetable and animals tissues and the active principles of the transmissible lysis are accepted, and the same problems, with respect to the endogenous or exogenous origin of these agents, still remain to be solved. According to Stanley, the protein virus acts by modifying the metabolism of the cells so that they produce more of the active protein. Gowen and price compare the protein virus to the genes. They differ by passage from one cell to the other and by the possible inoculation of healthy cells, but they are similar in having analogous dimensions, under mutations under the influence of X-rays; inactivation by X-rays and ultraviolet rays seems to imply the absorption of a unit of energy by the active element. In addition to the infectious mosaics the hereditary mosaics are recognized, the latter being transmitted according to Mendel's law. A bibliography is appended.—B. DELAGE. *Bull. sci. pharmacol.*, 46 (1939), 97–104. (S. W. G.)

**Sodium Citrate Solution—Sterilization of, with Nipa Esters for the Estimation of Erythrocyte Sedimentation Velocity.** It is shown experimentally that addition of 0.07 to 0.10% of nipagin M plus 0.03% nipasol M to the usual 3.8% sodium citrate solution suffices to render the latter sterile, and without recourse to heat.—TH. SABALITSCHKA. *Pharm. Zentralhalle*, 79 (1938), 151–152; through *Chimie & Industrie*, 40 (1938), 531. (A. P.-C.)

**Sterile Preparations—Manufacture of.** Easily decomposable pharmaceutical substances for injection, for example, dry pancreas or pituitary hormone, adenylphosphoric acid, diphtheria toxin, are treated with a solution of mono-or poly-hydric phenol (for example, chlorothymol or *-m*-cresol, hexylresorcinol) in a low boiling inert solvent (ethyl alcohol, ether, acetone) which is allowed to evaporate at low temperature (in vacuum) and the product is then filled into sterile ampuls.—W. P. WILLIAMS. From SCHERING A.-G. Brit. pat. 501,813; through *J. Soc. Chem. Ind.*, 58 (1939), 552. (E. G. V.)

**Sterilization of Surgical Dressings and Instruments.** The dressings etc., are heated by a high-frequency, oscillating electric field between electrodes in a closed vessel and are sterilized by steam generated from the hygroscopic moisture they contain. Apparatus is claimed.—R. M. SAVAGE and S. MAW, SON & SONS, LTD. Brit. pat. 483,147; through *J. Soc. Chem. Ind.*, 57 (1938), 1504. (E. G. V.)

**Sulfanilamide and Related Compounds in Experimental Tuberculosis.** Sulfanilamide was found to inhibit the tuberculous processes in guinea pigs infected with human tubercle bacilli. Large doses were necessary. Prontosil Uliron and Septazine had no effect. There was no effect in rabbits infected intravenously with bovine tubercle bacilli.—P. H. GREERY, G. D. M. BODDINGTON and M. H. LITTLE. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 418. (A. E. M.)

**Sulfanilamide and Sulfapyridine—Comparative Effects of, in Type II Pneumococcic Infection of Mice.** Sulfapyridine is slightly more potent than sulfanilamide, but it only delays death without cure.—GEORGE W. RAIZISS, M. SEVERAC, J. C. MOETSCH and L. W. CLEMENCE. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 434. (A. E. M.)

**Sulfanilamide and Sulfapyridine in the Treatment of Experimental B. Typhosus (Eberthella Typhosus) Infection of Mice.** Sulfanilamide was moderately efficacious depending on the time of injection and site of injection, whether subcutaneously or intraperitoneally. Sulfapyridine was less effective.—JOHN A. KOLMER and ANNA M. RULE. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 615. (A. E. M.)

**Sulfanilamide—Observations on the Mode of Action of, in Vitro.** Repeated transfer of a virulent strain of hemolytic streptococcus in 1:10,000 sulfanilamide broth does not attentuate the organism. The combined bactericidal action of antibody and sulfanilamide is greater than that of either alone. The drug promotes phagocytosis in dilute solutions, probably nonspecifically. Organisms previously grown in sulfanilamide are rapidly inhibited in fresh media containing the drug, whereas normal organisms multiply at the usual rate for several hours before bacteriostasis occurs. This delay is due to the formation of a loose union between the drug and the organism. The bacteriostatic effectiveness of sulfanilamide varies directly with the concentration of the drug and inversely with the size of the inoculum.—CAROLINE A. CHANDLER and

CHARLES A. JANEWAY. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 179. (A. E. M.)

**Sulfapyridine and Sulfanilamide in Experimental Pneumococcal, Meningococcal, Welch Bacillary and Friedlænder's Bacillary Infections in Mice.** While sulfapyridine is superior to sulfanilamide in the control of experimental pneuococcal and Friedlænder's bacillary infection, the effect does not approach that observed when either drug is used in hemolytic streptococcal infection. No difference was seen in infections with Welch bacilli or meningococci.—ELEANOR A. BLISS, W. HARRY FEINSTONE, ALICE W. GARRETT and PERRIN H. LONG. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 619. (A. E. M.)

**Sulfapyridine—Further Studies on Therapeutic Properties of, in Experimental Pneumococcus Infection.** Sulfapyridine has a curative action when administered to mice infected with pneumococci Types I, IV, V, VIA and B, VII, XI, XX, XXII, XXIV, XXVII and XXIX. The drug has little curative action in infections with Types II, III and VIII, although it does prolong life.—L. H. SCHMIDT and CAROLYN HILLES. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 611. (A. E. M.)

**Sulfur Derivatives—Bacterial Chemotherapy of Organic.** A critical review of present knowledge giving chemical and clinical procedures.—R. FABRE. *J. pharm. chim.*, 29 (1939), 210–222, 252–268. (S. W. G.)

**Syphilis—Average Chance of Infection with.** The statement was recently made by the Surgeon General of the United States Public Health Service that: "Syphilis strikes one out of every ten adults." The factual material on which this statement was based has never been published; it consists of information on the annual attack rate of the disease acquired from treatment centers serving about five per cent of the population of the United States. Charts are given which show the annual attack rate, and this rate seems quite low, but it must be remembered that if only the law of hazards is considered, a given person has this chance of acquiring the disease repeated each year of his life. This piles up quite an impressive number of chances, and gives approximately the figure quoted above. Every practitioner is aware of the fact that out of 100 persons tested for syphilis much less than 10 per cent will be found to have it; this is explained by the fact that many of those tested still have a chance to acquire the disease.—R. A. VONDERLEHR and L. J. USILTON. *New York State J. Med.*, 38 (1938), 1376; through *Abbott Abstract Service*, (1938), No. 411. (F. J. S.)

**Urinary Tract Infections—Further Observations on Mandelic Acid in.** The bacteriostatic and bactericidal power of mandelic acid was determined in the laboratory for different species of bacteria, using urine which had been passed through a Berkefeld filter as the culture medium. Two strains of *Proteus vulgaris* showed growth inhibition and death in twenty-four hours from concentrations of 0.19% at $p_H$ 5.0, but at $p_H$ 5.5, a 1% concentration was needed to produce the same effect. Roughly similar conditions brought about the death of *B. coli*. *Aerobacter ærogenes* and *Ps. pyocyaneus* were not injured by concentrations of 1% at $p_H$ 5.0. Clinical results on 125 cases in general bore out the laboratory findings; 72% of all the urinary infections treated had the urine rendered culturally sterile within an average time of 7.2 days. Most of these were due to *B. coli*. Infections due to staphylococci cleared, but did not often become culturally sterile. No serious ill effects were demonstrable from the medication.—G. CARROLL, B. LEWIS and L. KAPPEL. *J. Urology*, 39 (1938), 710; through *Abbott Abstract Service*, (1938), No. 337. (F. J. S.)

## BOTANY

**Amylases of Barley and Malted Barley—Study of the Influence of Heavy Water upon the Activities and the Stabilities of.** The influence of heavy water upon the activities of these amylases was studied by comparable measurements of their action in the presence of heavy water (99%) and in its absence. Working with highly purified preparations of the amylases of barley and of malted barley, it was found that heavy water had no appreciable influence upon the hydrolysis of starch as catalyzed by any of these enzymes provided the conditions of the hydrolysis are such as to minimize the deterioration of the amylase and to favor its action. Stability measurements show that inactivation of these plant amylases is much less rapid and less pronounced in highly purified heavy water than in similarly purified ordinary water.—M. L. CALDWELL, S. E. DOEBBELING and F. C. VON WICKLEN. *J. Am. Chem. Soc.*, 61 (1939), 125. (E. B. S.)

**Auxin—Determination of.** Auxin can be determined in animal fluids or tissue extracts by its growth-inhibiting effect on the roots of lupine seedlings. In auxin-free nutrient solution, in a narrow tube, the root increases in length in 24 hours by 7 to 11 mm. For a content of 2 mg. per liter of heteroauxin, root growth almost totally ceased; in the presence of 0.001 mg. per liter the root was about 10% shorter than normal; with 0.0005 mg. per liter the effect was scarcely noticeable.—P. E. SIMOLA, HELENA WÄRE and K. KANNISTO. *Suom. Kemistil.* (B), 10 (1937), No. 12, 36; through *Chimie & Industrie*, 40 (1938), 656. (A. P.-C.)

**Cell-Wall Constituents of Soybean. I. Embryo of the Seed.** A scheme for the isolation of the constituents of the cell wall of the embryo is given.—SIUIKU SASAKI and YOSIMASA YAMASITA. *J. Agr. Chem. Soc. Japan*, 14 (1938), 1257; through *Chem. Abstr.*, 33 (1939), 6903. (F. J. S.)

**Colchicine and Its Place in Fruit Breeding.** The chromosomes and how they act, the chromosomes numbers in cultivated fruits, and the relation of chromosome number to a breeding program with especial reference to colchicine are discussed.—B. R. NEBEL and M. L. RUTTLE. *N. Y. Agr. Expt. Sta. Circ.* (Geneva), 183 (1938), 1; through *Chem. Abstr.*, 33 (1939), 6903. (F. J. S.)

**Growth Substances—Preliminary Experiments with.** The $p_H$ of heteroauxin solutions is a factor not yet taken into account in growth factor analysis. This factor cannot be neglected.—A. A. SWARTELÉ. *Natuurw. Tijdschr.*, 21 (1939), 9; through *Chem. Abstr.*, 33 (1939), 6910. (F. J. S.)

**Hormones for Blossoming.** From the general negative results of tests with plants tied close to their cut surfaces but not overgrown, it follows that the blossoming hormones are difficult to transport. They can be extracted from the plant, are soluble in water, and can be preserved only to a limited extent in lanolin paste. These pastes promote blossoming in contrast to heteroauxin and yeast extract.—K. OBSIL. *Planta*, 29 (1939), 468; through *Chem. Abstr.*, 33 (1939), 6905. (F. J. S.)

**Insecticidal Washes—Combined. Phytocidal Properties of Petroleum Oil Sprays Alone and in Combination with Lime-Sulfur.** Acid and solvent refined oils having the same proportions of unsulfonatable matter exhibit the same phytocidal properties. Combined washes of petroleum-sulfite lye, lime-sulfur and nicotine cause no foliage injury when applied at petal fall to apple varieties which are not sensitive to sulfur. Incorporation of oil emulsion did not lower the efficiency of the lime-sulfur against apple scab. Oil emulsion caused no appreciable injury to black currants at tight cluster stage or to plums at petal fall.—H. G. H. KEARNS,

R. W. MARSH and H. MARTIN. *Ann. Rept.* (1937), *Agric. Hort. Res. Sta., Long Ashton*, (1938), 65–77; through *J. Soc. Chem. Ind.*, 57 (1938), 1473. (E. G. V.)

**Mineral Nutrition of Plants.** This review covers absorption and accumulation of salts by cells, trace-element nutrition and nitrogen nutrition.—J. W. SHIVE and W. R. ROBBINS. *Ann. Rev. Biochem.*, 8 (1939), 503; through *Chem. Abstr.*, 33 (1939), 6911. (F. J. S.)

**Provitamin D—Vegetable.** The provitamin D content of various plant sterols is given. Ergosterol was isolated and identified from cotton seed oil and scopolia root sterols, and in both cases proved to be identical with the provitamin.—A. WINDAUS and F. BOCK. *Hoppe-Seyler's Z. Physiol. Chem.*, 250 (1937), 258–261; through *Chimie & Industrie*, 40 (1938), 532. (A. P.-C.)

**Vitamins A, $B_1$ and C—Formation of, in Lemna Grown in the Absence of Organic Matter.** *Lemna* grown in inorganic solutions completely free from living microörganisms and organic matter: (1) cured xerophthalmia and caused increase in weight of rats which had been restricted to a diet deficient in vitamin A, (2) restored muscular control and normal growth to rats restricted to a diet deficient in vitamin $B_1$ and (3) when tested by iodine and by 2,6-dichlorophenolindophenol was shown to contain vitamin C. *Lemna* grown in the presence of organic matter and microörganisms contained less vitamin $B_1$ than those grown with inorganic matter only. Drying and storage decreased the vitamin content of *Lemna*. An attempt to use the fly, *Drosophila melanogaster*, instead of rats was unsuccessful.—N. A. CLARK, B. H. THOMAS and E. E. FRAHM. *Iowa State Coll. J. Sci.*, 13 (1938), 9–16; through *Chem. Abstr.*, 33 (1939), 1779. (F. J. S.)

**Vitamin C. I. Content of Various Flowers and Leaves.** Vitamin C is extracted by acetic acid, coloring matter removed by fuller's earth, and vitamin C determined by titration with 2,6-dichlorophenolindophenol. Flowers and leaves contain large amounts of vitamin C, *viz.*, more than is present in citrus fruits. Petals contain more vitamin C than pistils, stamens and calices, and red and violet flowers generally contain more dihydroascorbic acid than do white or yellow flowers. Young wistaria leaves contain much more vitamin C than old leaves. Green tea contains more vitamin C than black tea. *Amaranthus tricolor* L. contains large amounts of the vitamin and there is a relationship between the amounts of vitamin C and chlorophyll.—HISATERU MITUDA. *J. Agr. Chem. Soc. Japan.*, 14 (1938), 1228; through *Chem. Abstr.*, 33 (1939), 6913. (F. J. S.)

## CHEMISTRY

### GENERAL AND PHYSICAL

**Binary Liquid Systems—Viscosity of Non-Ideal.** An equation on the lines of Kendall and Munroe's cube root equation has been proposed and shown to work as satisfactorily as other equations on eleven binary liquid systems whose $\eta$-c curves either sag or show maxima or minima.—M. K. SRINIVASAN. *J. Indian Chem. Soc.*, 16 (1939), 305. (F. J. S.)

**Gum Acacia Solutions—Osmotic Pressure of.** The colloid osmotic pressure of several samples of 6% acacia in 0.9% sodium chloride solution was determined to be 246 to 260 mm. $H_2O$ at 20° C. This value is approximately the same as the average colloid osmotic pressure of human sera ranging in protein concentration from 6 to 8%, namely 276 mm. $H_2O$.—GEORGE SASLOW. *Proc. Soc. Exptl. Biol. Med.* 40, (1939) 277. (A. E. M.)

**Radium Exposure Meter.** The meter for radium exposure described in this article is a modification of a portable Geiger-Müller counter unit with a range of sensitivity that is suitable for indicating when the tolerance dosage for gamma-ray exposure has been exceeded. A milliammeter indicates the actual exposure in roentgens per day, and a light and buzzer are energized when the exposure exceeds the equivalent of 0.1 roentgen per day. This alarm arrangement is particularly important in handling radium, since it reveals at once when the safe limits of exposure have been exceeded. It has been found of help in ascertaining the effectiveness of lead screening arrangements and storage safes. Where large quantities of radium are in constant use, unsafe conditions may frequently pass unnoticed for a considerable time in the absence of some provision for their detection. This device is of great help in training technicians to follow safety procedures by warning them immediately of unsafe conditions, as far as general exposure is concerned. The device works from a simple alternating-current outlet and will operate continuously. It may be transferred readily to any location where a test of exposure is desired.—LEON F. CURTISS. *J. Research Natl. Bur. Standards*, 23 (1939), 479. (F. J. S.)

**Synthetic Resins—Adsorptive Properties of. III.** The adsorption of homologous series of mono- and dibasic aliphatic acids by acid and alkali-condensed phenolic resins and by an amino-resin has been studied. In acid-condensed phenolic resins, the adsorption in a homologous series increases with increase in molecular weight, while in alkali-catalyzed phenolic resins and amino-resins the order of adsorption is reversed. The adsorption of substituted acetic acids by an amino-resin has also been determined and the influence of the various substituents on adsorption studied. The introduction of acidic groups increases adsorption, while that of basic groups decreases it. The effect of the amino group is much more pronounced than that of hydroxyl group.—S. S. BHATNAGAR, A. N. KAPUR and M. S. BHATNAGAR. *J. Indian Chem. Soc.*, 16 (1939), 261. (F. J. S.)

**Wool—Electrophoretic Studies of.** A new investigation of the electrophoretic properties of wool shows that phthalate ion, used in buffers in earlier work, exhibits a specific ion effect, and shifts the isoelectric point to lower $p_H$ values. In acetate buffers, the isoelectric point of wool scales and cortical cells was found to be at $p_H$ 4.5. Samples of ground or powdered wool show an isoelectric point at $p_H$ 4.2. Much of the confusion which exists concerning the location of the isoelectric point has arisen from the assumption that the isoionic and isoelectric points are identical. The significance of both of these points in wool processing is discussed.—ARNOLD M. SOOKNE and MILTON HARRIS.—*J. Research Natl. Bur. Standards*, 23 (1939), 471. (F. J. S.)

**X-Ray Studies of Compounds in the System PbO–$SiO_2$.** X-ray diffraction powder patterns were made on various compositions in the system PbO–$SiO_2$ in order to check the presence of certain reported compounds. It was found that three binary compounds exist: PbO.$SiO_2$ (same as the mineral alamosite), 2PbO.$SiO_2$ and 4PbO.$SiO_2$. The latter occurs in at least two polymorphic forms. The powder patterns of the alpha and beta forms of PbO are also given.—HOWARD F. MCMURDIE and ELMER N. BUNTING. *J. Research Natl. Bur. Standards*, 23 (1939), 543. (F. J. S.)

### ORGANIC

#### *Alkaloids*

**Alkaloids in Toxicological Analysis—Method for Extracting.** An investigation was undertaken to find some method that would eliminate the most

serious defects of the methods that have been in use. The most widely accepted methods are based fundamentally on the precipitation of protein with ethyl alcohol. Newer methods use trichloracetic acid. The present experimental work combined precipitating powers of ethyl alcohol and trichloracetic acid. Procedure is given in detail, also a list of alkaloids tested and the best organic solvents. The method was also tested to determine smallest amount of morphine which could be extracted.—CHARLES O. WILSON and L. W. RISING. *J. Am. Pharm. Assoc.*, 28 (1939), 146. (Z. M. C.)

**Alkaloids of Groundsel. IV. Alkaloids of Senecio Vulgaris. Degradation of Senecionine.** Senecionine extracted from *Senecio vulgaris* is hydrolyzed by alkalies into retronecine, $C_8H_{13}NO_2$, and senecic acid, $C_{10}H_{14}O_4$. Hydrogenation of retronecine yields retronecanol, $C_8H_{15}NO$, which was obtained as pure crystals. Dehydration of this compound gives an unsaturated base identical with heliotridene obtained by degradation of the alkaloid heliotrine. This whole group of compounds is derived from a single heterocyclic nucleus, heliotridane, $C_8H_{15}N$. They form a natural class, the members of which are differentiated by the arrangement of the hydroxyls in the nitrogenated nucleus and by the nature of the esterifying acids.—L. KONOWALOWA and A. OREKHOFF. *Bull. Soc. Chim. France*, 4 (1937), 1285–1290; through *Chimie & Industrie*, 40 (1938), 526. (A. P.-C.)

**Alkaloids of Salsola Richteri. III. Optically Active Salsoline and Separation of Two New Alkaloids.** In addition to salsoline, $C_{11}H_{15}NO_2$, two new alkaloids were separated from *Salsola Richteri:* (1) salsolidine, $C_{12}H_{17}NO_2$, is levo-rotatory, and has been identified as the *o*-methyl ester of *l*-salsoline; (2) salsamine, obtained in such small quantity that its composition could not be determined, melts at about 155° to 157° C., and gives crystalline picrate and picrolonate.—N. PROSKURNINA and A. OREKHOFF. *Bull. Soc. Chim. France*, 4 (1937), 1265–1271; through *Chimie & Industrie*, 40 (1938), 526. (A. P.-C.)

**Ecgonine Bases—Determination of, in Crude Cocaine and Coca Leaves.** A report of the methods devised by the Geneva Committee. The following methods are given and discussed: *Crude Cocaine:* (A) Sampling; (B) Examination of Crude Cocaine, (1) Determination of moisture; (2) Determination of the ecgonine content; (3) Determination of the acids combined with the alkaloids. *Coca Leaves:* (1) Preparation of the sample; (2) Determination of moisture; (3) Determination of the ether-soluble ecgonine alkaloids; (4) Determination of acids combined with the alkaloids.—L. VAN ITALLIE. *Pharm. Weekblad*, 75 (1938), 909. (E. H. W.)

**Ergot—Review of, in Netherland Indies.** A review of the hitherto discovered pure alkaloids in ergot and a short description of their pharmacological and therapeutic activity is given. The tendency to decomposition of the ergot alkaloids causes a low degree of stability of the galenical preparations. The considerable qualitative and quantitative differences in alkaloidal content necessitate standardization. At present there are no satisfactory methods for the determination of the alkaloidal content, the former methods having proved insufficient by the discovery of new alkaloids with qualitative as well as quantitative deviating activity. For the tropics it has been found that Gynergen, which keeps for years is adequate. It seems that Neo-gynergen and Basergin can meet the requirements also. As the tenability of these preparations can be ascertained with the naked eye, the ergot problem (for Netherland Indies) seems to be solved.—H. T. LIEM. *Pharm. Tijdschr. voor Nederl. Indie*, 15 (1938), 172, 221. (E. H. W.)

**Morphine—Quantitative Determination of, in Opium. I.** Modification of Stucki's extraction method, involving the use of a 3:1 chloroform-isopropyl alcohol mixture as solvent. The solvent recovered after the determination can be re-used twice; after the third recovery, isopropyl alcohol must be added to bring the specific gravity to 1.314. —S. ICHIKAWA and M. ITO. *J. Pharm. Soc. Japan*, 57 (1937), 103–106; through *Chimie & Industrie*, 40 (1938), 108. (A. P.-C.)

**Morphine—Quantitative Determination of, in Opium. II.** In the modified Stucki extraction method it is possible to use, instead of the originally proposed solvent (mixture of chloroform and isopropyl alcohol) a mixture of 3 volumes of chloroform and 1 volume of absolute or 93% ethanol. The coloring matter which frequently accompanies the morphine interferes with the titration and reduces the sharpness of the methyl red end point. This can be overcome by using methylene blue as indicator. Chloroform-methanol mixtures are not suitable for the extraction of morphine.—S. ICHIKAWA and W. YAMAGUCHI. *J. Pharm. Soc. Japan*, 57 (1937), 106–107; through *Chimie & Industrie*, 40 (1938), 108. (A. P.-C.)

**Sulfanilamide Addition Compounds with Cinchona Alkaloids.** Reports on the chemotherapeutic action of sulfanilamide compounds on malaria have been both favorable and unfavorable. A number of citations are given. Recently it has been found that sulfanilamide will form compound salts with alkaloids of cinchona similar to quinine and urea hydrochloride. Directions are given for preparation of these salts and about thirty of them are listed, giving melting point, optical rotation and color. Some of them have been tested pharmacologically on mice and canaries. Several of the compounds indicate promising chemotherapeutic activity against experimental streptococcus infections when given in proportion to sulfanilamide content. None of those tested were effective in chemotherapy of staphylococcus infections or of human influenza virus infections in Swiss mice. The compounds tested in chemotherapy of malaria-infected canaries have been active only in proportion to their content of cinchona alkaloid.—E. H. STUART, H. M. POWELL, C. L. ROSE and F. E. BIBBINS. *J. Am. Pharm. Assoc.*, 28 (1939), 90. (Z. M. C.)

**Valerian—New Alkaloid of.** The therapeutic value of valerian root has been variously attributed to its oil, to its alkaloids and to its taste and smell. The nature and composition of its oil are well known; alkaloids have been isolated from the drug, but their chemistry and action are still subjects for investigations. Previous work on valerian was done on the fresh root. The authors, however, worked on the dried official root. The investigation, which is still in progress, has shown that there is a water-soluble base possessing physiological activity present in appreciable quantity in the official dried valerian root; and that the alkaloids described by previous investigators as found in the stabilized fresh root, and soluble in ether and chloroform respectively, are not present in the dried drug.—J. J. BLACKIE and D. RITCHIE. *Pharm. J.*, 142 (1939), 299. (W. B. B.)

*Essential Oils and Related Products*

**Anise, Caraway, Celery Fruit, Coriander, Cubeb and Fennel—Volatile Oils of.** The experimental work included the total volatile matter % w/w, oil by the Clevenger method % w/w, water by the toluene method % w/w and oil by the oven method % w/w (Chart I) and determinations of specific gravity, refractive index, optical rotation, boiling range, congealing points, acid and ester number for the oils listed above (Chart II). Results indicate

that the Clevenger method agrees closely with the oven method which runs a little higher. The Clevenger method seems to be more adaptable as a means of detecting substandard or substituted drugs and for the determination of the volatile oil content.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 7 (1939), 231–233. (H. M. B.)

**East African Lemongrass Experiments.** The lemongrass oil of commerce is derived mainly from *Cymbopogon flexuosus* Stapf and is largely East Indian in origin. *Cymbopogon citratus* Stapf also yields lemongrass oil but with slightly different characteristics; insolubility in 70% alcohol being the chief difference. The results of the experiments are tabulated. ANON. *Perfumery Essent. Oil Record*, 30 (1939), 258. (A. C. DeD.)

**Essential Oils in Alcoholic Liquids.** A rapid method of determination is given.—G. A. ROSENBERGER. *Perfumery Essent. Oil Record*, 30 (1939), 133. (A. C. DeD.)

**Essential Oils—Moroccan.** Conditions for production are described. The following table of constants and properties is given:

| | Oil | Lots | *d* | Optical Rotation | Index Refraction | Yield |
|---|---|---|---|---|---|---|
| 1 | Pennyroyal | 3 | 0.941–0.947(15°) | +20°18′–+22°55′ | 1.4872–1.4880(20°) | 1.25–2% Pulegone 89–97% |
| 2 | Rosemary | 1 | 0.905(20°) | +0°14′ | 1.4690(20°) | 0.3–0.4% Borneol 10.3% ester 1.6% |
| 3 | Myrtle | 2 | 0.900–0.912(15°) | +24°40′ | 1.4669–1.4671(20°) | 0.2–0.25% Sapn. No. 49.5–58.8 |
| 4 | Rue | 1 | 0.833(15°) | +0°22′ | 1.4301(20°) | 0.75–1.2% Ketone 96% |
| 5 | Fennel | 1 | 0.879(20°) | +57°50′ | 1.4689(20°) | 0.5–0.7% |

The solubilities of the various oils in alcohol of various dilutions are given—ERNEST GUENTHER. *Drug and Cosmetic Ind.*, 42 (1938), 439–443. (H. M. B.)

**Essential Oils of White and Brown Mustard—Determination of.** When myrosin acts upon sinigrin from black or brown mustard seed, glucose, allyl isothiocyante (I) and potassium acid sulfate are formed; from white mustard seed, glucose, *p*-hydroxybenzylisothiocyanate (II) and the acid sulfate of an aliphatic base, sinapin ($C_{16}H_{24}NO_5$-$HSO_4$) is formed. While I is stable toward steam distillation II is easily decomposed. A determination of the sulfate content of mustard flour both before and after hydrolysis of the glucoside can be used as an indirect determination of the glucoside. *Method*—(A) *Before hydrolysis.*—Weigh 4 Gm. of mustard flour into a beaker and stir with 10 cc. of saturated solution of mercuric chloride. Add 60 cc. of water and after 5 minutes filter into a 100-cc. flask. Wash the residue with water to make about 90 cc. of filtrate. Add to the filtrate 2 cc. of 6*N* ammonium hydroxide and 0.2 Gm. of light magnesium carbonate, make up to 100 cc. and filter after 0.5–1.0 hour through a dry filter. Determine the sulfate as described below. (B) *After hydrolysis.*—Mix 4 Gm. of mustard flour with 70 cc. of water to form a smooth paste and allow to stand at room temperature (16°–18° C.) for 1.5 hours. Filter into a 100 cc. flask and wash as above until the filtrate measures 90 cc. Add 1 cc. of 6*N* ammonium hydroxide, 0.2 Gm. of magnesium carbonate, make up to the mark and filter after 0.5 to 1.0 hour. Acidify 25 cc. of the filtrate with 1 cc. of 2*N* hydrochloric acid and add, slowly, 20 cc. of a solution of benzidine hydrochloride (4 Gm. benzidine in 200 cc. of water and 50 cc. of 2*N* hydrochloric acid). After two minutes add 40 cc. of acetone and filter after 30 minutes on an asbestos mat in a glass filter crucible. Wash with 25 cc. of acetone then transfer the precipitate and the asbestos to a flask with 50 cc. of water. Add 10 cc. of *N*/10 sodium hydroxide solution and titrate the excess of sodium hydroxide at the boiling point of the solution with *N*/10 sulfuric acid using methyl red indicator. The difference between the results of (A) and (B) represents the sulfate equivalent to either I or II or to sinigrin or sinalbin. 1 cc. of *N*/10 sodium hydroxide = 0.0048 Gm. $SO_4$; = 0.00495 Gm. I; = 0.00825 Gm. II; = 0.0198 Gm. sinigrin ($C_{10}H_{16}NS_2KO_9$); = 0.0367 Gm. sinalbin ($C_{30}H_{42}N_2S_2O_{15}$). A discrepancy is noted between the calculated amount of I obtained by this method and the amount of I obtained by steam distillation. An explanation is offered that the reaction by which sulfate is split from sinigrin goes to completion but that the action of the glucosidase in myrosin reaches an equilibrium when about 66% of the glucoside has been hydrolyzed. This has been confirmed by the work of Gros and Pichon [*J. Pharm. Chim.*, 19 (1934), 249].—R. C. TERRY and J. W. CORRAN. *Analyst* 64 (1939), 164. (G. L. W.)

**Iodine Number of Oil of Peppermint.** Preliminary experiments indicate that the iodine number may prove valuable in the examination of peppermint oil. It was found that oils with high iodine numbers had low menthol (I) and high menthone (II) contents, whereas samples with normal content of I and II have iodine values which vary from 62 to 72. The ratio of the iodine number to the combined ester and II in normal samples is practically constant, while other samples show lower ratios. Additional data are required before a range for the iodine values can be established.—L. H. BALDINGER. *Proc. Indiana Acad. Sci.*, 48 (1939), 107–109; through *Chem. Abstr.* 33 (1939), 7043. (F. J. S.)

**Volatile Oils—Production of, in Northern Africa.** A discussion with illustrations.—BERNARD ANGLA. *Riechstoff-Ind. u. Kosmetik*, 14 (1939), 23–28. (H. M. B.)

*Glycosides, Ferments and Carbohydrates*

**Cerberin—Constitution of.** Cerberin, a glucoside extracted from the seed of *Apocyanaceæ Cerbera Odollam* (Gaertner), $C_{26}H_{44}O_8$, is an unsaturated $\beta,\gamma$-lactone; it has a sterol structure and contains a tertiary hydroxyl group in $C_{14}$ and a secondary hydroxyl group in $C_3$. On hydrolysis it gives one molecule of cerberigenin and one molecule of cerberose, $C_6H_{12}O_5$.—T. MATSUBARA. *Bull. Chem. Soc. Japan*, 12 (1937), 436–441; through *Chimie & Industrie*, 40 (1938), 528. (A. P.-C.)

**Cholinesterase—Variation of, in the Brain and Spine of Tetanized Animals.** The cholinesterase content is increased in the spinal marrow and in a higher degree in the cortical part of the brain of animals poisoned with tetanus toxin.—G. PIGHINI. *Biochim. terap. sper.*, 26 (1939), 226. (A. C. DeD.)

**Copper-Protein Possessing Tyrosinase Activity—Crystalline.** A crystalline material was obtained from the aqueous extract of wild mushroom which may be phenol oxidase, or closely related to it. The crystals were six-sided plates and undoubtedly belonged to the hexagonal system. They were insoluble in water, dilute acids and salt solutions, but

soluble in an aqueous solution of secondary sodium phosphate. This solution was active in promoting the aerobic oxidation of *p*-cresol and catechol. Analysis showed a copper content of 0.25 and 13.6% nitrogen.—H. R. DALTON and J. M. NELSON. *J. Am. Chem. Soc.*, 60 (1938), 3085. (E. B. S.)

**Glucoside of Hydrangenol.** The glucoside of hydrangenol can be obtained by extracting hortensia flowers with hot alcohol. The formula of the glucoside is $C_{21}H_{22}O_9$; by hydrolysis it decomposes into hydrangenol and glucose. In alcoholic solution it does not give any color with ferric chloride. When treated in methanol solution with diazomethane it gives a colorless monoethyl ester, hydrolysis of which gives the monomethyl ester of hydrangenol, which gives a violet red coloration with ferric chloride.—Y. UENO. *J. Pharm. Soc. Japan*, 57 (1937), 114–115; through *Chimie & Industrie*, 40 (1938), 108. (A. P.-C.)

**Glucosides—Natural. I. The Constitution of the Glucoside Present in Murraya Exotica.** The glucoside obtained from the air-dried petals of *Murraya exotica* was identified as scopolin (6-methoxy-7-glucosido-coumarin). The "murrayin" of de Vry and Blas (*Z. Chem.* (1869), 310) was probably impure scopolin.—P. K. BOSE and ASIMA MOOKERJEE. *J. Indian Chem. Soc.*, 14 (1937), 489–491; through *Chimie & Industrie*, 40 (1938), 528. (A. P.-C.)

**Phosphoglycerodihydrase—Activity of the Enzymatic System of, on the Funicule of Human Fœtus.** The author has verified that in the funicule of mature human fœtus the presence of the enzymatic phosphoglycerodihydrasic system, which acts as a catalysator on the third reaction of the glycolysis scheme after Embden-Meyerhof, cannot be detected by the usual method of research: this seems to agree with the low value of the quotient,

$$\frac{\text{internal respiration}}{\text{glycolysis}},$$

in this organ.—M. GUISEPPE. *Biochim. terap sper.*, 26 (1939), 215. (A. C. DeD.)

**Saponin of Soya bean.** Four fractions (sapogenins) were obtained from soya bean saponin by hydrolysis and chromatographic adsorption: (1) fraction A, $C_{30}H_{50}O_4$, melts at 311° C.; (2) fraction B, $C_{30}H_{50}O_3$, less soluble in benzene than the preceding, melts at 259° C.; (3) fraction C, $C_{30}H_{50}O_2$, melts at 239° C.; (4) fraction D, $C_{30}H_{50}O$, melts at 298° C. All four sapogenins give Liebermann's color reaction.—E. O. CHIAI, K. TSUDA and S. KITAGAWA. *Ber. deut. chem. Ges.*, 70 (1937), 2083–2902; through *Chimie & Industrie*, 40 (1938), 525. (A. P.-C.)

*Other Plant Principles*

**Aloin—Action of Alkaline Hypobromite on.** The author carried out a successful technic in effecting the decomposition of barbaloin by means of alkaline hypobromite.—E. J. SCHORN. *Pharm. J.*, 142 (1939), 300. (W. B. B).

**Ambergris—Notes on.** A brief outline including the origin, properties and uses and description of ambergris is given.—F. R. MORRISON. *Australasian J. Pharm.*, 20 (1939), 180. (A. C. DeD.)

**Brassicasterol—Empirical Formula and Hydrogenation of.** Brassicasterol is a phytosterol isolated from rapeseed oil. The empirical formula was obtained from analyses of the tetrabromide acetate and propionate. Experience has shown that combustions of bromides do not give analyses sufficiently accurate to distinguish between homologs. Analytical results of brassicasteryl dinitrobenzoate and brassicastyl dinitrobenzoate indicate an empirical formula that is identical with that of stigmasterol. Catalytic hydrogenation of brassicasterol gave a saturated sterol not identical with stigmasterol. Hence it was evident that the difference between the two does not lie in the position of a double bond, but in the carbon skeleton.—E. FERNHOLZ and H. E. STAVELY. *J. Am. Chem. Soc.*, 61 (1939), 142. (E. B. S.)

**Emodin from Chrysarobin—Preparation of.** A previous report showed that chrysophanic acid can be obtained from chrysarobin by a reducing action which converts dianthrones to anthrones, refluxing with hydrobromic and acetic acids to demethylate the emodin-anthrone-monomethyl ether, acetylating and crystallizing the chrysophanic acid-anthranol tri-acetate from acetic acid. Chrysophanic acid is prepared by oxidation followed by saponification. Chrysarobin contains reduction products of emodin monomethyl ether so residual material contains emodin anthranol tetra-acetate. This was oxidized in acetic acid solution and the oxidation product saponified. This was extracted with sodium carbonate solution and the extract acidified. A quite pure product, ranging from 16 to 31% of the chrysarobin, resulted.—JOHN H. GARDNER. *J. Am. Pharm. Assoc.*, 28 (1939), 143. (Z. M. C.)

**Isoquanine from the Croton Bean.** Isoquanine has been isolated from the croton bean as the aglycone fragment of the glucoside 2-oxy-6-aminopurine-*d*-riboside. Unlike quanine, it is not convertible to xanthine by reaction with nitrous acid. Xanthine was obtained from isoquanine in good yield by the action of HCl which affords an unusual example of the deamination of a compound resistant to the action of nitrous acid. The conversion of naturally occurring isoquanine to xanthine is confirmation for its accepted structure, 2-oxy-6-aminopurine. Isoquanine has been found to crystallize from water in large rosettes, containing one and one-half molecules of water of crystallization.—J. R. SPIES. *J. Am. Chem. Soc.*, 61 (1939), 350. (E. B. S.)

**Meliaceæ—Some Reputed Febrifuge Plants of the.** The barks of *Khaya Senegalensis* Juss. and *Pseudocedrela Kotschyi* Harms are used by the native Senegalese in the forms of infusions and decoctions as febrifuges, tonics, antidysenterics, antisyphilitics, abortives, etc. Alkaloids are absent, and the bitter principles present were isolated by the following procedure. The dried, bruised bark is extracted with several portions of boiling 90% alcohol; the alcoholic extracts are filtered while hot, the filtrates combined and concentrated under reduced pressure to about 200 cc. for each 250 Gm. of dried bark. The extract is clarified with solution of lead subacetate, and as many Gm. of anhydrous sodium sulfate are added as the number of cc. of the clarifying agent used. A paste is made, with the aid of a little calcium carbonate, and is dried at 37°, then it is powdered in a mortar. The powder is extracted with several portions of boiling anhydrous ethyl acetate. The extract is concentrated (about 30 cc. for each 250 Gm. of dried bark) and mixed with four to five volumes of petroleum ether (boiling below 45°). The flocculent white precipitate which forms immediately is removed by centrifuging and is dried in a vacuum over phosphoric anhydride. From *K. Senegalensis* was obtained about 4 Gm. (per 1000 Gm. of dried bark) of a yellowish white powder, non-hygroscopic, very bitter and melting at 157° after purification from benzene. From *P. Kotschyi* was isolated 2 Gm. (per 1000 Gm. of dried bark) of a new bitter principle; yellowish white, and melting at 210° after purification from benzene and methyl alcohol. Using light magnesium oxide as clarifying agent raised the yield to 10 Gm. per 1000 Gm. of dried bark. The root bark of *Trichilia emetica* and the leaves and twigs of *Ekebergia Senegalensis* were treated as above and yielded analo-

gous bitter substances. All the substances exhibited similar solubilities: very slightly soluble in cold water, more soluble in hot water, soluble in alkali solutions, alcohol, chloroform, acetone,ethyl acetate, very slightly soluble in ether, insoluble in petroleum ether. The substances are shown to react as unsaturated compounds, and give positive tests for pentoses. Hydrolysis increases the reducing sugars only slightly. The preparations and bitter substances show low toxicities. The first two bitter principles (0.01 Gm./Kg.) caused slight hypotension on intravenous injection into dogs; and they caused a lowering of the temperature when injected into guinea pigs. The normal temperature was lowered 0.5° one-half hour after subcutaneous injection of 0.05 Gm. per Kg. of the bitter principle in a 5% solution in 70% alcohol, diluted with an equal volume of saline solution just before injection. If 0.003 Gm. of dinitrophenol is administered to the guinea pig followed immediately by intravenous injection of 0.05 Gm. of the bitter principle per Kg. the temperature will be 1° lower than that of the control at the end of one hour. Intraperitoneal injection causes a more marked lowering of the temperature.—R. PARIS and H. MIGNON. *Bull. sci. pharmacol.*, 46 (1939), 104–108. (S. W. G.)

**Menthols.** Eight forms or combinations were studied: (1) using forty-three subjects and observing the intensity, rapidity of development and duration of hyperemia, a burning or smarting sensation, a sensation of coolness and partial anesthesia or numbness and it was observed that U. S. P. menthol from the oil of peppermint, synthetic U. S. P. menthol or *l*-menthol and liquid menthol consisting of 66% *l*-menthol, 16% *d*-neomenthol and 16% *d*-isomenthol produced, in most cases, a more rapidly appearing intense and lasting sensation of coolness followed by a somewhat slighter degree of numbness than the other five products; the smarting sensation and hyperemia produced were slightly less intense and lasting and developed somewhat more slowly than the other samples; in no cases did local irritation pass beyond the rubifacient stage; young blond females are the most susceptible; and (2) sixteen subjects of both sexes were treated with a 0.5% solution of menthol in liquid petrolatum (light), a 0.2% solution in the same solvent and a 0.1% solution in physiological solution of sodium chloride and applied by means of a dropper or atomizer; the 0.5% solution in oil was irritating to the nasal and mucous membranes of all subjects although the three menthols mentioned in (1) appeared to be the least irritating; 0.2% solution in oil and the 0.1% aqueous solution of the three menthols were non-irritating whereas most of the others were irritating. Toxic symptoms in healthy albino rats appeared more slowly with the three menthols in (1) and in testing on rabbits little observable differences in toxicities were noted in all forms.—H. B. GLASS and A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 44 (1939), 289–291. (H. M. B.)

**Methylchavicol—Identification of, in American Gum Spirits of Turpentine.** From investigations it was possible to obtain physical and chemical evidence that fractions of gum spirits of turpentine boiling above those of the pinenes contain considerable amounts of methylchavicol (4-methoxyallylbenzene). The difference in odor between highly purified turpentine and American gum spirits can be partly attributed to the presence of phenol ethers.—T. HASSELSTROM and B. L. HAMPTON. *J. Am. Chem. Soc.*, 60 (1938), 3086. (E. B. S.)

**Plant Germs—Constituents of. II.** There was isolated from wheat germ oil a new substance, neotocopherol, $C_{29}H_{50}O_2$ or $C_{28}H_{48}O_2$, which is related to Evans and Emerson's $\beta$- and $\gamma$-tocopherol. Tserevitinov's reaction revealed the presence of an active hydrogen atom (hydroxyl group). The molecule also contains 27.6% methoxyl.—P. KARRER, H. SALOMON and H. FRITZSCHE. *Helv. Chim. Acta*, 20 (1937), 1422–1426; through *Chimie & Industrie*, 40 (1938), 533. (A. P.-C.)

**Salicin and Populin—Determination of, in Different Varieties of Salix.** To determine salicin (*d*-glucoside of *o*-hydroxybenzyl alcohol), polarize the purified decoction of *Salix* bark, hydrolyze the salicin by means of emulsin, and polarize again; the difference observed in the readings corresponds to the glucose formed, from which the salicin content may be calculated. To determine populin in the same liquid, after determination of the salicin add concentrated hydrochloric acid to hydrolyze the populin, heat for 1 hour on the water bath, neutralize with ammonia and polarize. When populin is to be determined, before carrying out the salicin determination the sucrose should be removed by treatment with invertase.—A. KUHN and G. SCHÄFER. *Pharm. Ztg.*, 82 (1937), 949–951; through *Chimie & Industrie*, 40 (1938), 525. (A. P.-C.)

***l*-Sesamine in Asarum Sieboldi Miquel. Var. Seoulensis Nkai.** From the ground drug there was obtained *l*-sesamine by extraction with hot alcohol, steam distillation of the extract and extraction of the residue with ether. By dissolving the ether extract in alcohol, defecating, filtering, neutralizing the filtrate with sodium hydroxide and crystallizing, there is obtained a mixture of *l*-asarnine and *l*-sesamine. Final separation is effected by extraction with ether and repeated recrystallization in a mixture of ether and methanol.—T. KAKU and H. RI. *J. Pharm. Soc. Japan*, 57 (1937), 184–185; through *Chimie & Industrie*, 40 (1938), 528. (A. P.-C.)

**Tinospora Crispa Miers—Bitter Principle of.** A new procedure was followed to isolate the bitter principle, picroretin, from "liana-quinine." The yield obtained by this procedure is 6–8 Gm. per Kg of dried plant. The picroretin was obtained as a white, non-hygroscopic powder, and was identified by chemical reactions (decoloration of permanganate, reduction of ammoniacal silver nitrate, fixation of hydrogen, acetylation, production of protocatechuic acid by alkaline fusion, etc.). The compound was shown to be a heteroside, difficultly hydrolyzed by acids and probably having a methylpentose in the molecule. The aglycone gives a positive Liebermann reaction.—R. PARIS and L. BEAUQUESNE. *Bull. sci. pharmacol.*, 46 (1939), 73–77. (S. W. G.)

*Fixed Oils, Fats and Waxes*

**Cashew Nuts—Oil from Shells of Roasted.** The shells contain from 18–20% of an oil, readily extractable by solvent benzene (boiling point 90–110°), which can be used for protective coatings and varnishes. The dry film-forming properties of the oil with and without the incorporation of driers have been investigated. Heating or introduction of a drier, particularly copper, increased the rate of drying, which varied for different surfaces. The dried films of the roasted shell oil, as well as those of the acetylated oil, were resistant to hydrochloric acid in all concentrations and to other acids in dilute form, as well as to mild alkalies and both hot and cold water and alcohols. M. S. PATEL and N. M. PATEL. *J. Indian Chem. Soc.*, 1 (1938), 83–90; through *J. Soc. Chem. Ind.*, 11 (1938), 1322. (E. G. V.)

**Castor Oil—Drying Oils from.** Castor oil is heated with 1–2% of ascanite at 220–230° for 1 hour, to yield an oil which dries more rapidly than does linseed oil; it yields, however, a slightly sticky film owing to traces of ricinoleic acid.—A. ZINOVIEV. *Maslob. Zhir. Delo.*, No. 4 (1938), 32–34; through *J. Soc. Chem. Ind.*, 57 (1938), 1445. (E. G. V.)

**Fatty Acids—Studies on the Chemistry of the. The Purification of Linolenic Acid by Fractional Crystallization of the Fatty Acids of Linseed and Perilla Oils, with Observations on the Properties of This Acid Prepared by Crystallization and by Debromination.** Linolenic acid is the principal unsaturated fatty acid of the vegetable drying oils and has been shown to replace linoleic acid as an essential fatty acid. The acid was obtained from linseed and perilla oils and was purified by fractional crystallization from acetone. The final filtrate contained 75% linolenic acid which was crystallized from petroleum ether. This raised the purity to 88%, assuming the impurity to be only linoleic acid. The possibility of the multiple nature of linolenic acid is discussed along with the application of the hexabromide number as a method of estimating the amount of linolenic acid present in fatty acid mixtures.—G. Y. SHIMOWARA and J. B. BROWN. *J. Am. Chem. Soc.*, 60 (1938), 2734. (E. B. S.)

**Grape Seed Oil—Argentine.** The oil had *d* 0.9255, $n_D^{19}$ 1.47649, $n_D^{24}$ 1.46828, saponification value 189.57, iodine value 133.72, Reichert-Meissl value 0.537, fusion point −10.5°.—R. ROUZAUT. *Rev. Fac. Quim. Ind. Agric.*, 3 (1936), 192–196; through *J. Soc. Chem. Ind.*, 57 (1938), 1445. (E. G. V.)

**Lard—Study of Rancidification of. III. Action of Vegetable Antioxidants.** The following procedure was used to determine the action of the antioxidants: Place 50 Gm. of fat, containing the antioxidant to be tested in half a Petri dish (16 cm. diam.), heat to 60° on a hot plate, keep at this temperature and place at a distance of 25 cm. from an ultraviolet ray lamp. After oxidation determine the peroxides by Fourmont's method and express the results in mg. of oxygen fixed by 100 Gm. of fat. Benzoin retarded peroxide formation, and this action appears to be a function of the resinotanol present. Vanillin, benzoic acid, cinnamic acid and benzyl cinnamate had no effect on the oxidation of the fat. Balsam of tolu, which contains toluresinotanol, acted in the same manner as benzoin. Fat digested with poplar buds (20%) showed less oxidation than fat treated with benzoin. Tannin showed a weaker antioxidant action than benzoin. The authors recommend the use of tolu in place of benzoin for the conservation of fats. Tolu that has been exhausted in the preparation of syrup of tolu may be used, as this retains the antioxidant principle.—F. MORVILLEZ, P. BALATRE and L. PUJO. *J. pharm. chim.*, 29 (1939), 195–202. (S. W. G.)

**Lard—Study of Rancidification of. IV. Antioxidant Action of Phenols.** The same procedure was followed as that used in the determination of antioxidants of vegetable origin. The antioxidant action of phenols in lard at a concentration of 1:1000 was studied. The antioxidant action of the phenols varies as follows, taking the most active, pyrogallol, as equivalent to 100: pyrogallol 100, pyrocatechol 70, hydroquinone 67.5, alphanaphthol 62.1, thymol 24.3, resorcinol 8.1, betanaphthol 0.0, phenol 0.0, phloroglycinol −2.7. The first five of the above phenols are more active agents than benzoin in the prevention of oxidation of fat; but pyrogallol imparts to the fat a yellow tint which is accentuated with increase in temperature, and should not be used in a white preparation. The authors prefer the use of pyrocatechol which gives a white, odorless preparation having the appearance of pure lard. The solution of 1 Gm. of pyrocatechol in 1000 Gm. of lard is prepared without difficulty. The authors suggest that, providing the pyrocatechol does not irritate the skin, benzoin may be replaced by pyrocatechol as a conserving agent in lard preparations.—F. MORVILLEX, P. BALATRE and L. PUJO. *J. pharm. chim.*, 29 (1939), 202–209. (S. W. G.)

**Lettuce Oil—Unsaponifiable Matter of.** The following alcohols from the unsaponifiable matter in lettuce were isolated and identified: ceryl alcohol, and an amyrin-like alcohol. Ergosterol also was detected in the lettuce sterol complex. The sterol-free unsaponifiable matter when subjected to fractional distillation at 0.3 mm. gave a fraction, boiling from 190° to 225° C., which contained substances responsible for absorption bands similar to those of vitamin E concentrate of wheat-germ oil.—A. ICHIBA. *Sci. Papers Inst. Phys. Chem. Research*, 34 (1937), 132–136; through *Chimie & Industrie*, 40 (1938), 534. (A. P.-C.)

**Oil of Ergot of Rye—Chemical Composition of.** The oil contains 98.5% of glycerides and 1% of unsaponifiable matter. The fatty acids present as glycerides are acetic 0.1%, caproic 0.01%, palmitic 30%, stearic 12%, oleic 23%, ricinoleic 34%, linoleic traces. The unsaponifiable portion consists of essential oil, resin, one or more sitosterols, ergosterol and sterols "A" and "C." Alkaloids are absent.—H. VANDERMEULEN. *J. pharm. Belg.*, 21 (1939), 195–197, 213–217, 237–241. (S. W. G.)

**Solanum Nigrum—Composition of the Oil from the Seeds of.** The berries of *Solanum nigrum* are used as a tonic, in heart diseases, fevers, diarrhea, eye diseases, liver and other ailments. The seed oil has a specific gravity of 0.89 and an iodine number of 111.7; it contains 1.4 to 1.6% of unsaponifiable matter. The following unsaturated acids were identified: dihydroxystearic, tetrahydroxystearic, linoleic and oleic; linolenic acid is absent. The following saturated acids were found: palmitic, and stearic. The unsaponifiable gives the reactions of phytosterol.—G. P. PENDSE. *J. Indian Chem. Soc.*, 14 (1937), 367–370; *Chimie & Industrie*, 40 (1938), 525. (A. P.-C.)

*Unclassified*

**Aneurin—Process for the Manufacture of.** 2-Methyl-2-alkoxy-3-chloro-tetrahydrofurane is made to react on 2-methyl-4-amino-5-thioformylaminomethylpyrimidine or on its hydrohalogenides.—PRODUITS ROCHE, S. A. Belg. pat. 428,101, June 30, 1938. (A. P.-C.)

**Antimalarial Compounds—Attempts to Prepare Some New.** Several new dialkylaminoalkyl derivatives of *p*-aminobenzenesulfonamide and some azo compounds were prepared with a view to obtaining antimalarial compounds.—N. S. DROZDOV and V. I. STAVROVSKAYA. *Compt. rend. acad. sci. U. R. S. S.*, 23 (1939), 61–63 (in English); through *Chem. Abstr.*, 33 (1939), 8914. (F. J. S.)

**Antimalarial Compounds—Synthesis of New.** Substances analogous to plasmochin and atebrine were synthesized from lupinine and its derivatives. 6-Methoxy-8-lupinylaminoquinoline was synthesized from chlorolupinane and 6-methoxy-8-aminoquinoline, and 2-methoxy-6-chloro-9-lupinyl-aminocridine from aminolupinane and 2-methoxy 6,9-dichloroacridine. Both compounds are powerful antimalarials of low toxicity. The natural lupinine of *Anabasis aphylla* L. can therefore advantageously replace synthetic 2-amino-5-diethylaminopentane.—I. L. KNOUNIANTS and Z. V. BENEVOLENSKAÏA. *J. Obchtch. Khim.*, 7 (1937), 2930–2933; through *Chimie & Industrie*, 40 (1938), 1146. (A. P.-C.)

**Antimalarial Products—Syntheses in the Realm of.** A comparative study was made of the physiological properties of dialkylaminoalkyl derivatives of 6-methoxy-8-aminoquinolein and of similar derivatives of methoxyaminobenzothiazole, more particularly of (γ-diethylaminopropyl)- and of (γ - diethylamino) - 7 - amino - 5 - methoxy - 2-

benzothiazole. It was observed that, whereas the aminoquinolein derivatives possess well marked therapeutic properties, the corresponding benzothiazole derivatives are completely devoid of such properties in spite of the identity of the substituent groups and of the similarity in physical and chemical properties of quinoleine and benzothiazole. In order that there may be antimalarial action, the molecule must contain a quinoleine nucleus, either condensed or uncondensed.—I. L. KOUNIANTS and Z. V. BENEVOLENSKAÏA. *J. Obchtch. Khim.*, 7 (1937), 2471-2477; through *Chimie & Industrie*, 40 (1938), 534. (A. P.-C.)

**Antispasmodics.** During recent years a number of synthetic compounds have been discovered which exhibit antispasmodic activity. Many of these products are simpler in structure than the natural occurring antispasmodics papaverine and atropine and a few of them appear on the market as substitutes for these alkaloids. Several of them, especially methyl-di-(beta-cyclohexylethyl)-amine, proved to be strong antispasmodics. Although these compounds are distinctly different from papaverine in structure, nevertheless, a relationship between them and a completely hydrogenated papaverine can be established.—F. F. BLICKE and E. MONROE. *J. Am. Chem. Soc.*, 61 (1939), 91. (E. B. S.)

**Azo Dyes—Medicinal.** The solubility of azo dyes of the phenylazodiaminopyridine group is greatly increased when they are alkylated on the pyridine nitrogen, that is, changed to quaternary pyridinium bases. Details are given of the production of a number of these compounds. These derivatives are medicinal compounds. They are relatively nontoxic when administered internally and, being eliminated through the urinary tract, they may be used as urinary antiseptics. They are relatively much more soluble than the unalkylated dyes. They are also useful for local application in the form of ointments, and in aqueous solutions, as wet dressings, irrigations, etc. Their bactericidal power against the cocci group is generally more pronounced than against the coli group. RAEMER R. RENSHAW and EDMOND T. TISZA, assignors to THE PYRIDIUM CORP. U. S. pat. 2,135,293, Nov. 1, 1938. (A. P.-C.)

**Bread—Preparation of, from Banana Starch in Abyssinia.** The preparation of the starch from the sheaths of leaves obtained from trees that have grown for four or five years is described. The procedure followed in preparing the bread is also described. Results of the chemical analysis of the bread are tabulated.—ANON. *Agr. coloniale*, 26 (1938); through *J. pharm. Belg.*, 21 (1939), 270. (S. W. G.)

**Bromine Index of Cinnamic Derivatives.** The method of Volmar and Samdahl, with $SO_2$ instead of $Na_2SO_3$ to remove excess metalloid, was applied to cinnamic acid and certain of its esters. The direct action of silver nitrate on dibromophenylpropionic acid produces a large proportion of $\psi$-bromostyrene in addition to monobromo-cinnamic acids.—LESPAGNOL, HERLEMONT and STERN. *Union pharm.*, (1939), 88; through *Chem. Abstr.*, 33 (1939), 9545. (F. J. S.)

**Calcium Compounds—Water-Soluble.** Dry calcium salts of polyhydroxy-monocarboxylic acids, derived from polyaldoses, such as calcium maltobionate, are pulverized together with calcium bromide, the resulting products having sedative action. —ARTHUR STOLL and ERNST BURCKHARDT, assignors to CHEMISCHE FABRIK VORM SANDOZ. U. S. pat. 2,134,456, Oct. 25, 1938. (A. P.-C.)

**Chalkones—Studies in. I. Chalkones Derived from Resacetophenone and its Dimethyl Ether.** Resacetophenone dimethyl ether has been condensed with *o*-vanillin, isovanillin, 5- and 6-methoxylsalicylaldehyde and resacetophenone with *o*-vanillin to yield corresponding hydroxymethoxychalkones. Attempt has been made to determine the optimum condition for these condensations.—JAGRAJ BEHARI LAL. *J. Indian Chem. Soc.*, 16 (1939), 296. (F. J. S.)

**Chloralides. The Condensation of Butylchloral with $\alpha$-Hydroxycarboxyllic Acids.** The condensation of butylchloral hydrate with $\alpha$-hydroxycarboxylic acids in the presence of sulfuric acid has been studied in order to compare its behavior with that of chloral.—N. M. SHAH. *J. Indian Chem. Soc.*, 16 (1939), 285. (F. J. S.)

**Chlorbutanol.** Usual methods of preparation yield about 10% of theoretical. The experimental work reported gives a procedure that yields 25% of theoretical and a very strong base was found to be necessary. The following procedure is recommended: One hundred Gm. acetone (5 mols) and 40 Gm. chloroform (1 mol) are mixed and 7 Gm. potassium hydroxide (5%) dissolved in the minimum quantity of alcohol, are added. The addition occupies 15 minutes; cooling is usually unnecessary. The precipitated potassium chloride is filtered off and washed with acetone. The filtrate is distilled on a water bath and when no further liquid distils about 200 cc. of water are added. The chlorbutanol is filtered off as a white solid. Distilled acetone is used again.—ARTHUR GEORGE FISHBURN and HERBERT BEN WATSON. *J. Am. Pharm. Assoc.*, 28 (1939), 491. (Z. M. C.)

**Cyanohydrins of the Etiocholane and Etioallocholane Series—Acyl Compounds of.** Cyanohydrins such as may be produced by reaction of hydrocyanic acid with saturated or unsaturated etiocholanones or etioallocholanones, by treatment with acid anhydrides such as acetic anhydride or with acid chlorides, cyanic acid, its isomers and derivatives such as phenyl isocyanates, etc., are converted into corresponding acyl derivatives of good stability and suitable for use as intermediates in the production of substances of high physiological activity, such as an androstenolone-cyanohydrin diacetate, or corresponding products produced with the use of benzoyl chloride, propionic anhydride, succinic anhydride or the like.—LOTHAR STRASSBERGER, assignor to SCHERING-KAHLBAUM A. G. U. S. pat. 2,136,401, Nov. 15, 1938. (A. P.-C.)

**Dehydroandrosterone—Preparation of a Pregnane Compound from.** Dehydroandrosterone and acetylene were condensed in a solution of potassium in liquid ammonia and acetic acid was then added to the acetylene bond of the resulting compound. Menthol may be used in place of the acetic acid. This reaction takes place only when the catalyst boron fluoride-ether and mercuric oxide are present. Subsequent hydrolysis yielded the ketone. Other members of the androstane series were changed into pregnane derivatives in one step by the addition of the elements of water in the presence of mercuric sulfate.—H. E. STAVELY. *J. Am. Chem. Soc.*, 61 (1939), 79. (E. B. S.)

**Dibenzisoquinoline and Naphthisoquinoline—Derivatives of.** The synthesis of phenanthrylethylamines and phenanthrylethylamino ethers is given. Cyclizations to isoquinoline derivatives were attempted according to the general methods of Bischler-Napieralski and of Decker and Becker. Only the method of Decker and Becker applied to the phenanthrylamines of the 2-and 9-series gave positive results.—E. MOSETTIG and E. L. MAY. *J. Am. Chem. Soc.*, 60 (1938), 2962. (E. B. S.)

**Glycerin Distillation.** The layout and operation of plant for a continuous process for the continuous distillation of glycerin, which is designed to effect flash evaporation of the glycerin without heating the liquors substantially above the vaporization temperature (about 157–160° under the prevailing pressure of 6–12 mm.), are described. Steam consumption and costs are low, and 97–98% of the total glycerin in the crude is recovered in the form of saleable products (C. P., and high-density grades) in one distillation.—O. H. WURSTER. *Oil and Soap*, 15 (1938), 292–294; through *J. Soc. Chem. Ind.*, 58 (1939), 169. (E. G. V.)

**Hexamethylenetetramine Salt of Hexylresorcinol-sulfonic Acid—Preparation of.** Hexylresorcinol (I) is treated with sulfuric acid, excess of the latter is removed with barium sulfate, unchanged I is extracted with ether, and the sulfonic acid of I is exactly neutralized with hexamethylenetetramine; or hexylresorcinol may be sulfonated and the product reduced before neutralization. The salt so obtained has a much greater antiseptic action than I and has specific therapeutic action in the case of paradentose and its auxiliary phenomena, gingivitides and stomatides.—H. LEGERLOTZ. Brit. pat. 492,914; through *J. Soc. Chem. Ind.*, 57 (1938), 1501. (E. G. V.)

**M. & B. 693 (2-*p*-Aminophenylsulfonamido-pyridine)—Synthesis of.** By a modification of the method of Goldyrev and Postovskiĭ (*Chem. Abstr.*, 32, 5800) the total synthesis of sulfanilylaminopyridine (May & Baker 693, Dagenan) has been reproduced and registration under the name "Coccoclase" has been requested.—MINGOIA QUINTICO. *Bull. chim. farm.*, 78 (1939), 401–411; through *Chem. Abstr.*, 33 (1939), 9540. (F. J. S.)

**Medicaments—Manufacture of. (Local Anesthetics).** Aryl aminoalkyl ketones, $NR_2.CR_2.COX$ (I), in which R is H or alkyl and X is aryl, are treated with magnesium aryl halides (2 mols.); I may be formed *in situ* from arylaminoalkylamides (X is $NH_2$ or substituted $NH_2$) and magnesium aryl halides (1 mol.). For example, phenyl dimethylamino methyl ketone (from dimethylamino-N-dimethylacetamide and phenyl magnesium bromide in ether) gives with phenyl magnesium bromide in ether diphenyldimethylaminomethylcarbinol, melting point 55° (hydrochloride, melting point 230–232° decomp.); with magnesium 2-*p*-xylyl bromide, phenyl-2-*p*-xylyldimethylaminomethylcarbinol is formed. 2-*p*-Xylyl dimethylaminomethyl ketone and magnesium-2-*p*-xylyl bromide give di-*p*-xylyldimethylaminomethylcarbinol. The compounds are claimed to have subsidiary effects to their local anesthetic action, for example, pressor effects.—H. and E. ALBERT. Brit. pat. 491, 951; through *J. Soc. Chem. Ind.*, 57 (1938), 1502. (E. G. V.)

**Paraffins—Normal, Physical and Chemical Constants of.** Samples of Borneo paraffin have been cracked at 440°/270 atmospheres, with precautions to avoid cyclization. The values of density at 20°, index of refraction at 20°, viscosity, surface tension and parachor have then been measured for each fraction obtained and the variations of these constants with molecular weight and in some cases with temperature have been plotted. The data for specific refraction and specific parachor agree with the values calculated by the atomic refractivities of Eisenlohr and atomic parachlors of Mumford and Phillips.—D. J. W. FREULIN. *J. Inst. Petroleum Tech.*, 24 (1938), 554–561; through *J. Soc. Chem. Ind.*, 58 (1939), 10. (E. G. V.)

**Phenylacetonitrile in Essential Oil of Karokarounde.** Fractional distillation of the oil affords a fraction (I), boiling point 100-108°/14 mm., which with boiling diethylene glycol-potassium hydroxide (1:1) affords ammonia; with hot sulfuric acid (3 volumes) and water (2 volumes), phenylacetic acid is formed. I with benzaldehyde affords stilbenyl cyanide, which indicates that benzyl cyanide is a component of I.—S. SABETAY, L. PALFRAY and L. TRABAUD. *Compt. rend.*, 207 (1938), 540–542; through *J. Soc. Chem. Ind.*, 58 (1939), 103. (E. G. V.)

**2-Phenyl-4-Aminoquinoline—Derivatives of.** Certain 2 - phenyl - 4 - (dialkylamino - 4′ - sulfonamidophenyl-, and 4′-amidobenzenesulfonyl-) aminoquinolines have been described. The yield of the condensation product is invariably poor.—U. P. BASU and P. K. DAS-GUPTA. *J. Indian Chem. Soc.*, 16 (1939), 301. (F. J. S.)

**Phenyl and Naphthyl Urethanes and Corresponding Di-Substututed Ureas.** Though phenylurethane was easily prepared and readily separable, the naphthylurethane of supposedly the same phenol was difficult to separate from the unreacted substances and from di-α-naphthyl urea, a side reaction product which was produced in considerable quantity. Three questions arose: How to prevent formation of the di-substituted urea and assist the desired reaction? What is the percentage of disubstituted urea contamination? How to separate urethane if the disubstituted urea cannot be prevented? Experimental work is reported. Urethanes of thymol, carvacrol and hydrothymoquinone were prepared. Yield and melting point were compared with those obtained by Sherk. Similarites and differences are discussed. As an unreacting solvent, ethylene dichloride was found desirable. A tabulation of results compares its practicability with alcohol.—PAUL JANNKE. *J. Amer. Pharm. Assoc.*, 28 (1939), 360. (Z. M. C.)

**Pollens—Chemistry of, Active in Hay Fever.** All the pollens studied show the presence of imidazol nuclei, usually united to a methyl radical or an aminopropionic chain. When pollen collected in the open and similar pollen obtained from the flowers in the laboratory are subjected to proteolytic digestion, amines and imidazol nuclei are found in both products. However, when the digestion products are dialyzed through collodion the field-collected pollen always gives a higher nitrogen value. This increase in nitrogen is attributed to the possible existence of atmospheric proteins which unite with and activate certain plant pollens. The author suggests the existence of two types of pollen: static pollen and activated pollen. The following causes of hay fever are given: (1) A predisposition of the mucous. (2) An excessive nervousness. (3) A local irritation produced annually by activated pollen.—R. ANGENOT. *J. pharm. Belg.*, 21 (1939), 265–266. (S. W. G.)

**Ring Compounds—Chemistry of Substituted. I. Synthesis of α,α,γ-Trimethylcyclopentanone.** Synthesis of α,α,γ-trimethylcyclopentanone has been affected from α,α,γ-trimethyladipic acid. The acid has been synthesized by two independent processes. In one of these, mesitonic ester has been allowed to react with ethyl bromacetate in presence of magnesium yielding a lactonic ester. From this the chloro-ester has been obtained which on reduction gives the substituted adipic ester. In the second method mesitonic ester has been condensed with ethyl cyanoacetate and the unsaturated ester, thus prepared, gives the saturated compound which ultimately produces α,α,γ-trimethyladipic ester. The ketone has been found to be identical with that prepared by Wallace by the degradation of dimethyldihydroisophorone.—M. QUDRAT-I-KHUDA and S. K. GHOSH. *J. Indian Chem. Soc.*, 16 (1939), 287. (F. J. S.)

**Sodium Hypochlorite Solution—Use of, in the Preparation of Chlorine Derivatives.** *Dichloro-*

*urotropine:* Dissolve 5 Gm. of urotropine in 40 cc. of distilled water, add 8.4 Gm. of potassium bicarbonate then 45 cc. of solution of sodium hypochlorite containing 72 Gm. of available chlorine per liter. Let stand for five minutes, then filter on a Buchner with suction and wash first with 50 cc. of water, then with 50 cc. of $N/50$ sodium hydroxide, 5 cc. of 95% alcohol and 5 cc. of ether. Continue the aspiration for 5 minutes. Yield 77–80%. The following figures are given for solubility as Gm. per 100 parts of solvent: water 0.206, ether 2.036, alcohol (95%) 2.148, chloroform 2.282. The aqueous solution of the compound loses all its active chlorine in four days; while the chloroform solution loses one-third of its active chlorine in 4 days and all its active chlorine in 20 days. The compound loses its active chlorine in about 20 days when exposed to the air, and becomes grayish white. *Dichloropiperazine:* Dissolve 5 Gm. of piperazine having six molecules of water of hydration in 50 cc. of water, add 10 Gm. of potassium bicarbonate, and 85 cc. of commercial Javel water containing 72 Gm. of active chlorine per liter. Allow the reaction to go on for five minutes, immersing the flask in cold water to avoid excessive heating, then filter on a Buchner and wash with water and aspirate for 20 minutes. The product is volatile at ordinary temperature and pressure. It is slightly soluble in water and more soluble in organic solvents. It melts at 74° on a Maquenne block. *Monochloroantipyrine:* Dissolve 10 Gm. of antipyrine in 60 cc. of water containing 7 Gm. of potassium bicarbonate. Add 30 cc. of sodium hypochlorite solution containing 72 parts of chlorine per liter. The mixture becomes turbid, then a precipitate forms. Filter, then dry in a vacuum desiccator over sulfuric acid to constant weight. The product is purified by dissolving in acetone and precipitating with petroleum ether. After four or five precipitations a white product is obtained which melts at 131–132°.—A. LEULIER and R. COHEN. *J. pharm. chim.*, 29 (1939), 245–251. (S. W. G.)

**Sulfonic Acid Amide Compounds—Manufacture of.** 4-Amino-3-alkoxy-(or -aralkoxy-)6-alkyl benzenesulfonamides, which may be wholly or partially substituted in the sulfonamide group, are obtained by the saponification of the corresponding 4-NHAc-compounds, by reduction of the corresponding 4-azo compounds, or by the action of ammonia on the corresponding 4-halogeno-compounds. The manufacture of 4-amino-3-methoxy-6-methylbenzenesulfonamide is claimed, although any steps which form part of the process of Brit. pat. 474,423 are disclaimed. The products are valuable in the treatment of ascarides infections of warm-blooded individuals.—A. CARPMAEL. Brit. pat. 491,425; through *J. Soc. Chem. Ind.*, 57 (1938), 1501. (E. G. V.)

**Sulfuryl Chloride—Interaction of, with Arylamides of Aromatic Acids. II. Orienting Influences of Groups in Substitution Reactions in Aromatic Compounds.** Sulfuryl chloride gives chloro derivatives with arylamides of salicylic acid, having chlorine both in the acidic and the basic parts of the molecule. Varying proportions of sulfuryl chloride show that chlorine enters first in position *para* to OH and *para* to NHCOR, then *ortho* to OH and then *ortho* to NHCOR according to the nature of the reacting amide. With arylamides of *o*-methoxy- and *o*-chlorobenzoic acids and *o*-toluic acid, products with chlorine only in the basic part are obtained. The constitution of compounds is proved by hydrolysis and synthesis.—N. W. HIRWE, G. V. JADHAV and D. R. SUKHTANKAR. *J. Indian Chem. Soc.*, 16 (1939), 281. (F. J. S.)

**Thiopyridone—Derivatives of, as Possible Chemotherapeutic Agents.** A sample of pyridine-4-sulfonamide was desired for a comparison of its therapeutic properties with sulfanilamide to which it shows a close structural relationship. Attempts to prepare the desired compound were not successful because the corresponding sulfonyl chloride could not be obtained by the action of $PCl_5$ on sodium pyridine-4-sulfonate nor by treating thiopyridone with chlorine. Several 4-thiopyridone derivatives were prepared and two of them, ammonium pyridine-4-sulfonate and pyridine-4-thioacetic acid, were tested for antistreptococcal activity in infected mice. Neither compound exhibited curative action.—HAROLD KIND and LANCELOT L. WARE. *J. Chem. Soc.* (London) (1939), 873–877. (W. T. S.)

**Vanadyl Lactate.** Vanadyl lactate is obtained by the reaction in aqueous solution of an inorganic vanadium salt, such as a sulfate or halide, with an alkaline earth metal lactate, such as that of barium (or with silver lactate if a halide such as vanadium tetrachloride is used). General mention is also made of the possible similar production of vanadium salts such as those of gluconic and furoic acids. The vanadium organic salts may be used as antiseptics in dentifrices, etc., and may be administered orally, or by intramuscular, subcutaneous or intravenous injection. They also have insecticidal and fungicidal effects, and are soluble in water, alcohol, glycerol and polyhydroxy alcohols.—HARRY J. PREBLUDA. U. S. pat. 2,135,111, Nov. 1, 1938. (A. P.-C.)

**Vinyl Barbituric Acids—Substituted.** The recent development of a practical indirect method for the introduction of 1-methylvinyl or isopropenyl groups into malonic ester has furnished the intermediate necessary for the preparation of isopropenyl alkyl barbituric and thiobarbituric acids. The preparation, properties and preliminary pharmacological assay of several new barbituric and thiobarbituric acid derivatives containing the isopropenyl or 1-methylvinyl group are described. Some alcoholysis of the isopropenyl alkyl malonic esters from which the barbituric acids are prepared occurs during their condensation with urea and thiourea, leading to a series of alpha-alkyl beta-methyl crotonamides.—A. C. COPE and E. M. HANCOCK. *J. Am. Chem. Soc.*, 61 (1939), 96. (E. B. S.)

## BIOCHEMISTRY

**Acetylcholine of the Blood—Possibility of Determining the Free, by Analyzing the Plasma.** None of the blood acetylcholine is in the corpuscles; hence determinations may be made on the plasma obtained by centrifuging blood treated with sodium fluoride and eserine.—E. KAHANE and JEANNE LÉVY. *Compt. rend. soc. biol.*, 127 (1938), 10–11; through *Chimie & Industrie*, 40 (1938), 472. (A. P.-C.)

**Acid Amines and Polypeptides of Blood—Biochemical and Clinical Study of.** The author reviews the known procedures for the determination of the individual acid amines. In certain cases modifications are recommended.—M. POLONOVSKI. *J. pharm. Belg.*, 21 (1939), 39, 57, 75, 91. (S. W. G.)

**Adrenaline—Extraction of, from Whole Blood, Corpuscles and Plasma and Its Determination.** When whole blood is defecated with trichloroacetic acid or acetone, much of the adrenaline is lost by adsorption of the corpuscle proteins. The blood should be treated with sodium fluoride, diluted with 2 to 4 volumes of 0.9% sodium chloride solution, and centrifuged. Very little adrenaline is carried down by the whole corpuscles. The adrenaline determination is made on the clear diluted plasma by biological methods without defecation or by chemical methods after suitable defecation.—ANTOINETTE CAHEN. *Compt. rend soc. biol.*, 127 (1938), 221–224; through *Chimie & Industrie*, 40 (1938), 655. (A. P.-C.

**Amino Acids and Polypeptides—Affinity of, for Acids, Bases and Amphoteric Ions.** The formation of salts by the reaction of amino acids with acids, bases or with one another is discussed.—ST. J. PRZYLECKI, J. CICHONKA, E. HOFER and H. RAFALOWSKA. *Biochem. Z.*, 299 (1938), 230–241; through *Chem. Abstr.*, 33 (1939), 1772. (F. J. S.)

**Aneurin—Estimation of, by Thiochrome Reaction with Pulfrich Photometer.** A modification of Jansen's method for the estimation of aneurin in different substances by converting the aneurin to thiochrome is described. It consists in carrying out the oxidation of aneurin in an atmosphere of carbon dioxide and later on in estimating the thiochrome by means of analysis with quartz lamp and Pulfrich's photometer. The results agree with the findings of other workers using Cohen fluorometer.—A. MUKHERJI. *J. Indian Chem. Soc.*, 16 (1939), 273. (F. J. S.)

**Antirachitic Substances—Production of.** Substances containing cholesterol and substantially free from provitamin are treated with non-gaseous oxidizing agents (hydrogen peroxide, benzoyl peroxide, eosin, chromium trioxide). For example, an ethyl alcohol solution containing about 2% of cholesterol and 4% of 30% hydrogen peroxide is boiled for 40 minutes. The solution is irradiated by ultra-violet light either during or after treatment.—W. W. TRIGGS. Brit. pat. 485,452; through *J. Soc. Chem. Ind.*, 57 (1938), 1503. (E. G. V.)

**Arsenic Compounds—Conversion of, into Arsine Oxide on Contact with Hepatic Cells.** The author states that the liver does not assist in the oxidation of arsenobenzols in the blood, or that at least the presence of arsine oxide, intermediary product of this oxidation, cannot be detected in the organism. The following possible explanations are given: The transformation progresses so slowly that at any one instant only a very minute quantity of arsine oxide is liberated and this is immediately blocked by tissues richer in reducing elements than red corpuscles; or the oxidation continues through the arsine oxide giving pentavalent arsenic which is not fixed by the corpuscles.—J. THURET. *J. pharm. chim.*, 29 (1939), 5–11. (S. W. G.)

**Ascorbic Acid—Detection and Determination of, in Urine.** A study of Bezsonoff's reaction, of the methods of Ferrari and Buogo, of Martin and Buonsignore, of Tilman and Harris and of Schiapparelli and Buofo showed that the latter gave the best results. It is essentially as follows: make 5 cc. of the urine alkaline to phenolphthalein by addition of decinormal soda; add 1 cc. of 5% zinc sulfate solution and make to 10 cc. with distilled water; filter, acidify 5 cc. of filtrate with 2 cc. of 8% trichloroacetic acid and titrate with two-hundredth normal iodine in presence of starch to a persistent violet coloration; then titrate the excess of iodine with two-hundredth normal sodium thiosulfate.—A. ESPOSITO. *Ann. igiene*, 48 (1938), 109–118; through *Chimie & Industrie*, 40 (1938), 658. (A. P.-C.)

**Atebrin—Determination of, in Tissues.** The minced tissue is digested 10 to 15 minutes with papain powder, 5 cc. of decinormal hydrochloric acid per Gm. of tissue is added and the mixture is held at 60° C. for 1 hour or more. The mixture is centrifuged and the residue washed 2 or 3 times with decinormal hydrochloric acid, after which the atebrin in solution is removed by the addition of potassium hydroxide and extraction with ether. The ether extract is washed with water, the atebrin is removed with decinormal hydrochloric acid, and the color of the acid extract is compared with that of a standard solution of atebrin in decinormal hydrochloric acid.—R. N. CHOPRA and A. C. ROY. *Indian J. Med. Research*, 25 (1937), 455–458; through *Chimie & Industrie*, 40 (1938), 470. (A. P.-C.)

**Atebrin—Determination of, in Urine by the Pulfrich Photometer.** The absorption curve of a 0.02% solution of atebrin in decinormal hydrochloric acid is determined with all spectral filters. The absorption was maximum with S/43. This filter was used for determination of the extinction coefficient. The concentration of the solution was found proportional to the extinction coefficient and the Lambert-Beer absorption law is valid, obviating the necessity for the calibration curve. The concentration of atebrin in mg. per 100 cc. is 5.49 times the extinction coefficient.—N. K. IYENGAR and B. MUKERJI. *Current Sci.*, 6 (1938), 381; through *Chimie & Industrie*, 40 (1938), 658. (A. P.-C.)

**Athletes—Use of Calcium in the Training of.** The author carried out experiments to see whether the administration of calcium would permit the progressive intensification of training of athletes without producing signs of excessive training. Fifteen of a group of 27 athletes were trained without calcium and twelve were given large doses of calcium over a period of five months. The material given was either calcium gluconate or some equivalent form. Improvement was measured by the coefficient of fatigability (difference between the pulse rate on arrival after the 400 meter run and the normal pulse rate); this was 60% higher in the athletes who had received calcium than in the controls. The improvement in the coefficient of rapidity of recuperation (difference between the pulse rate 10 minutes after finishing the run and the normal pulse rate) was 33% better in the athletes who had received calcium. Those taking the calcium medication did not find it unpleasant or disagreeable, since it was very well tolerated.—P. MARTIN. *Schweizerische Med. Wchnschr.*, 69 (1939), 125; through *Abbott Abstract Service*, (1939), No. 497. (F. J. S.)

**Avitaminosis B—Muscular Poisoning during, and Experimental Mineral Disequilibrium.** The following conclusions are given: Avitaminosis B and experimental mineral disequilibrium have incontestable reactions on the muscular biochemistry of the pigeon. The metabolic disturbances observed are very complex and depend in part on the nature of the glucide taking part in the change. In avitaminosis B the lactic impregnation of the muscle is always sharp whether the sugar be glucose or sucrose; but the formation of seemingly toxic substances having reducing properties may be masked in certain cases, notably when the system utilized is based on glucose. On the other hand, with the same system the augmentation of the orthophosphates and of the total acid-soluble phosphorus is greater. The mineral disequilibrium obtained by the addition of sodium sulfate to a system based on sucrose causes a definite augmentation of the muscular reducing substances, while the lactic acid and the orthophosphates are practically unchanged. In the case of the pigeon showing mineral disequilibrium owing to large additions of vitamin B, a reaction manifests itself in total lactic acid and the orthophosphates falling below normal, the reducing substances being then raised in proportion, but being apparently devoid of toxicity. These results emphasize the complexity of the intoxication process which may accompany the polyneuritis so frequently observed in human pathology. Variations may be due to the nutritional disequilibrium responsible, which is dependent upon the functional disturbance causing it and the quantity of vitamin B of which the body disposes.—R. LECOQ and R. DUFFAU. *Bull. sci. pharmacol.*, 45 (1938), 493–498. (S. W. G.)

**Bile—Importance of, in the Absorption of Vitamins.** It is well known that very little fat can be absorbed from the intestinal tract if bile is excluded from it. The close relationship of the fat-soluble vitamins to the sterols renders it probable that bile also takes part in the absorption of these elements. Evidence for this belief has been presented by Greaves and Schmidt in the case of vitamins A and E; deoxycholic acid is believed to be the constituent of bile which enters into the reaction most intimately. The importance of bile has recently been emphasized by the discovery of the part it plays in the absorption of vitamin K. When bile is excluded from the alimentary tract in certain animals, the lack of absorption of this vitamin becomes so marked that prothrombin content of the blood falls to low levels, and a hemorrhagic diathesis appears. These phenomena can be corrected by the oral administration of vitamin K concentrates with bile salts.—H. R. BUTT. *Amer. Journal Digest. Dis.*, 6 (1939), 127; through *Abbott Abstract Service*, (1939), No. 518. (F. J. S.)

**Biologic Oxidations.** The author discusses the different studies bringing this subject up to date.—A. SZENT-GYÖRGYI. *J. pharm. Belg.*, 21 (1939), 1–5. (S. W. G.)

**Biology—Film Reactions as a New Approach to.** There are so many variables in the cell that it seems to be hopeless to treat it as a unit in chemical reaction, though it may be a definite unit in life. Due attention must be given to a study of the ordered interface in order to properly understand biological activities.—E. K. RIDEAL. *Chemistry and Industry*, 58 (1939), 830–836. (E. G. V.)

**Black Sea Alga (Phyllophora Nervosa)—Utilization of.** Iodine to the extent of 0.130 to 0.726% on the dry basis, is present in the form of an insoluble organic compound which can be solubilized by steaming the alga and then extracting with water. The residues can be used for the production of agar-agar with low iodine and ash contents. The steaming of the dry alga facilitates extraction of agar-agar and increases the yield owing to the disintegrating action of the steam on the cell walls.—A. KORENTSVIT. *J. Prikl. Khim.*, 10 (1937), 2064–2067; through *Chimie & Industrie*, 40 (1938), 524. (A. P.-C.)

**Bleeding Tendency in Hypoprothrombinemia—Test for.** Since the advent of new theories of the cause of hemorrhagic tendency in jaundice, many wish to find a simple test for the tendency to bleed so that prophylactic treatment with vitamin K can be given. The authors believe their serum volume test, supplemented by study of the clot, is useful for this purpose. To perform the test an arbitrary amount of venous blood, preferably 3 cc. is drawn into a graduated tube. The volume, $B$, is read carefully and the blood is allowed to clot at room temperature, standing for four hours. In the meantime, a red cell count is made. At the end of four hours, the clot is removed from the tube and the volume of serum, $S$, is accurately read. The clot is examined for friability. $2S/B$ = the "volume index," which is normally unity. In cases in which the red count is found to be low, the index must be corrected by a factor RBC/5,000,000. Where the volume index is below 0.78, and the clot friable, danger of bleeding is present.—F. F. BOYCE and E. M. MCFETRIDGE. *New Orleans Med. Surg. J.*, 91 (1939), 357; through *Abbott Abstract Service*, (1939), No. 500. (F. J. S.)

**Blood Picture—Interpretation of the.** A review presenting diagrams and tables which may be useful in the diagnosis of types of anemia.—F. W. KONZELMANN. *Merck Report*, 47, No. 4 (1938), 16; 48 No. 1 (1939), 6. (S. W. G.)

**Bovine Mastitis—Gold Sol Test for.** The color reaction between casein-free milk serum and colloidal gold as a diagnostic test for bovine mastitis has been investigated. The basis of the test depends upon the percentage of casein nitrogen falling below the normal level even in sub-clinical mastitis. Casein-free milk serum adjusted to $p_H$ 6.0–6.5 turns instantaneously to violet or blue when there is slight infection of the udder if 1 cc. is mixed with five cc. of red gold sol as used in Lange's gold test for cerebrospinal fluid. The color of the gold sol remains unaffected by milk sera from healthy cows. The results of the simple and rapid test correlate closely with bacteriological findings. However, the intensity of the color changes is not directly related to globulin content or globulin/albumin ratio, as preliminary investigations indicate that the proteose-peptone components in milk participate in the reaction.—R. ASCHAFFENBURG. *Nature*, 143, No. 3261, 523; through *Chemist and Druggist*, 130 (1939), 556. (A. C. DeD.)

**Calcium and Phosphorus Metabolism—Effect of Toxic Doses of Vitamin D on.** A study of the effect of toxic doses of irradiated ergosterol (Vigantol) on the calcium, phosphorus and nitrogen metabolism in the albino rat revealed several facts. The amount of urinary nitrogen rose in spite of stationary intake of food but fell sharply when rats ceased to eat. The amounts of calcium and phosphorus excreted in the urine increased and remained at a high level even during diminished intake of food. Fecal calcium first fell and then rose in rats receiving Vigantol by mouth while the fall of fecal calcium was delayed in rats receiving Vigantol subcutaneously. In rats receiving Vigantol more phosphorus was withdrawn from the bones than calcium with the result that the Ca:P ratio was altered from 2.226 in normal rats to 2.585 in rats receiving Vigantol.—V. N. PATWARDHAN and R. G. CHITREE. *Indian J. Med. Research*, 26 (1938); through *J. Trop. Med. Hyg.*, 42 (1939), 149. (W. T. S.)

**Calcium—Elimination of Iron in the Determination of, in Biological Fluids.** After destruction of organic matter by the wet method the iron is precipitated by cupferron from the acid solution. The precipitate is flocculated by cooling and violent agitation to aid filtering. Calcium is precipitated as oxalate from the filtrate, preferably at a $p_H$ of about 5.4.—J. ETTORI and R. GRANGAUS. *Compt. rend. soc. biol.*, 127 (1938), 144–146; through *Chimie & Industrie*, 40 (1938), 472. (A. P.-C.)

**Calcium Metabolism—Several Aspects of.** The author reviewed the functions of calcium in the body with particular reference to the manner in which it is absorbed, its state in the blood, its effect on the coagulation of blood and milk and its elimination from the body. The parathyroid glands were discussed from the standpoints of their history, location, development as well as their influence on calcium metabolism.—LEILA E. ANDREWS. *Southern Med. J.*, 32 (1939), 667–670. (W. T. S.)

**California Wines—Color in. I. Methods of Measurement of Color.** Spectrophotometric data may be calculated in terms which give a complete color specification of a wine. The color comparator is a more reliable means of measuring the brightness of the wines than the Salleron-Dujardin vinocolorimeter, brightness being defined as the transmission of light in contradistinction to brilliance, which is restricted to freedom from suspended matter. The Lovibond slides are used only for measuring changes in wines. **II. Preliminary Comparisons of Certain Factors Influencing Color.** The primary sources of variation in color value, especially of red wines, namely, variety, maturity of fruit, regional conditions and season temperature, are discussed.—A. J. WINKLER and M. A. AMERINE.

*Food Res.*, 3 (1938), 429–438, 439–447; through *J. Soc. Chem. Ind.*, 57 (1938), 1480. (E. G. V.)

**Chloremia—Variations of Post-Operative.** The following conclusions are given: Studies show that the fixation of chlorine in traumatized tissues is not the absolute rule, and that post-operative hypochloremia is rare. Even if the fall of the erythroplasmatic ratio is constant, this appears to result from the presence in the blood of nitrogenous waste arising from the traumatized tissues during the operation.—R. LECOQ. *J. pharm. chim.*, 29 (1939), 118–122. (S. W. G.)

**Chlorides in Urine—Application of Phloroglucinol Indicator to the Determination of, by the Mercurometric Method.** Titrate 10 cc. of clear urine, diluted with 40 cc. of water, with decinormal mercuric nitrate solution in the presence of 5 to 6 drops of 10% alcoholic phloroglucinol solution. The end point is observed by an appearance of clearly-visible opalescence (stable for 1 to 2 minutes), which is better observed against a black paper. The presence of ferro- and ferricyanide interferes with the determination. The presence of urea, uric acid, glucose, glycine and albumin do not interfere with the determination.—I. MAVLIANOV. *J. Prikl. Khim.*, 10 (1937), 2162–2166; through *Chimie & Industrie*, 40 (1938), 657. (A. P.-C.)

**Cholesterol Ester to Total Cholesterol—New Method for Determining the Ratio of, in Serum or Plasma.** Velluz' modification of the Bloor method (*Compt. rend. soc. biol.*, 112 (1933), 255–256) has been further modified by substitution of trichloroethylene instead of chloroform.—M. PAGET and G. PIERRART. *Compt. rend. soc. biol.*, 126 (1937), 1206–1208; through *Chimie & Industrie*, 40 (1938), 471. (A. P.-C.)

**Cod Liver Oil and Vitamin A Preparations.** Data obtained by biological, chemical and physical methods indicate that the biological method produces considerably greater errors in results than the spectrographic method. On storing cod liver oil in colorless glass bottles in diffused daylight complete destruction of the vitamin A occurred in 5 months. A sample of the oil, stored under otherwise comparable conditions in a brown glass bottle (between 350 and 400 mμ to about 25%, under 300 mμ to 3% and less transparent) was also changed, although the loss of vitamin A amounted to only about 22%. On the other hand, a cod liver oil sample remained practically unchanged when stored during the entire period completely cool and in the dark. It appears necessary to examine samples of cod liver oil, taken in the retail trade, for their vitamin A content.—L. FUCHS and E. SOOS. *Scientia Pharm.*, 8 (1937), 141–146; through *Chimie & Industrie*, 40 (1938), 533. (A. P.-C.)

**Cumotocopherol, a New Factor of the Vitamin E Group.** A new vitamin E fraction "cumotocopherol," $C_{28}H_{48}O_2$, was isolated as the allophanate, melting at 147° C., and having a specific optical rotation of −6.7° at 18° C. It is less active than previously known fractions. Thermal decomposition yields pseudocumohydroquinone. Cumotocopherol is therefore a monoether of pseudocumohydroquinone and the next lower homologue of α-tocopherol which under the same conditions yields durohydroquinone.—W. JOHN. *Hoppe-Seyler's Z. Physiol. Chem.*, 250 (1937), 11–24; through *Chimie & Industrie*, 40 (1938), 532. (A. P.-C.)

**Cystine—Rapid Detection of, by Three Successive Micro-Crystalline Tests.** Dissolve about 1 mg. of powdered urinary calculi in 1 drop of ammonia solution on a glass slide. Heat on a plate until the first appearance of a white solid. Cool and examine at 100–150 X for hexagonal plates of cystine. Dry the residue and dissolve it in 1 drop of hydrochloric acid (1:10). Evaporate and examine again for voluminous prismatic crystals of cystine hydrochloride, especially along the borders. Dissolve the residue in 1 drop of water, and add to the center of the clear liquid 1 drop of 10% aqueous iodic acid solution. In a few seconds the mixture turns yellow, then brown, forming brownish black needles characteristic of iodine. Examine microscopically and test with starch paper. Transfer the remainder to a tube with chloroform and observe the imparted color. Another test is given as follows: The mixture obtained after treating with iodic acid is evaporated to dryness, mixed with 1 drop of concentrated iodic acid, evaporated again, and the procedure repeated until the residue is no longer yellow. If after several hours crystals of cysteic acid have not formed, the mixture should be seeded with traces of cysteic acid. The crystals should form in about 5–6 hours after seeding.—G. DENIGES. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 180–184. (S.W.G.)

**Diastasic Reactions. Possible Chain Reactions.** The following conclusions are given: The theory of reactions in chains or steps which has permitted the interpretation of the particular kinetics of certain chemical reactions seems able to be extended to some diastasic processes. Certain diastasic oxidation reactions appear theoretically to be explained by a series of reactions. Experimental confirmation, however, is rare and often uncertain. The author holds that further proof will appear.—J. COURTOIS. *J. pharm. chim.*, 29 (1939), 354–372. (S. W. G.)

**Diethylstilboestrol (Stilboestrol)—Oestrogenic Properties of.** The oestrogenic properties of the synthetic hormone stilboestrol have been investigated on forty-six women and six monkeys. It appears to imitate the natural oestrogens faithfully and to be highly active when administered by mouth. Stilboestrol administered orally imitates the effects of the natural oestrogens by: Producing "oestrin withdrawal bleeding." Producing an intramenstrual type of endometrium both in the human female and in the monkey. Inducing growth of the hypoplastic uterus. Relieving the symptoms of the menopausal syndrome. Converting a "menopausal" into an "oestrous" type of vaginal smear. Restoring the normal appearance of the vulva and vagina when they have become atrophic as the result of the oestrogen deficiency of the climacteric. Inducing painful swelling of the breasts. Causing proliferation and activation of the epithelium of the mammary glands. Relieving the pain of dysmenorrhea. Its oestrogenic activity when given by injection corresponds with that of oestrone.—P. M. F. BISHOP, M. BOYCOTT and S. ZUCKERMAN. *Lancet*, 236 (1939), 5. (W. H. H.)

**Dihydrofollicular Hormones—Isomeric, Process for Preparing, and Similar Substances Low in Hydrogen and Their Derivatives.** The material is introduced into a suitable substrate and subjected to enzymatic and phytochemical reduction processes.—SCHERING A. G. Belg. pat. 426,400, March 31, 1938. (A. P.-C.)

**Dusts—Studies on Fate of, in the Body. VII. Amount of Carbon Dusts in the Normal Human Lung.** The determinations were made according to the following procedure: To 500 Gm. of pulmonary tissue in a 5-liter flask add the following mixture: water 650 cc.; hydrochloric acid 450 cc.; potassium permanganate solution (5%) 20 cc.; nitric acid 200 cc. Heat cautiously until the froth which forms at first disappears, then boil two to four hours when a layer of fatty matter forms above a clear yellowish liquid. Allow to cool, filter, transfer the solidified fatty cake containing the mineral particles to a conical 250-cc. flask and

add a mixture of 100 cc. of alcohol (95%) and 20 cc. of hydrochloric acid. Attach a vertical condenser and reflux for two hours. Filter the mixture using an ashless filter paper (11 cm.) that has been heated at 105° for 1.5 hours and tared. Wash the residue two or three times with hydrochloric acid-alcohol mixture and then with alcohol until the filtrate is colorless. Transfer the residue to a conical flask, add a mixture of 100 cc. of alcohol (95%) and 20 cc. of 40% sodium hydroxide solution. Reflux for 15–20 minutes. Dilute with 100 cc. of alcohol and filter using the same filter paper. Wash the filter first with alcohol-alkali mixture, then alcohol until the filtrate is colorless, then with a mixture of 100 cc. of distillled water and 20 cc. of hydrochloric acid until the filtrate is again colorless, and finally wash again with alcohol. Place the filter in a vacuum desiccator, in the presence of a concentrated solution of sodium hydroxide, reduce the pressure and let stand for 12 to 24 hours, then place in an oven at 105° for 24 hours. Weigh, then place in a tared porcelain crucible and ignite. The corrected loss on ignition gives the weight of the carbonaceous particles in the sample, the remaining residue representing the siliceous dust particles. The author, working with lungs from 17 individuals, 28 to 73 years old, obtained values between 137.9 mg. and 1934.0 mg. per set of lungs, or 15 mg. to 138 mg. per 100 Gm. of lung. The mean value was 53.5 mg. per 100 Gm. Male lungs contained much more carbon than did female lungs, the means being 78.2 mg. and 24.2 mg. per 100 Gm. respectively. The difference is attributed mainly to smoking of tobacco. The upper lobe of the lung showed a higher content of carbon particles than the lower lobe; the middle portion was particularly low in carbon; while the hilum region showed more.—C. MISSBACH. *J. pharm. chim.*, 29 (1939), 64–77. (S. W. G.)

**Dusts—Studies on Fate of, in the Body. V. Siliceous Impregnation of the Normal Lung. VI. Fate of Siliceous Dust Administered Intratracheally.** The following conclusions are given: (1) The amount of siliceous particles found in the human lungs analyzed was between 0.0 mg. and 34.5 mg. per 100 Gm. of fresh material. With adults the minimum value was 1.64 mg.; while the mean value was found to be 13.45 mg. per 100 Gm., and this value is considered the proportion of siliceous impregnation of the normal human lung. (2) With the exception of the lungs of three men aged 25, 38 and 45 years respectively, the results from analysis of 27 lungs show an increase in siliceous particles with advance in age. (3) The proportion of silica in the silicates isolated from the lungs of different individuals is fairly constant, varying between 81 and 94% for a mean value of 87%. The study of the pulmonary contents of rabbits which have been subjected to injections of different siliceous dusts by tracheotomy show: (1) That there is a durable fixation in the lung of the particles injected. (2) That the proportion of this fixation varies according to the nature of the dust, the proportion of silica in the dust playing an important part in this respect. (3) That the finest particles remain the longest. (4) That the elimination occurs in two steps: immediately after the injection more or less of the dust is carried away by the bronchial mucus; in the following weeks and months variable amounts gradually disappear either by digestion or mechanical removal. (5) There is no qualitative transformation of particles found in the lungs after remaining there for three months.—J. PEYSSONNEAU. *J. pharm. chim.*, 29 (1939), 49–53, 53–64. (S. W. G.)

**Egg Albumen—Comparative Nutritive Value of Firm and Watery.** Tests on growing rats showed that there is no difference in the nutritive value between watery and firm egg albumen.—N. B. GUERRANT and W. J. RUDY. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 166. (A. E. M.)

**Egg Extract (Lecithin and Lutein)—Use of Porous Glass Filters for Suspension of.** The author recommends a glass filter having a diameter of 3 cm. and a mean porosity of 110$\mu$. This should be connected to a siphon tube and inserted in the 5% suspension of egg extract in physiologic salt solution. A rubber band should be placed around the filter to prevent breakage by contact with the container which must be continually shaken while the suspension is being siphoned. Six to seven liters of suspension may be filtered before the rate of filtration is appreciably decreased. The filter should be washed with water, alcohol and ether and autoclaved for one-half hour at one-half atmosphere.—L. BRACALONI. *J. pharm. chim.*, 29 (1939), 193–195. (S. W. G.)

**Estrone—Reduction Products of.** Estrone, by catalytic hydrogenation in an acid medium and reduced with aluminum isopropylate, yielded two estranediols. By eliminating the hydroxyl group from the third carbon atom, two monohydroxy estrane compounds were formed. Oxidation of both products yielded estranedione.—RUSSELL E. MARKER and EWALD ROHRMANN. *J. Am. Chem. Soc.*, 60 (1938), 2927. (E. B. S.)

**Fat Metabolism in the Animal Body.** A paper discussing the chemistry of digestion and absorption, transport, deposition, synthesis and catabolism of fats.—J. A. B. SMITH. *Chemistry and Industry*, 58 (1939), 213–220. (E. G. V.)

**Fat—Method for the Microchemical Determination of, in Biological Fluids.** A gravimetric method is described for the determination of total lipids in serum with the aid of a torsion balance. The method is suitable for clinical work. The method is similar to that previously published (*Wien Klin. Wochschr.*, 48 (1935), 871–872), but instead of using the centrifuge it is better to filter the alcohol-ether extract of the fat.—R. KÖNIGSTEIN and WETZLER-LIGETI. *Mikrochim. Acta*, 2 (1937), 85–90; through *Chimie & Industrie*, 40 (1938), 469. (A. P.-C.)

**Feces—Determination of Calcium Soaps in.** Calcium soaps are not extracted from wet human feces by ether or chloroform but are extracted with other lipids, by these solvents after drying the feces at 70° to 110° C. The calcium soaps are estimated by determining the calcium of the ash of the total lipid extract.—L. BRULL and G. BARAX. *Compt. rend. soc. biol.*, 127 (1938), 818–820; through *Chimie & Industrie*, 40 (1938), 1078. (A. P.-C.)

**Folliculin—Detection of, by Filtered Ultraviolet Light.** As little as 0.001$\gamma$ of folliculin can be detected under filtered ultraviolet light in 1 cc. of aqueous or alcohol solution by means of the fluorescence which it gives with concentrated sulfuric acid. When present in an oil the test can be made advantageously after saponifying the oil with 50% sodium hydroxide. After 5 to 10 minutes shaking, two layers are obtained. The test is made with the upper layer.—E. A. KOCSIS and B. BUGYI. *Mikrochim. Acta*, 2 (1937), 291–295; through *Chimie & Industrie*, 40 (1938), 533. (A. P.-C.)

**Fruit—Microbiology of, in Relation to Certain Fruit Products.** Attention is called to the apple and apple products.—V. L. S. CHARLEY. *Chemistry and Industry*, 58 (1939), 115–117. (E. G. V.)

**Gastric Hyperacidity Associated with Ulcer—Control of.** Clinical experiments were conducted on 24 patients with duodenal ulcer to determine the relative merit of magnesium trisilicate and a conventional alkali powder consisting of sodium bicarbonate, calcium carbonate and magnesium

oxide. The acidity of the gastric contents was tested with patients fasting, and also with patients on an ulcer régime in which they took the antacid medication between feedings. In both instances, the antacid effect of magnesium trisilicate was more prolonged than that of the other mixture. Certain patients, who previously had not been able to go throughout the night without taking food or antacid were enabled to do so with magnesium trisilicate. Other advantages were the absence of laxative or constipating effect, and the impossibility of producing alkalosis. The drug was given orally in doses of 60 grs., usually midway between the feedings of the ulcer régime. Maximal reduction in acidity was obtained thirty minutes after taking the medication.—C. G. REID. *Amer. Journal Digest. Dis.*, 6 (1939), 267; through *Abbott Abstract Service*, (1939), No. 529. (F. J. S.)

**Glucose in Blood—Colorimetric Determination of.** The following procedure is given: Obtain exactly 0.5 cc. of blood, by pricking, transfer it quickly to a small cylinder containing several mg. of sodium fluoride and 2 cc. of water. Add 1.25 cc. of potassium ferrocyanide solution (prepared extemporaneously with 1.5 Gm. of potassium ferrocyanide and 100 cc. of 0.9% physiological salt solution), and, after shaking, 1.25 cc. of zinc sulfate solution (crystalline zinc sulfate 2.0 Gm., 0.9% physiological salt solution 100 cc.) and mix carefully. Heat in a boiling water bath for three minutes. Filter with suction through a funnel with a short stem in which has been inserted a compressed pellet of asbestos receiving the filtrate in a tube graduated at 10 cc. Wash the cylinder with physiological salt solution, passing the washings through the filter. Cool make up to 10 cc. and mix carefully. The liquid, should be limpid and colorless. Transfer 2 cc. of this solution (equals 0.1 cc. of blood) to a glass stoppered 10-cc. cylinder containing 0.2 cc. of mixed Fehling's solution. Dilute 0.5 cc. of 1% glucose solution to 10 cc. and use 2 cc. of this dilution (1:1000) as a control. Place the two stoppered cylinders in a boiling water bath for one minute, remove the stoppers and after another four minutes withdraw the cylinders. Place in cold water for three minutes, then add to each tube tungsto-phosphomolybdic reagent to 5 cc. (Reagent: sodium tungstate 1 Gm., molybdic acid 7 Gm., 5% sodium hydroxide solution 40 cc. Boil for 30 minutes, cool, add 25 cc. of 85% phosphoric acid and make up to 100 cc. with distilled water.) Stopper the cylinders and mix the contents. A blue color, the intensity of which varies with the amount of sugar present is obtained. The two colors are compared in a colorimeter and the concentration of sugar per 1000 cc. of blood is obtained by the following formula, $K_2 = \frac{K_1 \times H_1}{H_2}$ where $K_2$ is sought concentration, $K_1$ is concentration of the control, $H_1$ is the reading for the control and $H_2$ is the reading for the sample.—S. MIHAELOFF. *J. pharm. chim.*, 28 (1938), 293–296. (S. W. G.)

**Gonadotropic Extracts—Masculinization of the Female Rat by.** Gonadotropic extracts of human pregnancy urine and of pregnant mare's serum cause masculinization of female rats if treatment is started at 6 days of age and continued until the 13th day. The hypertrophy is comparable to that induced by a similar treatment with testosterone. A gonadotropic pituitary extract did not cause any masculinization.—JAMES T. BRADBURY and FERDINAND GAENSBAUER. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 128. (A. E. M.)

**Gonadotropic Hormone—Process for Obtaining, from the Serum of Pregnant Mares.** The greater portion of the albumin of the serum is eliminated at a $p_H$ value of 5 by addition of an equal volume of alcohol, and the crude hormone is separated from the filtrate by addition of alcohol.—SOCIÉTÉ DE L'INSTITUT DE SÉROTHÉRAPIE HÉMOPOÏÉTIQUE. Belg. pat. 425,307, Jan. 31, 1938. (A. P.-C.)

**Hemoglobin—Heme-Globin Linkage of. I. The Course of the Pancreatic Digestion of Oxyhemoglobin and of Carboxyhemoglobin.** Oxy- and carboxyhemoglobin differ in the rate at which they are hydrolyzed by the pancreatic enzymes and also in the nature of the product formed from the prosthetic group. At $p_H$ 8 the hydrolysis of carboxyhemoglobin is slower in the earlier stages but after five days the degree of degradation is approximately the same. At $p_H$ 6.2 the digestion of carboxyhemoglobin is greatly inhibited while that of oxyhemoglobin proceeds almost unchanged. With the carboxyhemoglobin most of the protein appears to be digested away leaving the heme still associated with the amino acid residues to which it is combined in the original hemoglobin. This fragment is able to resist the enzyme action through the protection, possibly steric, of the porphyrin group. The key to this is the carbon monoxide which strengthens the bond of the heme, through its iron, to the protein. With oxyhemoglobin separation of the prosthetic group occurs and a proteose and hematin are formed. The solution soon takes on a brown tone while the bright red color of carboxyhemoglobin remains unchanged during the digestion of the solution if kept free of oxygen.—W. F. ROSS. *J. Biol. Chem.*, 127 (1939), 169–77; through *Chem. Abstr.*, 33 (1939), 1769. (F. J. S.)

**Hormones—Sex, Chemistry of the.** The first real advance in knowledge of hormones was made in 1923 when Allen and Doisy showed that an alcoholic extract of the ovary was capable of producing oestrus in rats and mice after their ovaries had been removed. The active principle of these ovarian extracts was called "oestrin." It was shown that these oestrogenic substances (obtained from pregnancy urine) were closely related to the sterols. Further investigations resulted in the isolation from the crude oestrogenic extracts of a number of related substances, which varied in potency, the more important of these being oestrone(ketodihydroxy-oestrin), oestriol(trihydroxy-oestrin), and oestradiol(dihydro-oestrone). Oestradiol, together with a hormone of the corpus luteum ("progesterone"), is necessary for the proper functioning of the female sex cycle. Testosterone propionate is one of the most generally used compounds in male sex hormone therapy. The author also discusses synthetic oestrogenic compounds, anterior pituitary hormones, pregnancy diagnosis, pregnant mares' serum extract, standardization of sex hormones, oestrone and stilboestral comparison, and methods of administration.—H. E. DALE. *Pharm. J.*, 142 (1939), 432. (W. B. B.)

**Hormones—Sex, Standardized Commercial Preparations of.** A large list of standardized commercial preparations of sex hormones is given.—ANON. *Pharm. J.*, 142 (1939), 436. (W. B. B.)

**Inositol—Separation from Glucose of, and Its Determination.** Glucose can be destroyed practically quantitatively by the action of magnesia at high temperature, without affecting inositol, which can then be easily obtained in the crystalline state. It can be determined either in the filtrate from the destruction of glucose, or else without destruction of the glucose by difference between total titration with periodic acid and reducing sugars determined by means of Fehling's solution.—P. FLEURY and MELLE. M. JOLY. *J. pharm. chim.*, 26 (1937), 341–353, 397–408; through *Chimie & Industrie*, 40 (1938), 658. (A. P.-C.)

**Insulin—Relative Efficiency of Commercial Forms of.** It was not possible to stabilize the insulin requirement of diabetic children through the use of protamin zinc insulin. Once stabilized, however, single doses of protamin zinc insulin maintained the blood sugar at normal levels. When zinc insulin crystals were substituted for regular insulin, no prolongation of action was observed. Protamin zinc insulin and zinc insulin crystals are not of identical action.—ROBERT L. JACKSON and JULIAN D. BOYD. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 15. (A. E. M.)

**Iron in Foods—Ionizable and Available.** A review.—R. A. MCCANCE. *Chemistry and Industry*, 58 (1939), 528–530. (E. G. V.)

**Iron, Phosphorus and Calcium Compounds in Respect to Nutritional Requirements—Analysis and Differentiation of the Composition of.** *I. Introduction.*—It is no longer possible to accept without reservation the statement that the daily requirements of the adult are calcium, 1.0 Gm; phosphorus, 1.5 Gm; iron, 0.015 Gm. On this basis one-half pound of red meat would cover the daily requirement of iron but actually about 10–20% of the iron content of cooked muscle is absorbed. A large proportion of the phosphorus content of common foods is not utilized and may even hinder the absorption of calcium. It is probable that most diets are deficient in calcium and phosphorus intake and that the ratio of calcium to phosphorus is too low. The author suggests that these points may have more significance than the amount of antirachitic vitamins ingested. The availability of these three elements is of more importance than the total amount ingested as revealed by chemical analyses of the foods. *II. The Ionizable and Available Iron in Foods.*—An abstract of the paper which discussed the relationship which may be shown between the determination of ionizable iron to total iron in food by the dipyridyl method and the correlation of the former with available iron. The difficulties of determining ionizable iron are the contamination of the red color with yellow pigments in food and the loss of colored complex by absorption on the matter which is filtered off before color comparison is made. Biological determinations of available iron have been made on rats and dogs but few on humans. Little correlation exists between chemical and biological methods. *III. Phosphorus Compounds in Relation to Nutrition.*—The total phosphorus in the diet does not indicate the available phosphorus for nutrition. Phytin contains much phosphorus but is not digested or absorbed. Diets rich in calcium may interfere with phosphorus absorption. Animals fed beryllium carbonate in addition to a normal diet develop rickets. The study of phosphorus absorption has been aided by the use of radioactive phosphorus compounds. Ingested inorganic phosphorus is largely taken up by the bones. About one-third of the total phosphorus ingested is excreted in the feces. In the laying hen, egg phosphatides which are formed in the liver are transported to the ovary and incorporated by the ovary into the yolk. The phosphorus compounds in milk are formed from the inorganic phosphorus of the blood. *IV. Calcium Compounds in Relation to Nutrition.*—In evaluating calcium metabolism the measure of serum calcium is not significant. It is necessary to know the calcium intake and output. A method of analysis is outlined. The factors that influence the absorption of calcium salts are: (*a*) The ratio of calcium to phosphorus should be 2:1; (*b*) The presence of free hydrochloric acid in the stomach promotes the absorption of calcium; (*c*) Lactose is believed to promote absorption if given with calcium; (*d*) Failure of fat absorption results in deficient calcium absorption; (*e*) Vitamin D influences the absorption of calcium and phosphorus from the intestinal tract.—J. C. DRUMMOND, R. A. MCCANCE, H. D. KAY, E. C. DODDS and J. D. ROBERTSON, *Analyst*, 64 (1939), 332. (G. L. W.)

**Lactic Acid—Determination of.** Protein and sugar can be removed from blood in one operation by treatment with thallium hydroxide. Then in an aliquot of the filtrate the lactic acid can be converted into acetaldehyde by boiling with sulfuric acid. By adding veratrole, a red coloration is produced which is proportional to the acetaldehyde present. The method is rapid and accurate.—F. RAPPAPORT and I. REIFER. *Mikrochim. Acta*, 2 (1937), 62–64; through *Chimie & Industrie*, 40 (1938), 468. (A. P.-C.)

**Lactic Acid in Argentine Wines.** From determinations of lactic acid (I) in samples of wine from four districts in Argentina it is concluded that the sulfur dioxide content places a limit on the activity of the bacteria by which it is generated. The I content is held to indicate the quality and genuineness of wines. The official Argentine method of Moslinger, Bonifazi and Ferre is employed.—E. VELAZQUEZ. *Rev. facultad cienc. quím. La Plata*, 11 (1936), 65–68; through *J. Soc. Chem. Ind.*, 57 (1938), 1480. (E. G. V.)

**Lactosuria and Slight Glycosuria—Detection and Determination of.** The authors recommend the following procedure: Determine the total reducing power of the urine by Bertrand's method; record the number of cc. of permanganate required. If the reducing power (expressed as glucose) exceeds 5%, dilute the urine to this concentration before taking the sample for fermentation. Sterilize a portion of the urine by boiling, then allow to cool, and dilute with distilled water to a titre of about 5%. Prepare a suspension of fresh baker's yeast, taking a piece about the size of a nut from the center of the mass. Mix with cooled boiled distilled water in a sterile mortar, let stand, reject the supernatant liquid and repeat the washing. Place 50 cc. of the sterilized, diluted urine in a 100-cc. glass-stoppered flask; inoculate with 1 cc. of the yeast suspension and incubate in an oven at 37–39° C. for about three hours. Clarify by the ferricyano-zincate procedure and determine the reducing power by Bertrand's method, taking into account the amount of yeast and the clarification. Express as cc. of permanganate required. The difference between the reducing powers before and after fermentation gives the amount of fermentable substances, which may be expressed as glucose.—M. PAGET and P. CONSEIL. *Bull. biologistes pharm.*, No. 42 (1938); through *J. pharm. Belg.*, 20 (1938), 943. (S. W. G.)

**Lecithin Soap—Effect of, on Vitamin A.** Intensive study of the properties of various soaps has revealed that certain soaps possess a marked bactericidal property. The medical use of soap as suppositories, and for colonic irrigation and lubrication, but more importantly, as an intestinal bactericide when taken *per os* is predicated upon these recent findings. Previous investigation disclosed the fact that lecithin soap is superior to other known standard soaps as an intestinal bactericide and detoxifying agent. The present investigation was pursued to determine whether lecithin soap possesses properties similar to its parent substance, lecithin in preserving vitamin A. It was found that lecithin soap retards the heat and air destruction of vitamin A in cod liver oil. Even in concentrations as low as 1%, it retards destruction of vitamin A in oil solution and water emulsion. Water emulsions of vitamin A and D concentrates from cod liver oil show an accelerated destruction of vitamin A in comparison to oil solutions.—SAUL

CASPE and L. G. HADJOPOULOS. *Am. J. Pharm.*, 110 (1938), 533. (R. R. F.)

**Mannonic Lactones from the Seeds of the Date Palm (Phœnix Dactylifera)—Preparation of, and a Study of Their Action and That of New Derivatives upon Gastric Mucin Smears.** In recent years sugar lactones have become important. A new source of galactonic lactone was sought. The seeds of the date palm contain 0.68% galactan and 48.85% of mannan. Experimental work is reported. The following conclusions were reached: A good yield of mannonic lactones directly from date seeds establishes the possibility of using them commercially; esters, ethanolamides and diethanol amides of gluconic and mannonic acids have been prepared; the efficiency of monnaonic lactones and amides as a solvent for mucin was found to equal that of galactonic lactone and organic acids; in the method of Nichols, Hatton and Doherty, alkaline and saponaceous substances react with mercury bichloride to form insoluble compounds, acidic substances including lactones form soluble mercury compounds and acidic substances prevent the fixing of mucin as mercury mucinate; the ethanolamide and diethanolamide of gluconic acid are nontoxic even in large doses.—KARL J. GOLDNER and CHARLES H. ROGERS. *J. Am. Pharm. Assoc.*, 28 (1939), 364. (Z. M. C.)

**Materials and Preparations for Diagnostic Use.** A tentative revision of the N. F. VI chapter as prepared by a special N. F. Committee on clinical laboratory preparations contains approved formulæ for 230 items including reagents, culture media and staining solutions that are most extensively used for their respective purposes in the clinical laboratories of the U. S.—ANON. *Bull. Natl. Formulary Committee*, 7 (1939), 97–158. (H. M. B.)

**Methanol—Detection of.** The liquid to be tested is made slightly acid with phosphoric acid and the methanol is oxidized with formaldehyde by means of potassium permanganate. The aldehyde is detected with chromotropic acid. A pink color can be detected with 0.0035 mg. of methanol.—E. EEGRIWE. *Mikrochim. Acta*, 2 (1937), 329–331; through *Chimie & Industrie*, 40 (1938), 467. (A. P.-C.)

**Mitogenesis in Vaginal Epithelium.** The observations made during the presence of mitosis in the vagina of rats during oestrus, dioestrus or in the vagina of castrated rats, rats castrated and treated with various quantities of either oestrin or oestrin and progesteron, or in the vagina of hypophysectomized rats, demonstrated that in all of these different conditions, mitogenesis is always present in the vaginal epithelium. The authors are forced to conclude that if the hormones of the ovary and the pituitary favor mitogenesis (ovariectomized or hypophysectomized rats), the number of mitoses is, in effect, reduced and the hormones are nevertheless not the exclusive cause of mitosis in the vaginal epithelium.—G. CASTELNUOVA and J. FREUD. *Arch. intern. Pharmacodynamie*, 61 (1939), 491. (W. H. H.)

**Nitrogen—Microdetermination of Urinary, by the Kjeldahl Method and the Residual, of Mestrezat and Janet.** In the determination of urinary nitrogen the Dumas method gives higher values than the Kjeldahl method as practiced with any of the ordinary catalysts. The difference (called residual urinary nitrogen by Mestrezat and Janet) is smaller if mercury selenite, about 1 mg. per cc. of sulfuric acid is used as a catalyst together with the usual amount of potassium bisulfate.—C. DUMAZERT and Y. MARCELET. *Compt. rend. soc. biol.*, 126 (1937), 945–947; through *Chimie & Industrie*, 40 (1938), 469. (A. P.-C.)

**Occult Blood—Orthotolidine and Orthotoluidine Tests for.** Orthotolidine has, for more than 25 years, been recommended for use in testing for occult blood but lately, probably by reason of a typographical error, orthotoluidine has appeared in several books as the chemical to be used. While the latter may be used for the purpose, it is not as sensitive as orthotolidine.—LOUIS GERSHENFELD. *Am. J. Pharm.*, 111 (1939), 17. (R. R. F.)

**Oil-Seed Proteins—Determination of the Degree of Thermal Denaturation of.** Five grams of finely powered material are soaked for 10 minutes in 15 cc. of water, and 15 cc. of 4% sodium hydroxide are added, followed after 1 hour by water to 100 cc. The solution is filtered and nitrogen determined in 10 cc. of filtrate. The degree of denaturation of the proteins is expressed by the ratio filtrate nitrogen/total nitrogen.—V. G. LEITES. *Maslob. Zhir. Delo*, No. 4 (1938), 15–17; through *J. Soc. Chem. Ind.*, 57 (1938), 1445. (E. G. V.)

**Oxalic Acid in Blood—Direct Determination of, by Precipitation with Cerium Salt as Described by Suzuki.** The method of Suzuki consists in precipitating the trichloroacetic acid filtrate with cerium chloride, and determining the oxalic acid in the precipitate iodometrically. The method has the drawback that if an excess of reagent is used, the results are lower. By using cerium sulfate, an excess does not appreciably affect the result, but the solution must be allowed to stand for several hours to secure complete precipitation. The special centrifuge tube described by Suzuki must be used. Ordinary cylindrical or conical tubes lead to a loss of the precipitate on decantation or washing, since the cerium oxalate separates out at first in a colloidal form, which only later becomes crystalline.—S. KAMIYA, Y. NOYE and H. SATO. *Japan J. Med. Sci.*, 3 (1937), 317–324; through *Chimie & Industrie*, 40 (1938), 470. (A. P.-C.)

**Pectin Supplements—Effect of, on Avitaminosis A in Rats.** Pectin appeared to be a beneficial supplement to a diet deficient in vitamin A in so far as pathological changes due to avitaminosis A in the vagina, nares and eyelids are concerned.—A. KOBREN, C. R. FELLERS and WM. B. ESSELEN, JR. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 117. (A. E. M.)

**Perchlorates—Elimination, Distribution in the Organs and Toxicity of.** When sodium perchlorate is ingested by man it appears in the urine in 10 minutes. Fifty per cent is eliminated in the urine in 5 hours and 95% in 48 hours. Seeds germinate in a 0.2% solution but some kinds are killed by a 0.5% solution. It requires 2% to check the growth of *Es. coli* and about 10% to check the growth of *Staphylococcus aureus* and *Sterigmatocystis nigra*. Tadpoles die after 24 hours in a 0.2% solution and leeches are killed by a 2% solution but live several days in a 1% solution. For rabbits the lethal dose of sodium perchlorate is 2 to 4 Gm. per kilo body weight by mouth. The distribution in the various organs of rabbits after administration by different routes was determined.—J. DURAND. *Bull. soc. chim. biol.*, 20 (1938), 423–433; through *Chimie & Industrie*, 40 (1938), 1139. (A. P.-C.)

**Phosphorus-Containing Oil Emulsions—Stable.** A stable aqueous non-acid vitamin-containing oil emulsion adapted for use as a food for animal organisms contains an alkali meta-phosphate as an emulsifying agent.—FRITZ DRAISBACH, assignor to HALL LABORATORIES, INC. U. S. pat. 2,145,344, Jan. 31, 1939. (A. P.-C.)

**Phosphotungstic Acid—Use of, in the Preliminary Refining of Extracts Containing Vitamin K.** The removal of green pigments from hexane extracts of dried alfalfa has been accomplished by the use of

phosphotungstic acid. To one volume of hexane extract is added one-half volume of redistilled ethyl ether and phosphotungstic acid (0.3 Gm. acid/1 Gm. dried alfalfa.). The mixture is shaken vigorously until two phases form on standing: an upper, light green layer containing hexane, ether, solids and all of Vitamin K; and a lower, dark, viscous layer of ether, phosphotungstic acid, and the remainder of the solids of the extract. The lower layer is discarded. The upper layer is washed repeatedly with approximately 50% ethanol and then with water. The ethyl ether is removed by distillation and the remaining solution is chilled at 0° and the solids that precipitate, are filtered out.—COLLEGE OF AGRICULTURE, UNIVERSITY OF CALIFORNIA. *J. Am. Chem. Soc.*, 61 (1939), 532. (E. B. S.)

**Phytosterol in Wheat Germ Oil. II. Preliminary Report on a New Sterol.** Fractionation of the sterol complex in wheat germ oil gave a new sterol melting at 162° to 165° C., which may correspond to a substance obtained by Karrer and Salomon (*Helv. Chim. Acta*, 20 (1937), 424–436). There was also isolated a crystalline substance melting at 74° to 75° C. and giving absorption bands at 327, 320, 293, 282, 270 and 260 mμ.—A. ICHIBA. *Sci. Papers Inst. Phys. Chem. Research*, 34 (1937), 116–20; through *Chimie & Industrie*, 40 (1938), 533. (A. P.-C.)

**Protein-Lipoid Ratio—Variation of, in Tissues.** The authors studied the variations of the protein-lipoid equilibrium: the determination of this ratio (*P/L*) in the blood serum shows a general diminution with increase in age, caused by an increase in fats. In cases of hypothyroidism there is a diminution; while in cases of hyperthyroidism there is an augmentation of the ratio. These facts are correlated with the classical clinical observations (the older myxedematous symptoms, and the newer Basedow consideration), and the condition of the aged in which a thyroidal insufficiency may exist is emphasized as important in thyroid treatment.—C. I. PARHON and G. WERNER. *Bull. soc. chim. biology*, (Nov. 1938); through *J. pharm. Belg.*, 21 (1939), 183. (S. W. G.)

**Protein—Spinal Fluid, Determination of, with the Photoelectric Colorimeter.** The spinal fluid protein is precipitated by sulfosalicylic acid in the presence of gum ghatti, yielding a colloidal suspension stable for at least thirty hours. After standing for 5–10 minutes the tubes can be read in the photoelectric colorimeter at any time up to 24 hours. Spinal fluids containing 5–150 mg. can be read directly without dilution but the greatest accuracy is obtained when the protein content is less than 75 mg. The mean difference between duplicates was 1.2 mg. with a standard deviation of 0.39 mg.—J. M. LOONEY and A. I. WALSH. *J. Biol. Chem.*, 127 (1939), 117–21; through *Chem. Abstr.*, 33 (1939), 1774. (F. J. S.)

**Protein Structure.** The effect of protein structure on physical and biochemical properties is discussed.—ANON. *Chemist and Druggist*, 130 (1939), 669. (A. C. DeD.)

**Protein Sugar and the Identification of Blood Proteins. A Preliminary Report.** Blood serum was diluted with 9 or 19 volumes of distilled water and saturated with carbon dioxide at 0° C. The precipitate contained a globulin and a "mucoglobulin." The latter contained combined carbohydrate and possibly a chondroitin-like substance. Separation was made by treating the precipitate with 1% sodium chloride solution at 1° C. The globulin was more soluble than the mucoglobulin.—H. BIERRY, B. GOUZON and COLETTE MAGNAN. *Compt. rend. soc. biol.*, 127 (1938), 483–485; through *Chimie & Industrie*, 40 (1938), 657. (A. P.-C.)

**Proteins—Deaminized, Cystine Content of.** The action of nitrous acid on proteins alters the cystine combined in the protein molecule, the alteration involving the $NH_2$ group and lowering the value for cystine given by the Sullivan method (*Chem. Abstr.*, 25, 2748), since a positive result with this method requires the presence of free SH, $NH_2$ and $CO_2H$ groups. Other methods except that of Folin and Marenzi (*Chem. Abstr.*, 23, 4492), which gave very high values for the deaminized proteins, gave results which indicated that the cystine content of the deaminized proteins was much the same as that of the untreated proteins.—W. C. HESS and M. X. SULLIVAN. *J. Biol. Chem.*, 128 (1939), 93–99; through *Chem. Abstr.*, 33 (1939), 3825. (F. J. S.)

**Prothrombin—Quantitative Study of Effect of Transfusion of Blood on Plasma.** The changes in the total content of prothrombin in the plasma of the recipient after transfusion are dependent on the prothrombin content of the plasma of the donor, and may be calculated on the basis of addition.—JERE W. LORD, JR., WILLIAM DEW. ANDRUS and ROBERT A. MOORE. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 98. (A. E. M.)

**Purine—Determination of, in Small Quantities of Animal Tissues.** Euler and Schmidt's procedure (*Z. Physiol. Chem.*, 223 (1934), 215–218) was tested and independent studies show that the modifications suggested by Edlbacher and Jucker (*Z. Physiol. Chem.*, 240 (1936), 78–98) are desirable, but if tissues fixed with ethanol are taken for analysis, the hydrolysis has to be extended to twice the stated time to get accurate results. If the organs are very high in purines, it is recommended to reduce the quantity of filtrate to the equivalent of 0.1 to 0.2 Gm. of tissue. The technic developed by Kerr and Blish (*J. Biol. Chem.*, 97 (1932), 11–22) for determining free nucleotides and nucleosides in blood and muscles often gives too high results with other tissues because other constituents containing nitrogen are likely to be absorbed by the various precipitates. Added phosphate is shown to have an effect on the precipitation of nucleotides by uranyl salts and a high concentration of divalent copper has an effect in precipitating purines by cupric hydroxide. For this reason slight modifications of the procedure of Kerr and Blish are recommended. A procedure is given by which purine from nucleinic acid, free nucleide, nucleoside and purine can be determined in the presence of one another and in the same portion of tissue.—A. PEHAM. *Mikrochim. Acta*, 2 (1937), 65–73; through *Chimie & Industrie*, 40 (1938), 468. (A. P.-C.)

**Quinine—Determination of, in Blood.** Blood is treated with sodium citrate and sodium hydroxide heated to 80° C. and extracted with chloroform. The dry residue from the chloroform extraction is then extracted with ether in the presence of decinormal sulfuric acid. The residue from this extraction is used for fluorescence determinations with ultraviolet rays. The details of the apparatus used, the control of unknowns and the method of determination are described.—F. J. KAISER. *Rec. trav. chim.*, 57 (1938), 117–132; through *Chimie & Industrie*, 40 (1938), 1077. (A. P.-C.)

**Rhizophora Mucronata—Tannin of, and Use in Tanning.** The plant is reported to contain at least 40% of tannin, 4.5% non-tannin matter, 15.8% moisture; and has a $p_H$ of 5.6. The extract may be readily obtained at 80°; the reddish brown color extracted is imparted to leather. This color and turbidity may be removed by treating the extract with oxalic acid or sodium bisulfite and alum. The extract should be decolorized and mixed with extract of chestnut for use in tanning.—G. A. BRAVO. *Agric. coloniale*, 32 (1938), No. 6; through *J. pharm. Belg.*, 20 (1938), 782. (S. W. G.)

**Riboflavin-Low Diets—Effect of, upon Nerves, Growth and Reproduction in the Rat.** The severe nerve degeneration characteristic of growing chicks fed a riboflavin-low diet failed to occur in rats maintained on a similar ration. Such diet had neither an adverse effect on the reproduction of the rat, but it lacks a growth-promoting constituent. Addition of nicotinic acid did not promote growth.—R. W. ENGEL and P. H. PHILLIPS. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 597. (A. E. M.)

**Serum Nitrogen—Determination of the, Not in the Form of Complex Proteins or Compounds of Low Molecular Weight (Intermediate Nitrogen).** The author defines "intermediate nitrogen" as the difference between the total nitrogen present in the serum after removal of albumin and globulins (by precipitation with acetone) and the nitrogen in the trichloroacetic acid filtrate which can be determined by the hypobromite method (urea, ammonia, creatine, creatinine and uric acid). For normal human serum the average value is 15 mg. per 100 cc. The technic of the determination is described.—Y. RAOUL. *Bull. soc. chim. biol.*, 19 (1937), 1361–1365; through *Chimie & Industrie*, 40 (1938), 472. (A. P.-C.)

**Sex Hormones. XXVII.** A study of the diols and the 17-*cis* and 17-*trans* hydroxyketones of androstane and androstene. The physiological tests brought out the importance of the *cis* isomerism of the hydroxyl group in 3-position and the *trans* isomerism in 17-position, for the physiological activity of the product.—L. RUZICKA and H. KÄGI. *Helv. Chim. Acta*, 20 (1937), 1557–1564; through *Chimie & Industrie*, 40 (1938), 533. (A. P.-C.)

**Sex Hormones—a Simplified Classification of Commercial Preparations of.** The commercial anterior pituitary-like hormones obtained from pregnancy urine or the placenta, anterior pituitary gland extraction products, the estrogenic hormone, the corpus luteum hormone and the male sex hormone products are tabulated, including the name, size and potency of the various products on the market.—W. G. CROCKETT. *Virginia Med. Monthly*, 66 (1939), 191–197; through *Chem. Abstr.*, 33 (1939), 9547. (F. J. S.)

**Sex Hormones—Color Reactions of.** Mix a solution of 1 mg. of substance in 3 drops of alcohol, with 10 cc. of water; to 1 cc. of the suspension add 1 to 2 drops of 0.1% alcoholic 1-nitroso-2-naphthol and 5 drops of nitric acid (specific gravity 1.4), and immerse in boiling water. Androsterone and corpus luteum hormone give no color; $\alpha$-follicular hormone gives a deep red color which fades slowly, equilin gives a bluish red changing to blue-violet, green and finally yellow, and equilinin gives a blue-violet changing to green and finally yellow.—K. VOSS. *Hoppe-Seyler's Z. Physiol. Chem.*, 250 (1937), 218–220; through *Chimie & Industrie*, 40 (1938), 532–533. (A. P.-C.)

**Silicosis—Metabolism of Patients Suffering from.** Metabolism at rest and fasting was determined on 37 patients suffering from silicosis, using Knipping's apparatus. For most patients, the value was 10% to 15% above normal. Even in severe cases whose working capacity is reduced 50 to 80% by silicosis the value often remains between 100 and 110%. In most cases these high results are obtained after increased pulmonary ventilation.—A. BÖHME. *Arch. Gewerbepath. Gewerbehyg.*, 8 (1938), 449–457; through *Chimie & Industrie*, 40 (1938), 891. (A. P.-C.)

**Snake Venom—Biological Characteristics of.** The venoms of the Russell viper and the cobra were found to contain no invertase nor diastatic enzymes, but both possessed the property of digesting fibrin, liquefying gelatin, clotting milk and digesting casein. Cobra venom was hemolytic in varying degrees for the susceptible varieties of R. B. C., but the viper venom was essentially non-hemolytic.—A. C. ROY and R. N. CHOPRA. *Indian J. Med. Research*, 26 (1938); through *J. Trop. Med. Hyg.*, 42 (1939), 11. (W. T. S.)

**Snake Venoms.** The activities of a number of venoms were measured by their ability to coagulate rabbit's blood. The effect of treating the venoms with formaldehyde, keeping the solutions for several days, heating them and shaking them with solid absorbents was examined.—C. J. HANUT. *Ann. physiol. physiochim. biol.*, 14 (1938), 893; through *Brit. Med. J.*, 4080 (1939), 598E. (W. H. H.)

**Soybean Proteins—Peptization of.** The amount of nitrogenous matter extracted from oil-free soybean meal by various acids and sodium and calcium hydroxides was determined over a wide range of $p_H$ values. Data are represented to show the influence of hydrogen-ion concentration on the dispersion of the nitrogenous constituents of the meal by sodium chloride and calcium chloride. $p_H$ dispersion data for wheat, tepary beans and Alaska peas are given for comparison.—A. K. SMITH and S. J. CIRCLE. *Ind. Eng. Chem.*, 30 (1938), 1414–1418. (E. G. V.)

**Sterols—Quantitative Measurement of the Ultraviolet Activation of. I. Ergosterol.** Activation of ergosterol was carried out using each of the five active lines of the mercury arc spectrum. The resulting vitamin D was tested on rachitic rats. It was found that the activation for the five lines was substantially uniform per quantum of energy applied.—ROBERT S. HARRIS, JOHN W. M. BUNKER and L. MALCOLM MOSHER. *J. Am. Chem. Soc.*, 60 (1938), 2579. (E. B. S.)

**Strychnine—Toxicological Determination and Identification of.** Extraction is carried out by Stas' method as modified by Ogier and Kohn-Abrest. Purification is based on precipitation of the strychnine by a solution of potassium iodo-mercurate containing no excess of iodide (13.55 Gm. of mercuric chloride and 35 Gm. of potassium iodide per liter). The complex is washed by centrifuging in presence of distilled water, and then decomposed with hydrogen sulfide. The mixture is centrifuged, the clear liquid is decanted and added to the wash waters of the mercury precipitate and evaporated on the water bath. The residue is extracted with chloroform. In the case of urine, it must first be concentrated by heat, avoiding temperatures greater than 115° to 120° C., above which there are formed tarry compounds which precipitate with the iodomercuric reagent. The residue obtained by evaporation of the chloroform is dissolved in 1 cc. of 50% hydrochloric acid, and the whole is transferred to a test tube 8 mm. in diameter and 10 cm. long. There is added 0.5 Gm. of zinc filings, the solution is heated to boiling, allowed to stand for 5 minutes and decanted into an identical tube. Into a series of 10 tubes there is placed 1 cc. of 50% hydrochloric acid containing 0.001 to 0.01 mg. strychnine, respectively; reduction is carried out as for the sample and, after cooling, 1 drop of a 0.01% sodium nitrite solution is added to each tube. The pink color produced in the sample is compared with those of the standards.—J. A. LABAT and E. KERGONOU. *Bull. biologistes pharm.*, (1937), 457–463; through *Chimie & Industrie*, 40 (1938), 469. (A. P.-C.)

**Sucrose and Glucose Tolerance in Depancreatized Dogs.** Definitely more sucrose than glucose can be tolerated in depancreatized dogs with the same dose of insulin.—P. O. GREELEY, D. B. TYLER and D. R. DRURY. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 36. (A. E. M.)

**Sulfanilamide—Estimation of, in Bilogical Fluids.** The method outlined for the estimation of sulfanilamide and its acetyl derivative in blood and urine yields highly satisfactory results, it is highly accurate and sensitive and is very suitable for clinical purposes. It has two very important advantages over the diazotization methods: its much greater simplicity in technic, which results in a considerable saving of time in carrying out the estimation, and the use of only reliable reagents long familiar to clinical chemistry. It thus places in the hands of the clinician a ready means of controlling the concentration of sulfanilamide and allied drugs in the blood and studying their elimination in the urine, a point which is of particular importance in cases of urinary infections treated with sulfanilamide or similar drugs. The method can also be directly applied to the estimation of two derivatives of sulfanilamide that have recently been introduced as chemotherapeutic agents—namely, M. & B. 693 (2-sulfanilylamino-pyridine) and Uliron (4'-dimethylaminosulfanamido - 4 - aminobenzenesulfonamide). Under the conditions described both these substances react with Ehrlich's reagent to produce a deep yellow color suitable for colorimetric analysis. The reaction is of the same degree of accuracy and sensitivity as with sulfanilamide itself. The same chromate standards can be used as in the estimation of sulfanilamide if small correction factors are used to allow for the differences in molecular weight of the substances. The exact nature of the substance formed has not yet been definitely established; by allowing equimolecular amounts of sulfanilamide and Ehrlich's reagent to react in acid solution the orange precipitate formed can be recrystallized from hot water and obtained in the form of dark red needles with a melting point of 244° C. and with the empirical formula $C_{15}H_{16}O_4N_3S$.—A. E. A. WERNER. *Lancet*, 236 (1939), 18. (W. H. H.)

**Sulfanilamide—Relation of, to Fat and Carbohydrate Metabolism.** The following summary is given: Experiments have been performed which indicate that sulfanilamide has no influence on the course of the ketonuria induced in rats by a diet containing a large proportion of fat. Sulfanilamide also has no effect on the blood sugar response of rabbits to insulin. The glycogen content of rats is unchanged by sulfanilamide.—T. E. W. GOODIER. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 692–696. (S. W. G.)

**Sulfapyridine Adsorption—Inhibitory Action of Peptone on.** Amino acids containing aromatic groups are able to inhibit the adsorption of sulfapyridine by activated carbon. This suggests the possibility that peptone, or certain of its constituents, may interfere with the adsorption of the drug on bacterial surfaces.—W. P. LARSON, RAYMOND N. BIETER, MILTON LEVINE and ROBERT E. HOYT. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 200. (A. E. M.)

**Terpene Alcohol—Sulfonated.** 0.2% of the alcohol greatly reduce the activity of yeast in fermenting grape juice.—C. BERTIN. *Compt. rend. acad. agric. France*, 24 (1938), 735–738; through *J. Soc. Chem. Ind.*, 58 (1939), 200. (E. G. V.)

**Testosterone Propionate—Effect of, on Ovulation and Luteinization in the Rabbit.** Testosterone propionate in daily doses of 10 mg. over a period of 22 days did not prevent ovulation in the rabbit in response to human pregnancy urine. Under continued treatment with testosterone degeneration of the newly-formed corpora lutea was accelerated.—LAMAN A. GRAY and HAMPDEN LAWSON. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 108. (A. E. M.)

**Thrombin—Manufacture of.** A solution of animal fibrin prepared from dry, fresh fibrin, for example, dried by treatment with acetone-ether, is mixed with a miscible organic solvent and the precipitated crude thrombin is extracted with water, preferably at $p_H$ 6.5–7.5. Purified thrombin is obtained from the extract by precipitation with, for example, acetone.—H. DYKERHOFF. Brit. pat. 485,731; through *J. Soc. Chem. Ind.*, 57 (1938), 1503. (E. G. V.)

**Tocopherol and Some Similar Compounds—Constitution and Determination of.** The potentiometric determination of tocopherol with gold chloride solution is better than the use of ammoniacal silver or ferric chloride solutions. By means of oxidation, $\alpha$-tocopherol, is shown to possess a chromane structure as is likewise the compound formed by condensing crotyl bromide with trimethyl-hydroquinone.—P. KARRER, R. ESCHER, H. FRITZCHE, H. KELLER, B. H. RINGIER and H. SOLOMON. *Helv. Chim. Acta*, 21 (1938), 939. (G. W. H.)

**Tocopherol—Quantitative Determination of, in Various Raw Materials.** Using the potentiometric titration method with gold chloride in 80% alcohol, the total ($\alpha$- and $\beta$-tocopherol) content of the following was determined: (1) Unsaponifiable from wheat germ oil 13.4%, wheat germ oil 0.52%, wheat embryos 0.0164%; (2) Unsaponifiable from green head lettuce 0.055%; (3) Unsaponifiable from linseed oil 2.34%; linseed oil 0.023%; (4) Unsaponifiable from olive oil 0.935%, olive oil 0.008%; (5) Unsaponifiable from sesame oil 0.63%, sesame oil 0.0050%; (6) Unsaponifiable from cocoanut oil 0.55%, cocoanut oil 0.0027%.—R. KARRER and H. KELLER. *Helv. Chim. Acta*, 21 (1938), 1161. (G. W. H.)

**Urinary Albumin—Determination of, by Means of the Photoelectric Cell.** To 5 cc. of filtered urine add 0.5 cc. of 20% sulfosalicylic acid solution and 0.5 cc. of 1% gum tragacanth solution (as protective colloid) and compare with a standard in a photoelectric nephelometer.—A. SARTORY, R. SARTORY and J. MEYER. *Bull. biologistes pharm.*, (1937), 503–506; through *Chimie & Industrie*, 40 (1938), 469–470. (A. P.-C.)

**Urine—New Method for the Wet Ashing of.** Place 500 cc. of urine in a 700-cc. round-bottomed flask which has a standard ground neck and add 30 cc. of concentrated nitric acid (sp. gr. 1.4). Cover the flask with a beaker and place it on a small metal stand in a high-pressure autoclave which contains, in place of water, 250 cc. of 10% sodium hydroxide solution. Heat the autoclave for five minutes after the contents boil, close the blow-off valve, and continue the heating until the temperature reaches 310–320° F. (as indicated by the autoclave thermometer), then allow the autoclave to cool. At this stage the mixture should be an almost clear yellow solution, nearly free from suspended matter. Add to the contents of the flask 15 cc. of concentrated sulfuric acid (sp. gr. 1.84), 10 cc. of 60% perchloric acid (sp. gr. 1.54), and a few chips of silica, and then close the neck of the flask with a suction adapter. Place the flask on a sand bath and connect the side arm of the suction adapter with a filter-pump by way of two Pyrex filter flasks arranged as wash bottles. The first flask has a capacity of two liters and contains 60 cc. of 40% sodium hydroxide solution, while the second flask has a capacity of 1 liter and contains 100 cc. of $5N$ hydrochloric acid. Heat the autoclaved material to boiling and maintain a fairly rapid current of air through the apparatus during the evaporation and digestion. When all the water has been evaporated, the yellow mixture becomes rather viscid and froths a little until the nitric acid has passed off, after which it rapidly darkens to a deep brown. Rarely is there any separation of free carbon. From this stage the

digestion proceeds rapidly and smoothly, and is usually complete within 5 to 10 minutes. After cooling, dilute the digest and proceed with the determination of the metal.—R. J. BARTHOLOMEW. *Analyst*, 63 (1938), 884. (G. L. W.)

**Vision—Solution of the Problem of.**—F. W. EDRIDGE-GREEN. *Chemistry and Industry*, 58 (1939), 753–758. (E. G. V.)

**Vitamin A—Determination of, in the Blood.** The power of vitamin A to absorb ultraviolet light can be used to determine it in blood. Hydrolyze 10 cc. of serum or of whole blood, in an atmosphere of nitrogen, by adding 1 cc. of 60% potassium hydroxide solution and heating 15 minutes on a boiling water bath; cool, add 5 cc. of 95% ethanol, extract with 30 cc. of petroleum ether, separate the latter, evaporate in an atmosphere of nitrogen; take up the residue in 10 cc. of absolute alcohol, and determine the absorption spectrum of the solution between 2900 and 3230 Å. A curve is obtained having a maximum at 3230 Å. Irradiation by light of 3650 Å only, produces the spectral modifications characteristic of vitamin A and permits an accurate determination, but only provided the blood does not contain appreciable amounts of carotene.—A. CHEVALLIER, Y. CHORON and R. MATHERON. *Compt. rend. soc. biol.*, 127 (1938), 541–542; through *Chimie & Industrie*, 40 (1938), 657. (A. P.-C.)

**Vitamin A—Difficulty in Transformation of Carotene into.** Utilization of carotene is impaired in a number of abnormal and pathologic conditions; *e. g.*, tuberculosis, cancer. This becomes evident when an increase in yellow pigmentation appears in the blood and the skin. In these cases recourse is recommended to natural substances such as fish oils containing the vitamin.—R. H. MONCEAUX. *J. pharm. chim.*, 28 (1938), 297–302. (S. W. G.)

**Vitamin A—Effects of Solvents on the Absorption Spectrum of.** The author, commenting upon the letter of Smith, Stern and Young, compares the experimental error of ±25% of the biological assay with the accuracy of the spectrophotometric determination. The polyene formulæ of vitamin A postulates many theoretical isomerides with five ethenoid linkages, but effects of these balance. The ratio of the ultraviolet absorption (328 mμ) to the antimony blue color absorption maximum (620 mμ) was found to be as follows: rich vitamin A concentrates 0.32; halibut intestinal oil fractionated by molecular distillation, 0.21 to 0.38; very rich ester fractions 0.28. The author suggests that a partial separation of *cis-trans* isomerides is a plausible explanation.—R. A. MORTON. *Nature*, 141 (1938), 552; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 637. (S. W. G.)

**Vitamin $B_1$—Biological and Chemical Determination of.** A standard thiochrome solution (A) is prepared by dissolving 1 Gm. aneurin in each cc. Ten cc. of the unknown solution is placed under an analytical quartz lamp and in a second tube containing 10 cc. isobutyl alcohol is added a sufficient amount of A to produce the same amount of fluorescence as the unknown. To determine the vitamin content in urine a correction must be made for the fluorescence properties of the urine itself.—TH. MOLL and K. RITSERT. *Scientia Pharm.*, 10 (1939), 39. (H. M. B.)

**Vitamin $B_1$ (Aneurin)—Colorimetric Method for the Determination of.** A colorimetric method for the determination of aneurin is described, which depends upon the formation of an ether-soluble azo dye through the reaction of diazotized 2,4-dichloroaniline with aneurin in an alkaline medium. The color is determined in a Pulfrich photometer (filter S 50). Optimum conditions for the reaction are described. Comparisons of international standard preparations of yeast extracts, etc., show good agreement with biological assays. For the determination of aneurin in urine, the aneurin is adsorbed on frankonite and the determination made on the eluate.—H. WILLSTAEDT and F. BARANY. *Enzymologia*, 2 (1938), 316–320; through *Chimie & Industrie*, 40 (1938), 472. (A. P.-C.)

**Vitamin $B_1$ Content of Evaporated Milk—Factors Affecting the.** Samples of raw milk contained 92 to 117 units per quart. The evaporated milk prepared from the same milk contained 61 to 93 units in equivalent quantities. Milk assaying 80 units contained after 2 months of storage at room temperature 68 units and later only 59. A 22-months old sample contained only 42 units.—F. W. SCHULTZ and ELISABETH M. KNOTT. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 532. (A. E. M.)

**Vitamin C Content of Legumes—Influence of Cooking on.** The ascorbic acid was determined by the procedure of Tillmans and Harris as follows: Triturate 10 Gm. of the sample in a mortar with 20–30 cc. of a 10% solution of trichloroacetic acid, then filter. Clarify the filtrate by treating with solution of lead acetate for three minutes, followed by treating with saturated solution of sodium sulfate for three minutes; using the proportions of 6 cc. of the former and 4 cc. of the latter for each 10 cc. of filtrate. Filter and develop the color by adding a 0.3% solution of 2:6-dichlorophenol-indophenol. The following conclusions are given: (*a*) Cooking in water. Cooking legumes in 7% salt solution produces variable losses in vitamin C content. The losses are increased when the cooking is started with cold or lukewarm water, and decreased when started with the water already boiling. Prolonged cooking augments the loss in vitamin. Part of the lost vitamin is retained as such in the liquor. After cooking in water or salt solution, potatoes contain appreciable amounts of vitamin C, the loss in both cases being equivalent. Old potatoes had the same vitamin C content as young potatoes. The loss of vitamin is increased when potatoes are peeled before cooking, and when the cooking is started with cold water. (*b*) Cooking with steam. The loss in vitamin C is the same as when the cooking is carried out in water or salt solution. (*c*) The loss in vitamin C is about the same by baking. (*d*) Legumes retain most of their vitamin C content when prepared by frying.—E. PIERANGELI. *Rev. brasil. chim., São Paulo*, (Mar. 1938); through *J. pharm. Belg.*, 20 (1938), 858. (S. W. G.)

**Vitamin C in Cataract Patients.** A detailed study of a large number of patients with cataract showed that elderly people have less vitamin C reserve than have young people. There is direct relationship between vitamin C deficiency and the development of cataract, for some patients are as well provided with vitamin C as young people. The blood-aqueous barrier seems to control the amount of vitamin C in the anterior chamber, for there is no close parallelism between the concentration of the vitamin in the blood and in the aqueous humour.—J. URBANEK. *Klin. Monat. für Augenheilkunde*, 101 (1938), 670; through *Brit. Med. J.*, 4075 (1939), 312F. (W. H. H.)

**Vitamin C Requirement of Man. Prolonged Study of Daily Excretion and Plasma Concentration of Vitamin C.** The optimum intake of vitamin C daily is 100 mg. At this intake the blood plasma concentration will be maintained at or above a level of 1 mg. %. If a greater amount of vitamin C is fed, it is excreted in the urine.—ELAINE P. RALLI, GERALD J. FRIEDMAN and SOL. SHERRY. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 604. (A. E. M.)

**Vitamin D—Preparation of, in High Yields.** Oils containing fat-soluble vitamins are degassed in a

centrifugal degasser (apparatus claimed) and then subjected to molecular distillation with a short heating period, that is, "flash" distillation in a specified apparatus. Antioxidants may be added to the oil. Two fractions of vitamin D may be obtained, having boiling points 142–144° and 210–260° under molecular conditions. A total recovery of 80–100% of the vitamin D can be attained. —KODAK LTD. from EASTMAN KODAK CO. Brit. pat. 482,880; through *J. Soc. Chem. Ind.*, 57 (1938), 1503. (E. G. V.)

**Vitamin E.** The chemistry, physiological action, chemical and veterinary uses of vitamin E are given.—ANON. *Chemist and Druggist*, 130 (1939), 528. (A. C. DeD.)

**Vitamin E—Discussion on the Clinical Uses of.** It has been said that there appeared to be a relationship between vitamin E and the function of the anterior pituitary. The availability of pure tocopherol and of chemical tests for its estimation should be helpful in the further study of vitamin E, and rapid progress should now be made in this field. On the other hand, there are other workers who feel that the necessity for vitamin E for normal embryonic growth in animals other than the rat and the mouse has not been established.—ANON. *Pharm. J.*, 142 (1939), 276. (W. B. B.)

**Vitamin E Preparations—Biological and Chemical Standardization of.** The biological determination based on measurements of the increase of fertility and the chemical determination based on oxidation of the vitamin to tocopherylquinone by means of $FeCl_3$ are in satisfactory agreement.—C. ENGEL and A. EMMERIE. *Nederland. Tijdschr. Geneeskunde*, 83 (1939), II, 2532; through *Chem. Abstr.*, 33 (1939), 6914. (F. J. S.)

**Vitamin E—Structure of.** A review is given of the history of the development of the knowledge of vitamin E structure and the synthesis of α-tocopherol. Twenty-five literature references are cited. —K. A. JENSEN. *Dansk Tids. Farm.*, 13 (1939), 125. (C. S. L.)

**Vitamin E—Studies on. Ethers of Durohydroquinone.** The preparations of several mono- and di-ethers of durohydroquinone are given. No results of their vitamin E-like activity are given.—E. FERNHOLZ and JACOB FINKELSTEIN. *J. Am. Chem. Soc.*, 60 (1938), 2402. (E. B. S.)

**Vitamin M.** Anemia, leucopenia and loss of weight, often accompanied by ulceration of the gums and diarrhea, leading to death in from twenty-six to one hundred days, resulted regularly in monkeys from a diet deficient only in factors of the vitamin B complex. This syndrome was not prevented by giving nicotinic acid, riboflavin, and thiamin chloride, but it could be prevented by giving yeast or liver extract. The active constituent which must therefore be present in the two latter substances is unknown; the authors propose to call it vitamin M.—W. C. LANGSTON, W. J. DARBY, C. F. SHUKERS and P. L. DAY. *J. Exptl. Med.*, 68 (1938), 923; through *Brit. Med J.*, 4081 (1939), 656F. (W. H. H.)

**Vitamin-Containing Oil—Treatment of, and Products Obtained Therefrom.** A vitamin-containing oil is distilled under a vacuum of the order of 0.01 to 0.000001 mm. of mercury. The oily distillate, containing most of the vitamin content of the original oil, is subjected to mild hydrogenation under conditions causing substantial deodorization of the oil and partial saturation thereof. The product thus obtained is substantially tasteless and odorless and free from tendency to develop objectionable taste and odor on standing.—HEIN I. WATERMAN, CORNELUS VAN VLODROP and JOHANNES A. VAN DIJK, assignors to IMPERIAL CHEMICAL INDUSTRIES LTD. U. S. pat. 2,143,587, Jan. 10, 1939. (A. P.-C.)

**Vitamin-Containing Preparations—Manufacture of Stable, Liquid.** (A) One or more vitamins of the B group is/are dissolved in one or more tricarbon polyhydric alcohols the carbon atoms in which form part of an acyclic C:C chain, for example, glycerol, propylene glycol. (B) Vitamin C is dissolved in a propanediol, for example, propane-α, β-diol.—E. LILLY & Co., H. W. RHODEHAMEL and E. C. KLEIDERER. Brit. pat. 486,054; through *J. Soc. Chem. Ind.*, 57 (1938), 1503. (E. G. V.)

**Vitamins. The Present Status of Vitamin Research.** A review with one table and 33 references. —KARL G. KREBS. *Scientia Pharm.*, 10 (1939), 1–13. (H. M. B.)

**Vitamins A and D Not Found in Mutton Bird Oil.** Claims have been made that the stomach oil of the Australian mutton bird (*Puffinus tenuirostris*) is one of the richest natural sources of vitamin A, and indeed, refined samples of this oil have been offered for sale as a substitute for cod liver oil. By the use of a chemical assay method for vitamin A and a biological assay method for vitamin D, the author determined that neither the fresh oil nor commercial emulsions prepared from it contained more than traces of vitamins A and D. The oil was said to consist mainly of a liquid wax and hence was of little use as a food.—WILLIAM DAVIES. *Australian J. Exptl. Biol. Med. Sci.*, 17 (1939), 81. (W. T. S.)

**Vitamins $K_1$ and $K_2$—Assay of.** The potency of vitamin $K_1$ is approximately 1000 units per mg., $K_2$ is 660 units. The 18 hours' assay procedure gives satisfactory results. In a slightly modified Almquist 7-day curative method, 80 micrograms per kilo of diet of $K_1$ and 160 micrograms per kilo of diet of $K_2$ are adequate.—SIDNEY A. THAYER, R. W. MCKEE, S. B. BINKLEY, D. W. MACCORQUODALE and EDWARD A. DOISY. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 194. (A. E. M.)

**Volumo-Colorimeter—Use of the, in Analysis.** Volumo-colorimetry is based on the progressive and proportional decolorization of the liquid to be analyzed by a suitable reagent. It can be applied to the determination of uric acid in blood; an intense blue coloration is first produced by means of phosphotungstic acid in alkaline medium, and the solution is then decolorized with alkaline potassium ferricyanide solution. Two molecules of ferricyanide are equivalent to one of uric acid.—A. IONESCO-MATIU. *Bul. Soc. Stiinte Farm. Romania*, 2 (1937), 80–81; through *Chimie & Industrie*, 40 (1938), 867. (A. P.-C.)

**Wheat Germ Oil—Growth-Stimulating Action of Ferric Chloride Treated.** Ferric chloride treated wheat germ oil containing approximately one-tenth of the vitamin E activity of the original oil stimulated growth when fed at a level of 80 mg. six times weekly to female rats which had plateaued in weight on a vitamin E low diet.—HERBERT M. EVANS and GLADYS A. EMERSON. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 170. (A. E. M.)

**Wheat Germ Oil—Unsaponifiable Matter of** The following substances were obtained from the unsaponifiable matter of wheat germ oil: an oily alcohol $C_{29}H_{50}O_2$ (melting point 78° to 79° C.); an eicosanol $C_{29}H_{42}O$ (melting point 68° C.), "tritiol" of probable formula $C_{22}H_{40}O_2$ (melting point 84° to 85° C.); β-amyrin, $C_{30}H_{50}O$ (melting point 195° to 196° C.); and a tritisterol (melting point 178° C.).—A. ICHIBA. *Sci. Papers Inst. Phys. Chem. Research*, 34 (1937), 121–131; through *Chimie & Industrie*, 40 (1938), 533–534. (A. P.-C.)

**Wines—Treatment of, with Oxygen.** Clarification of wine by oxygen removes iron but not copper or zinc. Sulfur dioxide is oxidized to sulfuric acid, so imparting an aged flavor. It is considered that wine so treated cannot be detrimental to health.—C. SCHATZLEIN. *Wein u. Rebe*, 18 (1936), 97–100; through *J. Soc. Chem. Ind.*, 58 (1939), 92. (E. G. V.)

**Zambrini's Reaction.** The reaction is used to detect the humoral modifications of saliva. The following procedure is used. The subject rinses his mouth thoroughly with distilled water, then 1 cc. of saliva is collected in a tube and 15–20 drops of the reagent (dioxyanthraquinone 7 Gm., trioxyanthraquinone 1 Gm., rubia tinctoria 1.5 Gm., cocineal carmine 1 Gm., 95% alcohol 1000 cc.) is added. The mixture is shaken vigorously for several seconds, then the color is noted by means of Zambrini's colorimetric scale (16 tints going from pale yellow to deep violet); the appearance or absence of a yellow ring in the upper part of the tube is noted; and finally the eventual appearance of a sediment is recorded. The authors describe in detail the various interpretations of the results of this test and recommend its use by clinicians. It contributes to the information on the state of resistance of the body, thus aiding the prognosis. In tuberculosis the test enables the following of the course of the illness and the effects of the therapeutic treatment may be noted. The test also should be capable of discovering the appearance of certain conditions and detect morbid states and laten infections. Little is known of the mechanism of the reaction, but hypothetically it correlates the complex phenomena of the $p_H$ factor, the toxic factor, the endocrinian factor and the colloidal factor of the humors. The authors state that the $p_H$ value appears to be the dominant factor in the mechanism of the reaction.—E. COTTIN and E. ARNOLD. *Bull. biologistes pharm.*, 43 (1938), 4; through *J. pharm. Belg.*, 21 (1939), 310. (S. W. G.)

## ANALYTICAL

**Acetic Acid and Acetaldehyde—Determination of Water in.** Five Gm. of acetic acid are heated with 100 Gm. of anhydrous toluene until a clear solution is obtained, and this is cooled until turbidity due to separation of water appears; the water content of the acetic acid is then read from a curve connecting water content with stratification temperature. The water content of acetaldehyde is determined similarly, in sealed flasks.—E. N. ROSLIAKOVA. *Zavodskaya Lab.*, 7 (1938), 929–932; through *J. Soc. Chem. Ind.*, 58 (1939), 240. (E. G. V.)

**Acetic Acid—Detection of.** A sensitive test for acetic acid consists in converting calcium acetate into acetone and testing the vapors with *o*-nitrobenzaldehyde.—L. ROSENTHALER. *Mikrochem.*, 23 (1937), 197; through *Chimie & Industrie*, 40 (1938), 467. (A. P.-C.)

**Acid in Wool—Determination of.** The three methods of determining acid in wool, now in general use were examined independently in each of four laboratories. The sodium terephthalate method of Hirst and King (*J. Text. Inst.*, 17 (1926), 101T) gave lower acid values than either the sodium acetate method of Trotman and Gee (*J. Soc. Dyers and Col.*, 48 (1932), 32) or the pyridine method of Barritt (*J. Text. Inst.*, 26 (1935), 87T). The sodium acetate distillation method gave erratic results due in part to an uncertain blank correction. The pyridine method was examined in detail and was shown to give consistent recovery of nearly all of the acid present (90 to 100%) under the conditions originally described. The effect of drying the wool at low or high temperature is negligible. The difficulty of using phenolphthalein indicator in extracts which are red or purple is overcome by using thymol blue indicator. The pyridine method is as follows: A 2-Gm. sample of the wool is wet with 190 cc. of water and then 10 cc. of a 10% solution of pyridine is added. The mixture is well shaken and allowed to stand for at least one hour. Suitable aliquots are withdrawn and titrated with $N/10$ sodium hydroxide solution, using phenolphthalein or thymol blue as indicator.—J. BARRITT, H. H. BOWEN, F. L. GOODALL and A. WHITEHEAD. *Analyst*, 63 (1938), 782. (G. L. W.)

**Acids in Wine and Fruits—Rapid Determination of Total, by "Dry Titration."** Titration is effected with a number of strips of filter paper impregnated with alkali, each corresponding with 0.5 or 1% of acid in one liter of liquid, using bromocresol-purple paper as indicator. The color change yellow-blue-violet ($p_H$ 6.8) may be observed with dark liquids.—F. HOLZBACH. *Sborník Československ. Akad. Zemědělské*, 11 (1936), 271–276; through *J. Soc. Chem. Ind.*, 57 (1938), 1480. (E. G. V.)

**Allantoin—Photometric Microdetermination of.** In studying the mechanism of nitrogen metabolism it is necessary to determine small quantities of allantoin not only in blood and in urine but also in pure solutions of allantoin. Fosse and his collaborators (*Compt. rend. acad. sci.*, 193 (1931), 7–11) have proposed a method based upon its transformation into allantoic acid as a result of the action of soybean urease in the presence of potassium cyanide. The allantoic acid is then hydrolyzed to glyoxylic acid which gives an intense red coloration when treated with a reagent containing phenylhydrazine, concentrated hydrochloric acid and potassium ferricyanide. An attempt was made to adapt this method of Fosse to photometric measurement, but the final solutions were too turbid for accuracy. The method of Borsook (*J. Biol. Chem.*, 110 (1935), 481–493), which is similar in principle, can, however, be used with slight modification. For this photometric method, at the most 2 cc. of solution containing 0.01 to 0.1 mg. of allantoin is sufficient. The results are accurate to 5%.—CH. BOSSON. *Mikrochem. Acta*, 2 (1937), 74–79; through *Chimie & Industrie*, 40 (1938), 468–469. (A. P.-C.)

**Ammonia—Determination of Free and Saline, Using a Semimicroanalytical Method.** A volume of 1, 2.5 or 50 cc. of the sample of water, depending on the amount of ammonia probably present, is introduced into the 50-cc. conical flask, and if necessary the volume is made up to 50 cc. with ammonia-free distilled water. 0.5 Gm. of sodium carbonate, which has previously been ignited to remove any ammonia, is added to the water and the head of the apparatus is fitted in position. A piece of No. 1 "Whatman" filter paper which has been steeped for 15 minutes in a manganese nitrate-silver nitrate solution and allowed to dry is previously placed between two glass disks in the head of the apparatus. The apparatus is heated on an asbestos plate until 25 cc. of the water have been vaporized. The flask is then removed from the source of heat and the test paper is taken out and allowed to dry. It can then be compared with a previously prepared series of standard papers. The ammonia present is calculated as parts per 100,000. Organic ammonia may be determined by adding to the residue, after the determination of free and saline ammonia, 10 cc. of a solution containing 50 Gm. of sodium hydroxide (ammonia-free) and 2 Gm. of potassium permanganate in 250 cc. of water and 25 cc. of ammonia-free distilled water. The solution is boiled in the apparatus until only 10 cc. of the solution remain. The test paper is

removed, dried and compared with the standard papers.—E. B. LISLE. *J. Soc. Chem. Ind.*, 57 (1938), 464. (E. G. V.)

**Ammonium Molybdate Reagent—Preservation of.** When a solution of the usual ammonium molybdate reagent is allowed to stand, crystals of $MoO_3.2H_2O$ are deposited. Light is not the cause of the deposition nor does heat have much effect. The solution of molybdic acid in thrice normal nitric acid is highly supersaturated with $MoO_3.2H_2O$. A solution containing 25 Gm. of ammonium molybdate in five times normal nitric acid keeps much better than one containing 75 Gm. of ammonium molybdate in thrice normal nitric acid. No data are given to show whether the reagent is just as sensitive for the determination of phosphates as the one commonly used.—S. SAITO. *Sci. Repts. Tohoku Imp. Univ.*, 26 (1937), 233–260; through *Chimie & Industrie*, 40 (1938), 462. (A. P.-C.)

**Ampul Monographs of the National Formulary VI—Revised.** Three new monographs, several new assay processes, changes in tolerances, etc., in the present monographs have been prepared by the special committee on ampuls and tablets with the collaboration of the Laboratory of the AM. PHARM. ASSOC.—ANON. *Bull. Natl. Formulary Committee*, 7 (1939), 159–187. (H. M. B.)

**Anthracene—Estimation of, in Phenanthrene.** Samples of phenanthrene, even the "pure" ones, contain invariably a certain amount of anthracene, which is not removed even by repeated recrystallization. Anthracene is easily detected by its fluorescence in the visible part of the spectrum while phenanthrene shows no fluorescence in this region. It is possible to determine anthracene quantitatively from the intensity of the three fluorescence bands (maximum at 4500, 4240, 4070 Å) as compared with the intensity of these bands for a solution of given concentration.—Y. HERSHBERG and E. BERGMANN. *Chemistry and Industry*, 58 (1939), 823–824. (E. G. V.)

**Antimonite Ion—Apomorphine as a Reduction-Oxidation Indicator in the Determination of, by Potassium Bromate.** Add sufficient hydrochloric acid to 50 cc. of solution to give a 5% hydrochloric acid concentration. Then at 45° to 50° C. add 0.3 cc. of a 0.1% solution of apomorphine hydrochloride and titrate with decinormal potassium bromate to a pink color. After each drop of the last portions wait 10 to 20 seconds. The results agree well with the values obtained by potentiometric titration. Too much apomorphine disturbs the sharpness of the end-point.—L. SZEBELLEDY and K. SIK. *Z. Analyt. Chem.*, 108 (1937), 81–85; through *Chimie & Industrie*, 40 (1938), 651. (A. P.-C.)

**Antimony—Microchemical Test for the Identification of.** The color test for antimony with rhodamine, which has been recommended by Egeriwe, can be combined with the development of antimony hydride. If the antimony hydride formed by reduction with zinc and hydrochloric acid is brought in contact with a drop of a rhodamine-mercuric chloride solution, a red crystalline precipitate forms if 1$\gamma$ of antimony is present.—L. ROSENTHALER. *Mikrochem.*, 23 (1937), 196; through *Chimie & Industrie*, 40 (1938), 1070. (A. P.-C.)

**Arsenic—Microelectrolytic Deposition and Determination of.** Arsenic was quantitatively deposited along with copper from solutions in which the copper to arsenic ratio was at least 4:1. Ten cc. of the solution containing the copper and trivalent arsenic was acidified with 1.5 cc. of hydrochloric acid (sp. gr. 1.16) and 6 drops of 50% hydrazine hydrate solution were added. The mixture was electrolyzed at 65–70° C., with an anode to cathode potential of 0.9 volt. The current fell from 100 milliamps. to 10 milliamps. within 4 minutes. The electrolysis was continued for 5 to 10 minutes longer and the deposit was washed, dried and weighed.—S. TORRANCE. *Analyst*, 64 (1939), 263. (G. L. W.)

**Barbitone and Other Compounds—$p_H$ Values of Solutions of.** The $p_H$ values were determined potentiometrically using a Lautenschlager ionometer sensitive to 0.01 $p_H$; the water used was redistilled and reboiled shortly before each test and kept in a neutral glass vessel, $p_H$ 6.21. Barbitone in 0.7% solution had $p_H$ 5.80, on dilution the acidity increased to $p_H$ 5.73 at 0.22% and gradually fell on further dilution. Phenazone, which is usually considered monobasic, surprisingly showed itself to be acid. A 1% solution had $p_H$ 3.43, on dilution this fell slightly and then rose rapidly to $p_H$ 4.27 at 0.06%, fell rapidly to $p_H$ 3.39 and rose again to $p_H$ 3.96 at 0.004% and after slight fluctuation rose to the value of water. Amidopyrine is alkaline, $p_H$ 7.72 in 1% solution, on dilution the $p_H$ falls until it reaches the acid $p_H$ of 5.96 at 0.002%, when it ascends to that of the water. A mixture of equimolecular proportions of barbitone and phenazone shows $p_H$ 5.64 at 1%, $p_H$ 6.18 at 0.06% and 6.36 at 0.002%. The product of the equimolecular reaction between these two substances shows $p_H$ 5.54 at 1% and $p_H$ 5.91 at 0.002%. A mixture of one molecule of barbitone and two molecules of amidopyrine at 1% gave $p_H$ 6.52, this remains practically constant to a dilution of 0.03% ($p_H$ 6.48) and then gradually falls. The product of the reaction between the two starts at a slightly higher figure $p_H$ 6.57, the curve runs parallel for a time, crosses at 0.25% ($p_H$ 6.58), runs roughly parallel to 0.125% ($p_H$ 6.46) where it coincides. A mixture of one molecule of barbitone, one of phenazone and two of amidopyrine at 1% has $p_H$ 6.42, becomes slowly less to 0.06%, $p_H$ 6.16 then rapidly falls to $p_H$ 5.43 at 0.0009% and then returns toward neutrality. The Italian proprietary "Alpha," which is stated to be a combination of barbitone, phenazone and amidopyrine, gives $p_H$ 6.53 at 1%, falls to $p_H$ 6.30 at 0.25% and finally falls to $p_H$ 5.02 at 0.0004%. This curve does not correspond with what would be expected from the curves of the components. The author also gives some theoretical observations based on the structural formulas of the substances to explain the irregularity of the curves.—A. PEROTTI. *Boll. chim.-farm.*, 77 (1938), 1; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 126. (S. W. G.)

**Belladonna and Hysocyamus—Study of the Assays of the Powdered Extracts of.** Attention is directed to difficulties noticed by previous workers, particularly the presence of volatile bases which the U. S. P. XI procedure endeavors to eliminate. Most of the experimental studies were made with pure alkaloids and with powdered extract of belladonna. Subtitles indicate scope of the work: relative efficiencies of the U. S. P. X and U. S. P. XI assay processes and the effect of the final heat treatment; effects of various diluents on the assay processes with five tabulations which cover the effect on the assay of atropine of corn starch and chlorophyll, rice starch and chlorophyll, wheat starch and chlorophyll, potato starch and chlorophyll and arrow-root starch and chlorophyll. Summarizing their work the authors found that quality of chloroform influences the amount of alkaloid recovered. Solutions of alkaloids in neutral 95% alcohol are stable at water bath temperature. Alcohol retards decomposition of alkaloidal residues in the last evaporation but is unnecessary if analytical grade of chloroform is used. Lower yields by U. S. P. XI procedure are chiefly due to removal of volatile bases, somewhat to loss of

alkaloids. U. S. P. X method gives more complete extraction, removes more chlorophyll and resins which interfere in U. S. P. XI method. Concordant results are more easily obtained. Most satisfactory results came with using U. S. P. X for extraction and completing by U. S. P. XI because alkaloids are easily extracted, the assay can be completed in a day, volatile bases are removed, concordant results are obtained if analytical chloroform is used and destruction of alkaloids is less than approximate error if this grade is used. Atropine is not adsorbed to any appreciable extent by chlorophyll with the possible exception of those extracts containing corn starch. Rice starch showed some adsorption. Atropine is difficult to extract from corn and rice starch. It is easily extracted from potato or arrow-root starches. Size of starch granules effect efficiency of extraction. —HOWARD H. FRICKE and K. L. KAUFMAN. *J. Am. Pharm. Assoc.*, 28 (1939), 215. (Z. M. C.)

**Belladonna and Stramonium—Rapid Colorimetric Assay of.** The method adopted is based upon a quantitative application of the color reaction of Vitali given when solanaceous alkaloids are treated with fuming nitric acid and the residue dissolved in acetone treated with potassium hydroxide dissolved in methyl alcohol. Chloroform proved most suitable for extraction of the alkaloids, 20 cc. sufficing to extract 1 Gm. of powdered belladonna leaf or root previously moistened with 1 cc. of alcohol or 0.1 cc. of dilute ammonia. The formation of emulsions in the case of dry extract of stramonium owing to the presence of starch is minimized by the addition of a little lard to the sawdust. The details of the method are given.—N. L. ALLPORT and E. S. WILSON. *Chemist and Druggist*, 131 (1939), 101. (A. C. DeD.)

**Boric Acid—Microchemical Test for the Identification of.** For the detection of boric acid, various anthraquinone derivatives have been recommended, but rufianic acid (quinizarinesulfonic acid) is easily obtained and gives a red color with boric acid in the presence of concentrated sulfuric acid. The test is very sensitive.—L. ROSENTHALER. *Mikrochem.*, 23 (1937), 196; through *Chimie & Industrie*, 40 (1938), 1070. (A. P.-C.)

**Boron in Plant Material—Method for the Determination of Small Quantities of.** Use is made of the red color developed when boric acid is brought in contact with turmeric extract. The intensity of this color is increased by the presence of oxalic acid and decreased by the presence of phosphates, silicates and salts of sodium and potassium. The effect of sodium salts reaches a maximum with a certain determinable excess and may be compensated for by a preliminary standardization. The turmeric reagent is prepared by evaporating an ether extract of turmeric on washed sand. After ashing the plant material with barium hydroxide, the ash is transferred to a suitable distillation flask and phosphoric acid and methyl alcohol are added. The distillation flask is attached to a condenser dipping into a flask containing an excess of $N/50$ sodium hydroxide solution and also to a second flask containing more methyl alcohol. After distilling the acid mixture to dryness, the methyl alcohol in the second flask is vaporized through the former distillation flask and the methyl borate is collected and hydrolyzed in the receiver containing the alkali. The distillate is evaporated to dryness, 1 cc. of water and 1 cc. of saturated oxalic acid are added, and to the acid solution 40 Gm. of the dried, turmeric treated sand is added, stirred and dried on a water bath. After the addition of 1 cc. of the oxalic acid solution and again drying, the sand is transferred to a sintered glass funnel and the color washed out completely with 70% alcohol. The extract is made up to 100 cc. and the intensity of the red color is estimated in a Lovibond tintometer. Standards are prepared from known amounts of boric acid. The color is stable for three hours under ordinary conditions.—K. L. ROBINSON. *Analyst*, 64 (1939), 324. (G. L. W.)

**Bromide—Determination of, in the Presence of Chloride.** A solution containing 20 cc. of $N/10$ hydrochloric acid, 20 cc. of potassium bromide solution (11.25 Gm. per liter), 50 cc. of standard potassium iodide solution and about 3 cc. of dilute sulfuric acid was boiled for five minutes and left over night. The solution was then boiled gently for more than two hours, water being added from time to time, until no further test for bromine in the vapor was obtained with fluorescein test paper. The residual liquid was reduced with zinc amalgam and titrated directly with standard potassium iodate solution in the presence of a high concentration of hydrochloric acid. The presence of a large proportion of chloride in the sample gives high results.—A. J. BERRY. *Analyst*, 64 (1939), 190. (G. L. W.)

**Caffeine—Determination of, in Coffee.** The following procedure is recommended: Introduce 4 Gm. of roasted and powdered coffee into a 100-cc. volumetric flask. Add 2 Gm. of calcium oxide and 30–40 cc. of distilled water, boil for fifteen minutes then add to the boiling mixture 2 Gm. of aluminum acetate, then boil for several more minutes. Cool the mixture rapidly and make up to the mark with distilled water. Mix well and filter using a dry filter. Evaporate 50 cc. of the filtrate (2 Gm. of coffee) in a porcelain dish on a water bath, to about 10 cc., allow to cool, add 20 cc. of a 10% solution of potassium permanganate (the liquid should have a definite color), then let stand for one hour. Remove the excess permanganate with hydrogen peroxide, transfer completely with the aid of distilled water to a 100-cc. volumetric flask, make up to 100 cc. with distilled water, mix and filter using a dry filter. Evaporate 50 cc. of the filtrate to dryness in a porcelain dish, extract the residue with 100 cc. of carbon tetrachloride, using 5 cc. each time and filtering, through a filter wetted with carbon tetrachloride, into a tared beaker. Evaporate the solvent, take up the residue in several drops of chloroform, place in an oven at 100° for one hour, cool in a desiccator, then weigh the caffeine.—G. SCOTTI. *Boll. chim.-farm.*, 13 (1938), 403; through *J. pharm. Belg.*, 21 (1939), 7. (S. W. G.)

**Calomel Suspension—Assay of.** Calomel suspension was prepared and after several attempts the following procedure was found to give concordant results for the determination of the calomel: To the suspension in a 250-cc. Erlenmeyer flask add 50 cc. sulfuric acid (1:10) and shake well. Heat on a water bath for 1–1.5 hours or until the calomel has settled out, cool and allow to stand for 15 minutes. Add 50 cc. $0.1N$ iodine solution and 5 Gm. KI dissolved in 10 cc. water and shake gently. Stopper the flask and allow to stand until solution has been effected. Titrate the residual iodine with $0.1N$ sodium thiosulfate. 1 cc. of $0.1N$ iodine = 0.02361 HCl.—E. E. VICHER and R. K. SNYDER. *Bull. Natl. Formulary Committee*, 7 (1939), 200–201. (H. M. B.)

**Carbon and Hydrogen—Determination of, by Pregl's Method.** Heating difficulties of the usual metal mortar are overcome by using an electrically heated mortar of the Schobel all-glass type, using mercury as heat conductor and also to operate the temperature regulator.—H. KIRBY. *Chemistry and Industry*, 58 (1939), 117. (E. G. V.)

**Carbon and Hydrogen in Organic Compounds—Semimicro Method for the Determination of.** Among the drawbacks to the microdetermination of

carbon and hydrogen, one is that a micro balance is used which necessitates a specially controlled balance room; also skill and practice are required before analyses can be carried out successfully. Further, the lead peroxide used in the tube filling to absorb the oxides of nitrogen becomes deteriorated before the rest of the filling. A method involving a modified tube filling has been devised which requires little skill on the part of the operator, who requires only a working knowledge of the semi-micro balance. Satisfactory results have been obtained with a variety of compounds. Seventy or more combustions have been carried out on the oxidation filling, the lead peroxide being changed six times.—G. INGRAM. *J. Soc. Chem. Ind.*, 58 (1939), 34–37. (E. G. V.)

**Carbon—Chemistry of Solid.** A lecture covering fundamental advances in our knowledge of the chemical nature of black carbon.—H. L. RILEY. *Chemistry and Industry*, 58 (1939), 391–398. (E. G. V.)

**Caustic Soda Content of Industrial and Household Cleaning Materials. Special Reference to the Pharmacy and Poisons Act.** Alkalis in constant use are listed and a scheme for the analysis of mixtures containing caustic soda, sodium silicates, sodium carbonate and trisodium phosphate is given.—P. D. LIDDIARD. *Chemistry and Industry*, 58 (1939), 111–112. (E. G. V.)

**Cerasus Lusitanica Lois—Protocatechuic Acid Complex in Twig Leaves of.** The following procedure was adopted to isolate protocatechuic acid and also to show that it does not occur as such in the leaves. The fresh twig leaves were extracted with boiling alcohol, the alcohol was distilled and the residual aqueous solution gave only a very faint reaction when tested for vanillic acid. The aqueous solution was submitted to alcoholic fermentation with brewer's yeast then treated with neutral lead acetate and filtered. The slight precipitate did not contain methoxylated compounds. The filtrate was diluted with an equal volume of 95% alcohol and then treated with solution of lead subacetate. After this treatment, traces of methoxylated derivatives were still present, and a very faint color reaction for protocatechuic acid was obtained. (The protocatechuic acid and vanillic acid complexes are carried over in a similar manner if barium hydroxide is used as the precipitating agent.) The lead precipitate was decomposed with hydrogen sulfide; the resulting aqueous solution was evaporated under reduced pressure; the residue was extracted with acetone and the acetone was removed by evaporation. The methoxyl determination carried out on the acetone extract was converted to the value for vanillic acid and indicated the presence of 5 Gm. of the acid per 100 Gm. of dried twig leaves. Acetone extracts obtained by the above procedure liberate any vanillic acid present upon simple boiling with water, or by hydrolyzing with sulfuric acid which also liberates protocatechuic acid.—H. HERISSEY, G. POIROT and J. RABATE. *J. pharm. chim.*, 29 (1939), 337–343. (S. W. G.)

**Chromium in Plant Ash, Soil, Water and Rocks—Colorimetric Determination of.** Ash from 5 to 10 Gm. of plant material in a platinum crucible, cool, add 10 cc. of hydrofluoric acid and 4 drops of sulfuric acid and evaporate to dryness to remove silica. Add in two portions, a total of 6 Gm. of potassium pyrosulfate, to the residue heated over a small flame, cool the melt and dissolve in 150 cc. of 1:9 hydrochloric acid. Add 2 cc. of 5% ferric sulfate, dilute to 200 cc. Add a few drops of nitric acid, boil for one minute and add 1:1 ammonia water until precipitation is complete. The solution is just alkaline to litmus paper. Wash the precipitate with hot 2% ammonium sulfate. Dissolve the precipitate in sulfuric acid, reprecipitate and wash as before. Return the precipitate to the original beaker, dissolving that which remains on the filter with hot dilute sulfuric acid. Dissolve the main precipitate with sufficient sulfuric acid so that the total used is 4 cc. of concentrated sulfuric acid. Dilute to 80 cc., heat to boiling, add 5 drops of nitric acid, 1 cc. of 2.5% silver nitrate and 20 cc. of fresh 10% ammonium or potassium persulfate. Cover the beaker and boil for 10 minutes. The final volume should be not less than 70 cc. Cool and add solid sodium carbonate in portions until a slight excess is present. Transfer the mixture to a 100-cc. flask, dilute to the mark and filter through a dry filter into a dry flask. Place 50 cc. of the filtrate in a 100-cc. stoppered graduated cylinder and add 10 cc. of 1:1 sulfuric acid, 5 cc. of freshly prepared 0.1% diphenyl carbazide solution and dilute to 70 cc. Compare the color developed with that of a standard chromium solution treated in the same way. Prepare the standard by acidifying 3 to 4 cc. of a solution of potassium dichromate (0.002 Gm. per liter), adding the diphenyl carbazide reagent and diluting to 70 cc. Analyses of citrus leaves gave values of from 2.5 to 7.5 p. p. m. of chromium trioxide.—C. F. J. VAN DER WALT and A. J. VAN DER MERWE. *Analyst*, 63 (1938), 809. (G. L. W.)

**Cinnamic Aldehyde—Synthetic, Detection of, in Cassia.** Oil of cassia contains *ortho*-methoxycinnamic aldehyde; 1.227 parts of the latter are equivalent to 1 part of cinnamic aldehyde when assayed according to the hydroxylamine method. By sulfite assay, both aldehydes would be equal. If the oil were adulterated with synthetic cinnamic aldehyde, the difference between the sulfite and hydroxylamine assays would be less than in the case of a true oil.—F. D. DODGE. *Am. Perfumer*, 38 (1939), No. 3, 30–32. (G. W. F.)

**Copper—Determination of Small Concentrations of.** Optimum conditions for the colorimetric determination of copper with potassium ferrocyanide were studied. The intensity of the coloration depends on the order in which the various reagents are added. Best conditions consist in adding to the solution (containing up to 0.07 mg. of copper) 0.5 cc. of saturated ammonium chloride solution followed by 5 drops of a 3% potassium ferrocyanide solution, and bringing the mixture to a volume of 15 cc. The catalytic method for the determination of copper, depending on the reduction of ferric iron to the ferrous state, by means of sodium thiosulfate in presence of copper, though it gives good results for quantities of copper from 0.003 to 0.05 mg., is less accurate than the colorimetric method.—S. I. SINIAKOVA. *J. Prikl. Khim.*, 10 (1937), 2109–2117; through *Chimie & Industrie*, 40 (1938), 1071. (A. P.-C.)

**Copper—Periodates of, Study of.** Quaternary cupric paraperiodate was formed by the interaction between disodium paraperiodate ($Na_2H_3IO_6$) and copper sulfate, and between paraperiodic acid and copper carbonate. Heptahydrated cupric paraperiodate, was formed by the action of paraperiodic acid on copper acetate. On dehydrating this salt the pentahydrated cupric paraperiodate was formed. The vapor pressures of the hepta- and pentahydrates were found to be 5 mm. and 3 mm. respectively. The trihydrate could not be obtained by further dehydration.—R. K. BAHL and SURJIT SINGH. *J. Indian Chem. Soc.*, 16 (1939), 269. (F. J. S.)

**Copper—Spectrographic Microdetermination of.** A large quartz spectrograph and non-recording microphotometer are used, following essentially the internal standard procedure of Nitchie and Standen (*Anal. Ed.*, 4 (1932), 182).—L. H. ROGERS. *Ind. Eng Chem., Anal. Ed.*, 11 (1939), 47–48. (E. G. V.)

**Cotton Plants—Biochemistry of.** A review and numerical data are given on the chemical composition of the plant and especially its seeds and fiber in regard to the content of oil, wax, proteins, carbohydrates, glucosides, etc. Data are given showing the influence of the place and the conditions of growth on the chemical composition. The accumulation and transformation of substances during the ripening period and during the storage of seeds are illustrated by numerical data. Chemical differences of different grades of cotton plant are characterized by differences in the chemical composition of the plants and the seeds. A description is given of the utilization of the cotton plant and of its selection from the point of view of crop yield and quantity of the fibers, as well as the chemical composition of the seeds.—V. N. BYLINKINA. *Biokhimiya Kul'turnykh Rasteniĭ*, 3 (1938), 133–177; through *Chem. Abstr.*, 33 (1939), 8689. (F. J. S.)

**Creatinine—Reaction of, with 3:5-Dinitrobenzoic Acid.** In furtherance of his study of this color reaction, the author has prepared crystalline compounds containing one molecule of creatinine, two molecules of dinitrobenzoic acid and varying proportions of sodium hydroxide. A purple one was obtained in 85% yield when a solution of creatinine (1 mol.) in alcoholic sodium hydroxide (3 mol.) was treated with 3:5-dinitrobenzoic acid (2 mol.). It did not melt, was rapidly turned brown by exposure to the air at room temperature, was easily soluble in water and gave a purple silver salt. When a methyl alcoholic extract of the above compound was allowed to stand for about an hour and then treated with ether, a second, brown compound was precipitated, from which a brown silver salt could be obtained by treatment of its aqueous solution with silver nitrate. Other compounds containing different proportions of sodium hydroxide were prepared and analyzed, and in each case the original purple form rapidly changed into the more stable brown form. This "fading" of the color produced by 3:5-dinitrobenzoic acid contrasts with the so-called Jaffe reaction for creatinine using picric acid, in which the red color produced is more permanent. —A. BOLLIGER. *J. Proc. Roy. Soc., N. S. W.*, 71 (1938), 223; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 128. (S. W. G.)

**Distillation—High-Vacuum, Theory and Development of.** Molecular distillation is characterized by the use of permanent gas pressures so low ($10^{-6}$ atmospheres) as to play no essential part in determining the speed of distillation, or even whether distillation takes place or not. The historical development of this method of distillation, and the theoretical considerations governing the process, are outlined, and factors limiting the large-scale application are discussed. Two types of "self-pumping still," which remove the limit set by the finite rate of gas flow in the still itself, are described. The limit set by splashing due to traces of decomposition remains.—C. R. BURCH and W. J. D. VAN DIJCK. *J. Soc. Chem. Ind.*, 58 (1939), 39–50. (E. G. V.)

**Dry Ice—Production and Use of.** Sources of carbon dioxide, condensation processes and fields of application are reviewed.—J. KOBOLD. *Engineer*, 166 (1938), 560–561; through *J. Soc. Chem. Ind.*, 58 (1939), 36. (E. G. V.)

**Ephedrine in Solutions and in Mixtures—Determination of, with Ethyl Morphine.** A method of gravimetric assay for ephedrine as hydrochloride is described. It was found that ephedrine is volatilized from ether or chloroform solutions during concentration of the solvent solution to 10 cc. by evaporation, but could be retained if evaporation was conducted in the presence of concentrated HCl solutions. Either solvent was suitable for extraction of the alkaloid from alkaline aqueous solutions. NaOH was better suited for liberation of the base than $NH_4OH$. *Method:* The aqueous ephedrine solution was mixed with excess NaOH and extracted 3 times, each time with an equal volume of $CHCl_3$. The filtered extract was mixed with an excess of concentrated HCl and evaporated to dryness. The residue was dried at 100° C. and weighed. The micro-melting point of *l*-ephedrine hydrochloride was 219–220 C.; that of *d,l*-ephedrine hydrochloride was 189–190 C. In the study of the determination of ephedrine in mixtures with other alkaloids the method of Kristna and Ghose (*J. Soc. Chem. Ind.*, (1929), 48) was not found suitable as the hydrochloride of ephedrine was somewhat soluble in $CHCl_3$ (5.0 Cg. in 100 cc. at 16° C.), as was also the hydrochloride of racemic ephedrine (5.6 Cg. in 100 cc. at 16° C.). However, by carrying out the $CHCl_3$ extraction after adding various acetate mixtures, practically no ephedrine was extracted from solutions containing a slight excess of acetic acid. Ephedrine is often mixed with ethyl morphine and experiments were made with such mixtures. It was possible to extract the ethyl morphine with $CHCl_3$, leaving the ephedrine, provided the solutions contained a slight excess of acetic acid. *Method:* The ethyl morphine was quantitatively extracted from the mixture by means of 5 extractions, each with equal volumes of $CHCl_3$ after adding to the mixed solution of the alkaloid hydrochlorides an equal volume of a solution which was 0.09*N* with respect to acetic acid and 0.91*N* with respect to sodium acetate.—K. A. JACKEROTT. *Dansk Tids. Farm.*, 13 (1939), 53. (C. S. L.)

**Ethylvanillin—Detection of.** The test described by Griebel for vanillin is also given by ethylvanillin. The precipitates thus formed can be differentiated by addition of benzene with moderate shaking. The precipitate with vanillin remains undissolved in the aqueous phase, while that of ethylvanillin dissolves in the benzene layer to give a violet solution. Mixtures of vanillin and ethylvanillin can thus be resolved. By warming to 50–60°, the blue crystals of the vanillin compound dissolve in the aqueous layer to form a yellow solution, while the violet color of the benzene layer due to ethylvanillin remains unchanged.—P. STADLER and K. WAGNER. *Z. Anal. Chem.*, 111 (1938), 391–393; through *J. Soc. Chem. Ind.*, 57 (1938), 1098. (E. G. V.)

**Eugenol Content in Ethereal Oils—Determination of.** The extraction is carried out best with *N* KOH at room temperature. If the oil has a tendency to form an emulsion it is treated beforehand with a little tartaric acid paste, filtered and dried with anhydrous $Na_2SO_4$. The method succeeds well with clove, pimento, cinnamon leaf and lawang oils; unreliable results were obtained with bay oil.—P. A. ROWAAN and J. A. INSINGER. *Chem. Weekblad.*, 36 (1939), 642–643; through *Chem. Abstr.*, 33 (1939), 9551. (F. J. S.)

**Fatty Acids, Kaolin and Protein in Soap—Acceleration Method of Determining.** Excess of sulfuric acid is added to 0.5–0.8 Gm. of soap in 3 cc. of water, in a centrifuge tube, and the suspension is shaken with 8 cc. of ether and centrifuged. Four cc. of the ether layer are evaporated and the residue is weighed; the fatty acid content is then $795a/A-(4-0.84a)$, where $a$ is the weight of the residue, and $A$ the weight of the soap taken. Two volumes of ethyl alcohol are added to 0.5–0.8 Gm. of soap in 3 cc. of water, the mixture is centrifuged, the residue of kaolin boiled with 2 cc. of water, ethyl alcohol again added, and the mixture again centrifuged (these washing processes being repeated 3 times); the final residue is dried and weighed. Excess of sulfuric acid is added to the first centrifuge from kaolin determination, the solution extracted with

ether to remove fatty acids, ethyl alcohol is added, the suspension centrifuged and the precipitate of protein washed with ethyl alcohol and ether, dried and weighed.—B. I. SOIBELMAN. *Maslob. Zhir. Delo*, No. 4 (1938), 12–14; through *J. Soc. Chem. Ind.*, 57 (1938), 1447. (E. G. V.)

**Ferric Salts—Determination of Free Acid in Solutions of.** Excess of 0.1*N* sodium hyposulfite and 0.5 cc. of 1% cupric sulfate are added to 25 cc. of the ferric solution, to reduce ferric ions to ferrous ions, and free acid is titrated with 0.1*N* sodium carbonate (methyl orange). Muller's method is applicable to solutions of high acidity.—M. E. SCHUB and I. E. ORLOV. *Zavod. Lab.*, 7 (1938), 932–933; through *J. Soc. Chem. Ind.*, 58 (1939), 260. (E. G. V.)

**Flax—Biochemistry of.** Numerical data are given for the content in flaxseeds of oils, proteins, carbohydrates, organic acids, enzymes and ash substances, and for the chemical composition of stems in relation to their content of oil substances, pectin, cellulose, lignin and ash substances. The influence of the place and the conditions of growth of flax on the chemical composition are also given. Different grades of flax are analyzed for oil in the seeds. Values for oil constants are given. The utilization of flax stems and of flaxseeds according to their chemical composition is proposed.—A. I. ERMAKOV. *Biokhimiya Kul'turnykh Rastenii*, 3 (1938), 67–132; through *Chem. Abstr.*, 33 (1939), 8689. (F. J. S.)

**Fluorine—Determination of.** Several factors that cause interference in the determination of fluorine were studied by distilling the sample with perchloric, phosphoric or sulfuric acid and titrating the distilled fluorine with thorium solution. The titration is markedly affected by orthophosphate, sulfate and hypochlorite ions. In the concentration range studied arsenite, chlorate and silicate ions have no observable effect. Interference is greatly reduced and a sharper end point is obtained when the titration medium is an aqueous instead of an alcoholic solution. Difficulties arise from substances, such as (1) aluminum compounds and gelatinous silica, that retard the distillation of fluorine, and (2) the distilling acid, phosphate, pyritic sulfur, organic materials and halogens other than fluorine, that are incompletely separated from the fluorine and cause trouble in the subsequent titration. When perchloric acid is used as the distilling acid, the distillates of most types of phosphate rocks studied carry negligible quantities of perchlorate and phosphate. The separation of fluorine from pyritic sulfur and organic matter is improved by distilling the sample in the presence of an excess of permanganate.—D. S. REYNOLDS and W. L. HILL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 21–27. (E. G. V.)

**Fly-Spray Analysis. Pyrethrin Determination in Insecticides.** Collaborate analysis of (mixed) household insecticides show that the Seil method, as modified by the Calif. State Div. of Chemistry, is capable of yielding reasonably uniform figures for pyrethrins-I and -II; the original Seil method also yields fairly constant results, but the Ripert method was found to be unreliable. Rogers and Calameri's method for the determination of rotenone proved to be unsatisfactory, and even approximate estimation of thiocarbimide esters is scarcely possible unless the sulfur content of the original ester is known. For mixed insecticides biological assay appears to be the most satisfactory way of testing for service value.—*Pacific Coast Insecticide Assoc. Soap*, 14 (1938), 91, 93, 95; through *J. Soc. Chem. Ind.*, 57 (1938), 1509. (E. G. V.)

**Glycerite of Bismuth—Assay of.** On the basis of experiments conducted, it is recommended that the following method of assay be used: "Quantitatively transfer with distilled water 50 cc. of the glycerite, accurately measured in a volumetric flask, to a 500-cc. volumetric flask and dilute to the mark. Transfer 25 cc. of the dilution to a crucible, evaporate the water, absorb the remainder of the liquid with shredded filter paper, burn to an ash and then ignite. Cool, add nitric acid, cover with a watch glass and heat on a steam bath until the residue dissolves. Rinse the crucible and watch glass with distilled water into a beaker, filter the solution carefully, washing the filter. To the filtrate add ammonia water drop by drop until a slight, but permanent, precipitate is produced, then add 2 cc. nitric acid and increase the volume to 100 cc. Heat the solution to boiling and add 50 cc. *M*/5 diammonium hydrogen phosphate, also heat to boiling slowly for three minutes. Digest the mixture at 80° C. for 1 hour, allow to settle and decant through an ignited tared Gooch crucible, washing the precipitate three times with 50-cc. portions of hot water. Transfer the precipitate to the crucible with cold water, wash with cold water, dry and ignite the crucible to dull redness for 30 minutes. Cool and weigh as bismuth phosphate ($BiPO_4$).—REPT. AM. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 7 (1939), 228–229. (H. M. B.)

**Guinea Oil of Orange—Rapid Detection and Determination of Petroleum in.** The following test will detect 0.5% or more of kerosene: to 5 cc. of the oil in a test tube add 5 cc. of 94.8% alcohol (specific gravity at 15° C. 0.8170) and place for 5 minutes in a water bath maintained at exactly 23° C. In presence of 0.5% or more of kerosene the solution is turbid. Turbidity at 23.5° C. indicates 1% or more of kerosene; at 24.5° C., 3% or more; at 25.5° C., 5% or more. Freshly-prepared oils (less than 1 month) may contain minute particles of water invisible to the eye, and should first be dried by thorough shaking with anhydrous sodium sulfate. The turbidity point of very old oils may be as low as 19° C., but this would be revealed by high (above 0.3%) peroxide content.—MME. M. G. IGOLEN. *Rev. marques parfum. France*, 16 (1938), 87–90. (A. P.-C.)

**Hydrocyanic Acid Generated by Linseed Cake—Convenient Method for Estimating the.** Mix from 0.5–1.0 Gm. of linseed cake or as much as will yield from 0.0001 to 0.0010 Gm. of hydrocyanic acid with 10 cc. of water in a small glass container about 3 inches in diameter and fitted with a tight lid. Place a small shallow beaker containing 10 cc. of sodium picrate solution (4 Gm. of picric acid and 40 Gm. of anhydrous sodium carbonate per liter) in the container, cover and incubate at blood heat for one day. Prepare standards using known amounts of acidified potassium cyanide solution in the same way. After incubation, wash the colored solution into Nessler tubes and compare colorimetrically. The results given are compared with results obtained by two other methods of estimating small amounts of hydrocyanic acid.—C. LOUDEN and H. ANTROBUS. *Analyst*, 64 (1939), 187. (G. L. W.)

**Hypochlorite Solutions—Reduction of the Alkalinity of, with Sodium Bicarbonate.** For application to wounds this solution should be nearly neutral and the U. S. P. XI directs that when strong solutions are used, diluted sodium bicarbonate solution is added. Reference is made to previous explanations of the mechanism of reaction and report is made of an investigation of it. Action of sodium bicarbonate on sodium hydroxide solutions and upon sodium carbonate solutions was studied and results are tabulated and discussed. Comparison of $p_H$ values of solutions containing sodium hydroxide and sodium carbonate with solutions containing sodium carbonate, with and without bi-

carbonate shows that neutralization of caustic alkalinity of hypochlorite solutions by sodium bicarbonate involves formation of sodium carbonate rather than repression of ionization of sodium hydroxide as has previously been reported.—ARTHUR OSOL and JOHN ROGER COX. *J. Am. Pharm. Assoc.*, 28 (1939), 148. (Z. M. C.)

**Indophenol-Blue Reaction in Animal Tissues—Quantitative Study of.** To 300 mg. of finely ground animal tissue were added 6 cc. of indophenol reagent ($\alpha$-naphthol, dimethyl-*p*-phenylenediamine and sodium carbonate). After 1 hour at room temperature, 4 cc. of 96% alcohol were added. By centrifuging and washing with alcohol a clear liquid was obtained which contained all the blue coloring matter that had been formed; this was examined by the step photometer. The extinction coefficients of brain and liver samples from thyroxin-treated animals were greater than for control animals. Avitaminosis A caused higher extinction coefficients; avitaminosis B and inanition had no effect. Normal results were obtained in mice inoculated with sarcoma, but the sarcoma tissue itself had much less ability to form the coloring substance than had the liver tissue.—P. E. SIMOLA and L. NORO. *Suom. Kemistil.* (B), 10 (1937), No. 12, 33–34; through *Chimie & Industrie*, 40 (1938), 656. (A. P.-C.)

**Iron Iodide—Cod Liver Oil Preparation of. Thiocyanate Reaction for Ferric Ions in Presence of Iodine.** Freshly precipitated ferrous carbonate reacts rapidly with oleic acid to give ferrous oleate, soluble in cod liver oil and then miscible with iodinated cod liver oil to give ferrous iodide in oil. It is concluded that the determination of ferric ions in presence of iodine is reliable only on acidifying with hydrochloric acid.—C. MASINO. *G. Farm. Chim.*, 85 (1936), 30–35; through *J. Soc. Chem. Ind.*, 11 (1938), 1361. (E. G. V.)

**Kurchi and Kurchi-Bismuth Iodide—Assay of.** The bark of *Holarrhena antidysenterica* made into a paste with $Ca(OH)_2$ and NaOH is extracted with hot chloroform. The chloroform residue is extracted with *N* HCl and the alkaloids are again liberated by 3*N* NaOH and extracted with chloroform. The bark contains about 2% of total alkaloids. For the preparation of kurchi-bismuth iodide the bark is extracted with 1% $H_2SO_4$ (w/v) and the alkaloids precipitated by 1% NaOH are taken up in kerosene, extracted from the latter with 1% $H_2SO_4$, and finally precipitated with Dragendorff's reagent. Total alkaloids are determined after liberation by 10% aqueous ammonia and 2*N* NaOH and extraction with chloroform. The alkaline liquid is made strongly acid with HCl and iodine determined by titration with $KIO_3$; after neutralizing, the bismuth is precipitated and determined as phosphate.—M. L. SCHROFF and M. L. DHIR. *Indian J. Pharm.*, 1 (1939), 20–23; through *Chem. Abstr.*, 33 (1939), 8911. (F. J. S.)

**Liquors—Determination of Aldehydes in Distilled Alcoholic, with Schiff's Reagent.** Instructions are given for the preparation of a completely colorless reagent of great stability and sensitivity (by treatment with decolorizing carbon and careful adjustment of the amount of sulfur dioxide), and of aldehyde-free ethyl alcohol (by refluxing with (*a*) potassium hydroxide and aluminum turnings, or (*b*) diaminobenzene, hydrochloric acid, and then distilling). A concentrated standard solution of acetaldehyde is stable at low temperatures. The procedure for determination is outlined.—W. C. TOBIE. *Food Res.*, 3 (1938), 499–504; through *J. Soc. Chem. Ind.*, 58 (1939), 93. (E. G. V.)

**Lithium—Microreaction of.** Treat a drop of solution under investigation with a drop of 15% urotropine solution, followed by a drop of 15% potassium ferricyanide solution. Observe the precipitate under the microscope. The presence of shiny, yellow octahedrons discloses the presence of lithium. The reaction is sensitive to 0.00006 mg. of lithium (1:50,000). The determination is possible in the presence of cations of the fifth analytical groups.—I. M. KORENMANN and M. M. FOURSINA. *J. Prikl. Khim.*, 10 (1937), 1494–1495; through *Chimie & Industrie*, 40 (1938), 464. (A. P.-C.)

**Magnesium—Determination of.** After the precipitate of magnesium ammonium phosphate has been washed with dilute ammonia solution, it can be washed with acetone and weighed with its water of crystallization. To determine very small quantities of magnesium it is recommended to precipitate as $MgNH_4PO_4.6H_2O$, dissolve the precipitate in acid, precipitate the phosphorus with ammonium molybdate and weigh the yellow precipitate. On the assumption that the precipitate is $(NH_4)_3PO_3.14MoO_3$ and that 1 mg. of magnesium corresponds to 89 mg. of precipitate, fairly accurate were obtained.—F. ROGOZINSKI. *Bull. intern. acad. polon. sci.* (A), (1937), 477–482; through *Chimie & Industrie*, 40 (1938), 465. (A. P.-C.)

**Magnesium—Determination of, in Water.** In the titration of magnesium with potassium palmitate the end-point is difficult to detect, particularly in the presence of oxalate. By removing calcium as calcium carbonate the use of oxalate has been avoided. An investigation of titration curves has been made to find the conditions required for obtaining a sharp end-point. Satisfactory results were obtained by titrating in the presence of a trace of acid, using a mixture of indicators having a sharp color change at $p_H$ 8.2.—W. G. MOFFITT. *J. Soc. Chem. Ind.*, 58 (1939), 125–126. (E. G. V.)

**Mandelic Acid in Calcium Mandelate, Monoethanolamine Mandelate and Elixir of Mandelic Acid—Determination of.** The method described extracts the mandelic acid with ether in acid solution then titrates with tenth-normal barium hydroxide. It is thought that the method may be used for estimating mandelic acid in other of its salts than those tried in these experiments.—ASA N. STEVENS and EDWARD J. HUGHES. *J. Am. Pharm. Assoc.*, 28 (1939), 222. (Z. M. C.)

**Manganese—New Method for the Microdetermination of, in Biological Materials.** The microdetermination of manganese is based upon the oxidation of benzidine by permanganate in the presence of nitric acid. The yellow-green color is read with the photoelectric colorimeter with a 4200 Å. filter. It is possible to perform 6–8 filtrations through the same filter and then read the colors developed, in this way reading 30–40 determinations in an hour. From 0.1 to 10$\gamma$ of manganese can be estimated and recoveries range from 92 to 106%.—A. C. WIESE and B. C. JOHNSON. *J. Biol. Chem.*, 127 (1939), 203–209; through *Chem. Abstr.*, 33 (1939), 1774. (F. J. S.)

**Mercurial Ointments—Assay of.** The assay of Oleated Mercury, B. P., Ointment of Red Mercuric Iodide, B. P. C. and Dilute Ointment of Mercuric Nitrate, B. P. is discussed.—G. J. W. FERREY. *Chemist and Druggist*, 131 (1939), 103. (A. C. DeD.)

**Mercury—Determination of, with Diphenylcarbazone in the Presence of Other Metals.** From a study of the methods for the colorimetric determination of mercury with diphenylcarbohydrazide and diphenylcarbazone, the latter is preferred because of its greater purity and the resulting uniformity of the color reaction. The color reaction of diphenylcarbohydrazide with mercury is attributed to the presence of diphenylcarbazone as impurity.

The determination of mercury in the presence of other elements capable of similar color reactions with diphenylcarbazone is made possible by the masking effect of the pyrophosphate complex compounds formed on adding sodium pyrophosphate to the solution. The optimum conditions of determination are with diphenylcarbohydrazide $p_H$ 8, and with diphenylcarbazone $p_H$ 7. Detailed procedures of the determination and the maximum concentrations of disturbing elements permissible in the solutions are given.—R. I. ALEXEIEV. *Zav. Lab.*, 6 (1937), 955-959; through *Chimie & Industrie*, 40 (1938), 649. (A. P.-C.)

**Mercury—Determination of, with Formic Acid.** When mercury is determined by reduction with formic acid, certain other metals, such as copper which usually interferes, form soluble salts which can be washed out, and therefore do not interfere.—SPITZER. *Ann. Chim. Applicata*, 27 (1937), 566-567; through *Chimie & Industrie*, 40 (1938), 1071. (A. P.-C.)

**Methionic Acid—Titration Curve of.** It was necessary to determine whether the acid would behave like a weak dibasic acid showing two separate dissociations. Titration with NaOH using hydrogen electrode shows two breaks in the curve but the second is not significant. Methionic acid titrated with NaOH to approximately $p_H$ 7 and evaporated to dryness and analyzed gives results that check for the disodium salt. This indicates that methionic acid acts as strong dibasic acid. Other experiments tend to show that the second break in the titration curve is due either to decomposition or to molecular rearrangement in strongly alkaline solution.—PHYLLIS M. BREWSTER and GLENN L. JENKINS. *J. Am. Pharm. Assoc.*, 28 (1939), 144. (Z. M. C.)

**Mild Silver Protein—Detection of Strong Silver Protein in.** When the U. S. P. XI test for ionizable silver or strong silver protein in mild silver protein is applied to the various market brands, the filtrate does not remain clear upon the addition of the hydrochloric acid. While the U. S. P. does not specify that it must remain clear and says only that a precipitate shall not form, there is the range intermediate between clear and precipitation which is a source of indefiniteness. The authors suggest the following modified test: Dissolve 1 Gm. of the mild silver protein in 10 cc. of distilled water. Add 7 Gm. of ammonium sulfate and stir occasionally for one-half hour. Filter through quantitative filter paper. Re-filter, if necessary, to obtain a clear and practically colorless filtrate. Obtain as much filtrate as possible, but do not wash the material on the filter. Collect the filtrate in a 50-cc. Nessler tube. Add 25 cc. of a 1-100 solution of acacia. At the same time make a blank determination as follows: Dissolve 7 Gm. of ammonium sulfate in 10 cc. of distilled water in a 50-cc. Nessler tube. Add 25 cc. of a 1-100 solution of acacia and then 1.6 cc. of $N/100$ silver nitrate. (The determination may be made roughly quantitative, if several blanks for comparison are prepared containing different amounts of $N/100$ silver nitrate). Then to each of the two solutions in the Nessler tubes add 2 cc. of nitric acid, 2 cc. of dilute hydrochloric acid and sufficient 1-100 solution of acacia to make both solutions up to 50 cc. Mix thoroughly and let stand for five minutes. The turbidity in the test should be less than that of the blank when viewed crosswise against a black background in indirect light.—F. N. VAN DERIPE and R. A. KONNERTH. *Am. J. Pharm.*, 111 (1939), 65. (R. R. F.)

**Mitigal and Mesulfen Preparations. II. Absorption Spectra.** The preparations and fractions described in paper I (Rame, *Ibid.*, 13 (1939), 21) were examined as to ultraviolet absorption in the quartz spectrograph. Their absorption curves were compared with those of pure chemicals, thianthrene, 2,6-dimethylthianthrene, 2,6-dimethylthianthrene-S-oxide and 2,6-dimethylthianthrene-*bis*-S-dioxide. Most of the curves were practically identical. The curve of thianthrene and of 2,6-dimethylthianthrene practically coincided; there were some differences in the curves of the S-oxide and the *bis*-S-dioxide. At 340 millimicrons the curves of Mitigal, Mesulfen and Sulfotol had the same course and practically covered the curve of 2,6-dimethylthianthrene. The curve of fraction 7 (b. p. 184° C.), which chemically had most closely resembled it, had a somewhat different shape. The curve of fraction 1 (b. p. 130-140° C.) in the region toward the visible from 340 millimicrons somewhat resembled that of the S-oxide. From the height of the absorption maximum at 260 millimicrons one would calculate the content of thianthrenes, estimated as 2,6-dimethylthianthrene, as: Fraction 7, 95%, Mitigal, redistilled, Mesulfen preparations, Disp. Dan., 3 and 4, also Fraction 8 and 9, 90%, Sulfotol and Mitigal (commercial preparations), 85%, Fraction 5 and 6, 75%.—H. BAGGESGAARD-RASMUSSEN and H. RAME. *Dansk. Tids. Farm.*, 13 (1939), 43. (C. S. L.)

**Moisture in Gentian and of Extractive in Gentian Preparations—Effect of Dry Heat in the Determination of.** It was found that gentian and extractive from gentian liquid preparations when heated to 100° C. in an oven tend to lose volatile matter other than water, to decompose and that the toluene method for moisture determination is to be preferred.—E. C. BEELER, R. K. SNYDER and E. N. GATHERCOAL. *Bull. Natl. Formulary Committee*, 7 (1938), 94-96. (H. M. B.)

**Molybdenum—Determination of, in Plant Materials.** Methods for the determination of molybdenum in plant materials involving complicated ashing procedures and precipitation of the molybdenum as sulfide were found to be tedious and time consuming. A method used for soil and rock samples, which involved no preliminary sulfide precipitation, was adapted for use with plant materials and a much simplified ashing procedure was found to give satisfactory results. The proposed method is sensitive to 1 mg., of molybdenum and allows amounts of molybdenum as low as one part per million to be determined with accuracy on a 2-Gm. sample.—F. B. MARMOY. *J. Soc. Chem. Ind.*, 58 (1939), 275-276. (E. G. V.)

**Morphine—Microelectrophotometric Determination of.** The apomorphinic reaction of Dènigés has been adapted to a microelectrophotometric determination of morphine. The solution of morphine is evaporated; after cooling, the residue is treated with 15 drops of concentrated sulfuric acid and heated 2 minutes on a boiling water bath. After cooling, 5 cc. of a saturated solution of sodium acetate and 2 drops of a 4% solution of mercuric chloride are added and brought to a boil; after cooling, the solution is brought up to 10 cc. and examined electrophotometrically. This method permits the determination of quantities of from 0.02-0.20 mg. The maximum of error under the best experimental conditions is 5% for 0.02 mg. of morphine and 1% for 0.16 mg.—RAYMOND CAHEN and HENRI FEUER. *Compt. rend.*, 208 (1939), 1907. (G. W. H.)

**Nicotinic Acid—Chemical Method for the Estimation of.** The yellow color produced when the pyridin ring is treated with cyanogen bromide and aniline provided a method for colorimetrically determining the amounts of nicotinic acid in a variety of foodstuffs. The reaction is sensitive, rapid and apparently selective since it was not afforded by trigonellin, the methylbetain of nicotinic acid.—

M. SWAMINATHAN. *Indian J. Med. Research*, 26 (1938); through *J. Trop. Med. Hyg.*, 42 (1939), 107. (W. T. S.)

**Nitrogen—Determination of, in Mixed Fertilizers Containing Nitrates and Chlorides.** The Jodlbauer modification of the Kjeldahl method wherein phenol or salicylic acid is used is satisfactory except when considerable amounts of chlorides are present. In these cases a preliminary reduction of nitrates with Devarda metal has been found satisfactory. The Kjeldahl flask is equipped with a two-holed rubber stopper through which are inserted the stem of a dropping funnel and a bent glass tube connected at its other end with a bulbed U-tube containing a charge of 10 cc. of 1:9 sulfuric acid. Place 2 Gm. of the sample and 3 Gm. of powdered Devarda metal in the flask, stopper with the above described stopper and add 5 cc. of sodium hydroxide solution (about 50%) through the dropping funnel. After 30 minutes heat the mixture almost to boiling for 1 hour with occasional gentle shaking. Cool and add 20 cc. of 1:1 sulfuric acid through the funnel, washing the neck of the flask with the acid. Cool and transfer the contents of the U-tube completely to the flask. Add 25 cc. of sulfuric acid and continue the determination in the usual manner. The result is expressed as total nitrogen in the sample.—B. DYER and J. H. HAMENCE. *Analyst*, 63 (1939), 866. (G. L. W.)

**Parachlorometaxylenol—Rapid Method for the Determination of.** Acidify 20 cc. of the antiseptic solution with 6*N* sulfuric acid and extract three times with 25 cc. of ether. Wash the ether solution three times with 10 cc. of water and the combined aqueous washings once with 15 cc. of ether. Dry the combined ether solutions, evaporate to dryness and esterify the fatty acids by boiling the residue for 45 minutes with 20 cc. of a 4% solution of naphthalene-$\beta$-sulfonic acid in methyl alcohol. Transfer this solution to a separator with twice its volume of *N*/1 sodium hydroxide and 20 cc. of petroleum ether. Shake vigorously and extract the petroleum ether three times with 10 cc. of *N*/1 sodium hydroxide. Acidify the combined alkaline extracts with 6*N* sulfuric acid and extract three times with 25 cc. of ether. Dry the washed ether solution, evaporate, dissolve the residue in the smallest volume of sodium hydroxide solution, dilute with water, precipitate the phenol with carbon dioxide, again extract completely with ether, dry, evaporate the ether solution in a tared dish and weigh.—D. MCNICOLL, R. P. MERRITT and T. F. WEST. *Analyst*, 64 (1939), 261. (G. L. W.)

**Peppermint—Time Variants in the Assay of Oil of.** Possible effect of prolonged heating on the menthol content suggested investigation of effects of variation in time of refluxing in the acetylation. Details of experimental procedure are reported. Failure of several laboratories to get concordant results is partly due to different operators stopping titration at different points but other factors must be considered when individual operators get deviations. Apparently, the time of acetylation may vary within broad limits but saponification time should be between 45 and 60 minutes. In less than 45 minutes, deviation was usually negative, indicating complete saponification; more than 60 minutes gave a positive deviation probably indicating side reactions involving potassium hydroxide and giving wrong percentages of menthol. It is believed that there is resinification or polymerization of certain constituents shown by darkening of the reaction mixture due to prolonged heating with potassium hydroxide.—LAWRENCE H. BALDINGER. *J. Am. Pharm. Assoc.*, 28 (1939), 155. (Z. M. C.)

**Phenol—Conductometric Titration of, in the Presence of Fatty Acids.** Phenol and acetic acid in a mixture in concentrations to thousandth-normal can be determined by conductometric titration of the sum of phenol and acetic acid with decinormal sodium hydroxide and that of acetic acid with normal ammonium hydroxide, and calculating the phenol content by difference. Acetic acid in the mixture can be determined also by titrating with ammonium hydroxide in the presence of a mixture of equal volumes of alcoholic 0.1% neutral red and methylene blue as indicator.—M. I. LAPCHINE. *Zav. Lab.*, 6 (1937), 1405–1409; through *Chimie & Industrie*, 40 (1938), 466. (A. P.-C.)

**Phenol—Iodometric Determination of.** Known quantities of phenol were treated with iodine, bromine and chlorine under various conditions. Phenol reacted with 2.256 to 2.521 (average 2.4) equivalents of iodine; the presence of borax, sodium hydroxide, sodium carbonate and bicarbonate and sodium acetate did not promote a stoichiometric reaction. A study of the halogenation products showed that they were mixtures containing from 0.10 to 3.40 equivalents of halogen per 6 carbon atoms. The products obtained in the presence of borax contained no borax. Conclusions: borax has only a salting out effect; the procedures studied were not satisfactory for the determination of phenol; similar determination of other phenolic compounds would be still less satisfactory.—B. G. SIMEK and S. POLATSIK. *Mitt. Kohlenforsch. Inst. Prag.*, 3 (1937), 204–217; through *Chimie & Industrie*, 40 (1938), 1076. (A. P.-C )

**Phenol Ointment—Assay of.** Two processes for the determination of phenol in phenol ointment—distillation from acid solution and extraction by *N*/1 sodium hydroxide from the warmed ointment, using calcium chloride to diminish emulsification—have previously been found satisfactory. This is the opinion also of the present author and others, but emulsification still causes some difficulty in the extraction process. Distillation, when carried out on numerous successive samples, is rapid, but when isolated samples are being analyzed an extraction process has advantages and the following is a description of one which has been found satisfactory. Dissolve about 0.5 Gm. of ointment in approximately 10 cc. of light petroleum. Extract this solution with four successive quantities of 10 cc. each of a solution of 7 cc. of concentrated hydrochloric acid and 33 cc. of water, shaking for 2 minutes on each occasion. Collect the extract in a Wijs iodine flask, add 20 cc. of *N*/10 bromate-bromide, and complete the analysis in the usual way. There is enough acid in the extracting liquid for the remainder of the process. Emulsions, if formed, are coarse and cause no trouble. A quantity of ointment was made by using a stoppered bottle, so that the ointment contained 2.57% of phenol, $C_6H_6O$. Two analyses gave results 2.56 and 2.59, equivalent to 99.6% and 100.8% of the theoretical amount.—R. MAXWELL SAVAGE. *Chemist and Druggist*, 131 (1939), 103. (A. C. DeD)

**Phenols in Water—Detection and Determination of.** Detection and determination of aqueous solutions of phenols, using bromine water, are discussed. A positive reaction is not given with very small quantities; in that case a colorimetric method must be used. The Fox-Gauge and Folin-Denis methods of determination are recommended; these can be used without a special colorimeter with reasonable accuracy within the limits 3.0–0.1 mg. of phenol per liter.—L. SCHUMANN and H. THIEBERGER. *Chem. Obzor*, 13 (1938), 1–4; through *J. Soc. Chem. Ind.*, 57 (1938), 1512. (E. G. V.)

**Potassium—Determination of, by Titrating the Potassium Phosphomolybdate Precipitate.** The proposed method is similar to that proposed by Handy for determining phosphorus in steel. The

potassium is precipitated as potassium phosphomolybdate in a small volume (10 to 15 cc.) with phosphomolybdic acid (1 Gm. for 0.01 to 0.1 Gm. of potassium chloride). The precipitate is filtered off, washed with dilute nitric acid to remove excess molybdic acid and with 3% sodium nitrate until neutral. It is then dissolved in a measured volume of standard potassium hydroxide solution and the excess titrated with sulfuric acid to a phenolphthalein end-point.—M. I. ILMENEV. *Zav. Lab.*, 6 (1937), 1018; through *Chimie & Industrie*, 40 (1938), 649. (A. P.-C.)

**Potassium Ferricyanide—A Note on the Action of Strong Solutions of.** An alkaline solution of potassium ferricyanide is a well-known oxidizing agent, but it does not appear to have been recorded that if the alkali is sufficiently strong, free oxygen is obtained.—E. BARNES. *J. Indian Chem. Soc.*, 16 (1939), 308. (F. J. S.)

**Potassium Iodomercurate—Iodometric Determination of. Application to Volumetric Determination of Morphine.** The author reviews the principal volumetric methods used in alkaloidal determinations. In the procedure of Ionescu-Matiu, the alkaloid is precipitated as the iodomercurate; the precipitate is separated and mineralized with a sulfonitric mixture, and the mercury is determined by sodium chloride in the presence of sodium nitroprussiate as indicator. The author proposes a method in which the excess iodomercurate in the filtrate is determined by oxidation of the iodomercuric ion by bromine water. After removing the excess of bromine, the iodic acid is decomposed by iodide in acid medium and the liberated iodine is titrated with thiosulfate. Good results were obtained when this procedure was applied to the determination of 10–30 mg. of morphine. The method is to be used in the determination of other alkaloids.—H. WACHSMUTH. *Bull. soc. chim. biol.*, (Dec. 1938); through *J. pharm. Belg.*, 21 (1939), 286. (S. W. G.)

**Pyrethrin-I—Colorimetric Determination of. Analysis of Perfumed Extracts of Pyrethrum.** Determination by titration of the monocarboxylic acids is vitiated by reduction of mercuric ions by the $C_3H_5$ groups in the perfume. With the dicarboxylic acids (for determination of pyrethrin-II), water distillation can be used for removing essential oils, but for pyrethrin-I a described colorimetric modification of the method is necessary. —G. CANNERI and G. MANNELLI. *Ann. chim. applicata.*, 28 (1938), 432–440; through *J. Soc. Chem. Ind.*, 58 (1939), 324. (E. G. V.)

**Rayless Goldenrod (Aplopappus Hartwegi)—Chemical Composition of.** A chemical study of this plant has been made including a successive extraction and proximate determination of the resins, essential oils, alkaloids, rubber content and other ordinary plant constituents. It was found that the plant contains an unusually high percentage of resins, the highest namely 25% being found in the leaves, and approximately 8% in a composite of the entire plant. The essential oils, present to an extent of 1.24% in the entire plant, were found to conform to the empirical formula $C_{10}H_{18}$ and to have the properties of the menthene group of the terpene series. The chloroform extract from material digested with concentrated sodium hydroxide yielded hydrochlorides which reacted as typical alkaloids toward the usual reagents. The crystals obtained on evaporation were found to contain 4.31% nitrogen, which partially confirms the qualitative tests. An unusual discovery was made that pyridine is evolved when the plant material is steam distilled from strongly alkaline solution. Microscopic and chemical tests confirm the presence of pyridine in the distillate. Quantitative analysis indicated 2.04% pyridine on the dry plant basis.—T. F. BUEHRER, C. M. MASON and J. A. CROWDER. *Am. J. Pharm.*, 111 (1939), 105. (R. R. F.)

**Reflux Regulator and Head for Laboratory Rectifying Columns.** A reflux regulator and head for laboratory rectifying columns is described that (*a*) has a nonlubricated glass valve, (*b*) utilizes a minimum of height above the rectifying section of the column, (*c*) provides for a substantially constant rate of removal of the distillate for each setting of the valve, (*d*) provides for the estimation of the "throughput" and the reflux ratio, (*e*) provides space for a thermometric device, and (*f*) has a flexible metal partition for permitting distillation at pressures below and above the prevailing atmospheric pressure.—FREDERICK D. ROSSINI and AUGUSTUS R. GLASGOW, JR. *J. Research Natl. Bur. Standards*, 23 (1939), 509. (F. J. S.)

**Rennin Assay of Elixir of Pepsin and Rennin.** The N. F. VI preparation ($p_H$ 4.7) retains its peptic action after four months but loses about $^2/_5$ of its rennitic activity in the same period. Other preparations buffered ($p_H$ 5.9 with phosphate; 6.02 with citrate) show negligible peptic activity after four months and lose $^4/_5$ to $^9/_{10}$ of their rennitic activity. It is recommended that the present preparation be retained but that the assay process for rennin be deleted.—J. B. FULLERTON and E. N. GATHERCOAL. *Bull. Natl. Formulary Committee*, 7 (1938), 85–86. (H. M. B.)

**Resin of Ipomoea—Tests on.** It is recommended, after a series of fifty experiments on the solubility of the resin in ether, that the following statement be offered: "The resin is soluble in alcohol and chloroform. Not less than 80% is soluble in ether when 1 Gm. of the resin is shaken in a tightly stoppered container with 30 cc. ether for 4 hours at room temperature; not more than 3% is soluble in petroleum benzine."—LUDWIG A. HALICSKA. *Bull. Natl. Formulary Committee*, 7 (1938), 87–88. (H. M. B.)

**Rhenium and Molybdenum—Separation and Colorimetric Determination of.** The method herein presented for the separation and colorimetric determination of rhenium and molybdenum depends on differential reduction with mercury. If a dilute hydrochloric acid solution containing molybdate and perrhenate is shaken with mercury, potassium thiocyanate and ethyl ether, only the molybdenum is reduced to the form which produces an ether-soluble colored compound with thiocyanate. The color of the ether extract serves for the determination of molybdenum. Addition of stannous chloride to the acid solution remaining after the molybdenum has been extracted produces a yellow to yellowish red ether-soluble compound which serves for the determination of rhenium. As little as 0.001 mg. of rhenium can be detected in a solution containing 10 mg. of molybdenum, and 0.01 mg. of molybdenum can be detected in the presence of 10 mg. of rhenium. Few elements interfere in the determination of rhenium, and practically all of these can be eliminated by a simple distillation.—JAMES I. HOFFMAN and G. E. F. LUNDELL. *J. Research Natl. Bur. Standards*, 23 (1939), 497. (F. J. S.)

**Selenium and Tellurium—Stannous Chloride as a Quantitative Reagent for.** The author summarizes the results of his investigation as follows: A process of fairly general applicability for the determination of subordinate amounts of selenium and tellurium is described. It consists in the following sequence of manipulations: acid attack, or fusion with sodium peroxide and solution in hydrochloric acid; precipitation of selenium and tellurium with ammonia or ferric hydroxide if copper and nitric acid have to be eliminated; precipitation of the two elements with stannous chloride; solution of the

precipitate in brominated hydrochloric acid; precipitation of the solution with sulfur dioxide in two stages for the separation of selenium from tellurium. No evaporations of chloride solutions, and no precipitations with hydrogen sulfide or extractions with alkaline sulfide are involved. Directions are given for the application of the method to a variety of ores, metals and by-products.—W. R. SCHOELLER. *Analyst*, 64 (1939), 318. (G. L. W.)

**Silver—Mercurimetric Microdetermination of.** The method consists in precipitating the silver by the addition of a known volume of standardized sodium or potassium chloride solution and titrating the excess of halogen with mercuric nitrate solution, using diphenylcarbazone as indicator, which gives with the first drop of excess mercuric nitrate a violet blue coloration which is distinctly visible even in presence of the silver chloride precipitate.—J. TRTILEK. *Mikrochem.*, 23 (1937), 190–194; through *Chimie & Industrie*, 40 (1938), 1070. (A. P.-C.)

**Silver—Recovery of, from Exhausted Fixing Baths by Precipitation with Sulfurated Potash.** Apparatus used is described and method of precipitating the silver as sulfide are given. Figures showing cost of materials and net income are given. As small a quantity as 5 gallons a week is worth taking care of.—EDWARD C. WATTS. *J. Am. Pharm. Assoc.*, 28 (1939), 232. (Z. M. C.)

**Solution of Ephedrine Sulfate and Tablets of Ephedrine Hydrochloride—Improved Assay Method for.** The method of the Contact Committee of the Am. Pharm. Manufacturers Association (*Natl. Bull.*, pages 2986–2987) was found to be a superior method for the above products.—REPT. AM. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 7 (1939), 235–236. (H. M. B.)

**Specific Gravity.** Determinations of the specific gravities of various liquid organic compounds at different temperatures show that there is a definite relationship between their change in density per degree of temperature and their chemical composition. This relationship may prove useful as an aid in determining the nature of a compound or its identity. Primary alcohols give the lowest and esters among the highest values. Halogen compounds give the highest value of any known liquid compound. Ethers and alcohols give low values, hydrocarbons, aldehydes, acids, acid anhydrides and esters, high ones. Unsaturation determines high values. Secondary and tertiary compounds, especially tertiary, have higher values than primary. The value of Java citronella oil is much higher than that for Ceylon oil. Evidently there are two forms of citronellal (citronellol), one of which appears to be very unstable and is readily changed into the other form on heating. The Java oil apparently contains the unstable and the Ceylon the stable form; at least proportion of the unstable form is high in the Java and low in the Ceylon oil.—L. W. BOSART. *Perfumery Essent. Oil Record*, 30 (1939), 145. (A. C. DeD.)

**Starch—New Iodine Method for the Determination of. V. Extraction from Plant Material.** Extract the fresh material several times with 80% alcohol followed by repeated extraction with ether, then dry at 100° C. and powder so that it will pass a 100-mesh sieve. Weigh 1 to 5 Gm. of dried powder into a centrifuge tube with 2 to 3 Gm. of purified sand and a short stout glass rod. Wet the mixture with 1 to 2 cc. 0.7% potassium hydroxide and crush the mixture for 5 minutes with the rod. Add 15 to 20 cc. of the alkali solution and heat in an actively boiling water bath for 1 hour, replacing any water lost by evaporation and thoroughly crushing and mixing the material with the rod. Remove the tubes from the bath and centrifuge. Decant the extract and repeat the above at least three times heating only 40 to 45 minutes in the bath. A few drops of the fourth extract should be tested for the presence of starch by acidifying and adding iodine solution. If starch is present another extraction should be made. *Determination.*—Combine all of the extracts, evaporate to small bulk on a water bath, filter into a 50-cc. flask and make up to volume. Transfer 15 to 20 cc. into a centrifuge tube, neutralize with 10% acetic acid, add 2 cc. of $N/10$ iodine, 5 cc. of 10% potassium acetate and allow to stand over night. Centrifuge the mixture, remove the clear liquid with a suitable pipette and wash twice more with 20 cc. of 30% alcohol by centrifuging. Transfer the precipitate to a medium grade alundum filtering crucible, filter, wash with alcohol, dry and weigh as previously described (*Analyst*, 59 (1934), 673). From 92 to 99% recovery of added starch was reported. Pectin does not interfere.—J. J. CHINOY. *Analyst*, 63 (1938), 876. (G. L. W.)

**Sulfate—Direct Determination of.** Transfer a 50-cc. sample, containing between 0.05 and 0.19 Gm. of sulfate, to a 250-cc. Erlenmeyer flask and render just acid to phenolphthalein by means of approximately $0.02N$ nitric acid. Add 16 cc. of alcohol and 14 drops of 1% solution of erythrosin. Mix well so that the color of the solution is a uniform orange-red. The temperature should not be over 30°. Run standardized $0.1M$ lead nitrate solution into the flask at a steady dropping rate and with constant swirling until the increasing persistence of the violet color, produced by each drop of standard, indicates the approach of the end-point. Continue the titration very slowly and with vigorous agitation until the color of the whole mixture becomes a distinct violet.—W. V. BURG. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 28–30. (E. G. V.)

**Sulfates—Volumetric Microdetermination of, in Waters.** The following procedure is recommended: Add 10 cc. of 25% hydrochloric acid to a liter (more or less, depending upon the sulfate concentration) of water, concentrate, by evaporation over a small direct flame, to about 40 cc. If the sample contains more than 40 mg. of silica per liter, it is necessary to precipitate this by evaporating to dryness, adding hydrochloric and perchloric acids, and evaporating again to dryness, then cooling and diluting to about 40 cc. with distilled water. The liquid should be only slightly acid at this point, and if it is strongly acid it should be partially neutralized with ammonium hydroxide. While the solution is gently boiling add exactly 10 cc. of $0.1N$ barium chloride, continue boiling for five minutes then allow to cool. After standing for an hour or more, transfer the solution and the precipitate to a 100-cc. volumetric flask, adding the washings to the mixture. Add a drop of phenolphthalein indicator solution, make slightly alkaline with strong ammonium hydroxide solution, add exactly 10 cc. of $0.1N$ potassium chromate, mix, make up to 100 cc., mix well and cool under a tap for an hour. Filter using a dry filter, transfer 50 cc. of the filtrate to an Erlenmeyer flask then add 2 Gm. of potassium iodide and 10 cc. of 25% hydrochloric acid. Titrate the liberated iodine with thiosulfate. One cc. of $0.1N$ thiosulfate corresponds to 0.004 Gm. of sulfur trioxide. If the sample of water is turbid and contains humic products, it should be made alkaline with ammonium hydroxide, evaporated to 250 cc., treated with 40 cc. of lime water, concentrated to about 150 cc., transferred to a 200-cc. volumetric flask and made up to 200 cc. Acidify 175 cc. of this solution, concentrate to 50 cc. and continue as above.—G. VAN BENEDEN. *J. pharm. Belg.*, 21 (1939), 321–323, 343–345. (S. W. G.)

**Sulfur and Sulfate Ions—Volumetric Method for the Determination of.** Detailed directions are given for the wet oxidation of the sample with nitric and perchloric acids in the presence of barium chloride. The method consists of precipitating the sulfate ion with an excess of standardized barium chloride solution, precipitating the excess of barium ion with an excess of standardized potassium chromate solution in the presence of a sodium acetate-acetic acid buffer solution and determining the excess of potassium chromate iodometrically with potassium iodide and standardized sodium thiosulfate solution.—B. JOSEPHSON. *Analyst*, 64 (1939), 181. (G. L. W.)

**Sulfur—Color Reaction for.** The author describes further modifications of the new reaction for sulfur announced earlier in the year (*Pharm. Weekblad*, 75 (1938), 278). The sulfur may be dissolved in pyridine and 4*N* NaOH added drop by drop until the maximum blue color appears; or the sulfur may be shaken with 1–2 cc. of 4*N* NaOH and 1–2 cc. of pyridine carefully added, inverted once and more pyridine added. Four layers are then visible, the lower colorless NaOH layer, a yellow layer, the green pyridine layer and the blue pyridine layer. The blue color is not permanent. Various dilutions of sulfur were tried and it was found that 0.005 mg. still gave the beautiful blue color.—L. VAN ITALLIE. *Pharm. Weekblad*, 75 (1938), 1445. (E. H. W.)

**Sulfur—Determination of, in Ointments and Other Medicinal Forms.** The method of Bolotnikov and Gurova of determining free sulfur in rubber is applied to medicinals.—I. L. MAIZELIS. *Sovet. Farm.*, 6 (1936), 20–24; 7 (1936), 23–60; through *J. Chem. Ind.*, 58 (1939), 212. (E. G. V.)

**Sulfur—Determination of, in Organic Substances.** Moisten 1 to 5 Gm. of sample in a Kjeldahl flask with 5 to 10 cc. of concentrated nitric acid, add 0.5 to 1 Gm. of calcined magnesia and digest with gentle heating for 2 to 4 hours with 15 to 20 cc. of fuming nitric acid; evaporate to dryness, heat the residue, take up in 10 cc. of concentrated hydrochloric acid and again evaporate to dryness. Dissolve the residue in water acidified with hydrochloric acid, filter and determine sulfur by precipitation with barium chloride in the usual manner.—F. W. KLINGSTEDT. *Z. anal. Chem.*, 112 (1938), 101–103; through *Chimie & Industrie*, 40 (1938), 654. (A. P.-C.)

**Tablets of Methenamine and Sodium Biphosphate—Improved Assay of.** It was found that the N. F. VI method of assay could be improved by boiling the solution in a liter beaker for 3–3 1/2 hours to remove the formaldehyde.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 7 (1939), 234. (H. M. B.)

**Terpene-Chromogenous Compounds—Detection of, Particularly of Azulenogenous. A New Color Reaction of Essential Oils.** The reagent is made by mixing equal volumes of a 5% solution of *p*-$NMe_2$.-$C_6H_4$.CHO in acetic acid and of a 10% solution of phosphoric acid (density 1.76) in acetic acid. Details are given of the colors given by about 195 essential oils, which may thereby be divided into eight groups. It is possible that the presence of terpene chromogens in essential oils is due to the partial dehydration of the polyunsaturated terpene and sesquiterpene alcohols (for example, farnesol and nerolidol) by the action of superheated steam. Oils obtained by cold extraction show little or no terpene-chromogenous color reactions.—A. MULLER. *J. prakto. Chem.*, 151 (1938), 233–248; through *J. Soc. Chem. Ind.*, 58 (1939), 325. (E. G. V.)

**Thiourea and Thiocyanates—Determination of.** During an investigation of the manufacture of thiourea it was necessary to find a simple and accurate method for its determination, particularly in the presence of thiocyanates. This was accomplished by means of a standard solution of mercuric nitrate, whereby both thiourea and thiocyanate may be determined either singly or in presence of one another. The determination of thiourea by means of sodium silver cyanide and titration of the filtered solution with decinormal silver nitrate is also described. The difficulty of removing small amounts of chloride from solution of thiourea and thiocyanates has been overcome by the direct preparation of the chloride as basic bismuth chloride by means of a specially prepared solution of bismuth nitrate.—H. E. WILLIAMS. *J. Soc. Chem. Ind.*, 58 (1939), 77–79. (E. G. V.)

**Tin—Colorimetric Method for the Determination of Minute Amounts of, in Organic Matter.** The organic matter is destroyed by treatment with concentrated sulfuric acid and 30% hydrogen peroxide. The diluted solution is treated with aluminum to reduce the tin to the bivalent condition and an atmosphere of carbon dioxide is provided. The addition of phosphomolybdate reagent will now cause the formation of molybdenum blue. The blue can be extracted with 10 cc. of amyl alcohol and the depth of color measured in a Lovibond tintometer. The only interfering elements are copper and titanium. Tin can be separated from copper as alkali stannate or as sulfide from a solution and the precipitation of copper is prevented by the presence of thiourea. Tin is separated from titanium by precipitation as sulfide in the presence of tartaric acid. The phosphomolybdic acid reagent is prepared as follows: Solution A — 2.5 Gm. of molybdic acid dissolved in 50 cc. of normal sodium hydroxide and diluted to 100 cc. with twice normal sulfuric acid; Solution B—0.44 Gm. of sodium dihydrogen phosphate in 100 cc. of water; mix 10 cc. of Solution A with 4 cc. of Solution B and dilute the mixture to 200 cc.—N. STRAFFORD. *Mikrochem. Acta*, 2 (1937), 306–313; through *Chimie & Industrie*, 40 (1938), 467. (A. P.-C.)

**Tin—Iodometric Determination of.** To overcome the oxidation of stannous tin it is proposed to dissolve the sample under a Göckel valve containing sodium bicarbonate solution so that when the solution cools an atmosphere of carbon dioxide is provided. Then to the stannous tin solution a known quantity of potassium bromate together with an excess of potassium iodide is added. In this way the stannous solution comes in contact with a known quantity of iodine and the excess can be determined by titration with sodium thiosulfate.—M. HEGEDÜS. *Z. anal. Chem.*, 110 (1937), 338–348; through *Chimie & Industrie*, 40 (1938), 463. (A. P.-C.)

**Urea and Pyrazole Derivatives—Examination of, under Ultraviolet Light.** The substances were all powdered and passed through a No. 40 sieve of the Italian Pharmacopœia, and were observed on a nonfluorescent black background under Wood's light. The following were the effects observed: Urea, very deep violet with a slight brown tinge; symmetrical dimethylurea, moderately brilliant clear bluish violet; asymmetrical dimethylurea, moderately brilliant dark violet; diethylmalonylurea, very deep violet; phenylethylmalonyl urea, brownish blue violet; *p*-methoxyphenylurea, deep violet with a pink tinge; *p*-ethoxyphenylurea, violet with a pink tinge; antipyrin, clear brilliant violet; amidopyrine, very brilliant pale blue; equimolecular mixture of barbitone and antipyrin, deep violet, very slightly brilliant; mixture of one molecule of barbitone and two of antipyrin, rather brilliant dark violet; equimolecular mixture of barbitone and amidopyrine, pale blue shading toward violet;

mixture of one molecule of barbitone and two of amidopyrine, pale blue not very brilliant; product of the equimolecular reaction of barbitone and antipyrin, dark violet with a brilliant pink tinge; product of the reaction of one molecule of barbitone and two molecules of antipyrin, pale violet with a slight pink tinge; product of the equimolecular reaction of barbitone and amidopyrine, dark yellow; product of the reaction of one molecule of barbitone and two molecules of amidopyrine, moderately brilliant yellow; Alpha (a proprietary molecular complex of diethylbarbituric acid, antipyrin and amidopyrine), bright pinkish white.—A. PEROTTI. *Boll. chim.-farm.*, 77 (1938), 209; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 130. (S. W. G.)

**Vinegar—Analysis of.** A modification of the method of Edwards and Nanji (*Analyst*, 63 (1938), 410) consisting principally of the use of a trap in the distillation process and the resulting possibility of making determinations of oxidation value, iodine value and ester value on the same distillate. A table of comparative results is included.—E. T. ILLING and E. G. WHITTLE. *Analyst*, 64 (1939), 329. (G. L. W.)

**Water—Determination of, in Organic Liquid Mixtures.** A sample of liquid is added to a weighed sample of powdered anhydrous copper sulfate. After thorough mixing, the solid is filtered off, washed with liquid butane and again weighed. The gain in weight is taken as the water content of the sample.—R. A. DAY, JR., and R. N. PEASE. *J. Am. Chem. Soc.*, 61 (1939), 524. (E. B. S.)

**Water in Organic Liquids—Azeotropic Determination of.** The water content of ethylacetate-ethyl alcohol-water and ethyl acetate-ethyl alcohol-acetone-water mixtures is determined by azeotropic distillation with dichlormethane and measurement of the volume of the water separating from the azeotrope.—S. BAKOWSKI and E. TRESZCZANOWICZ. *Przemysl Chem.*, 22 (1938), 239–240; through *J. Soc. Chem. Ind.*, 58 (1939), 14. (E. G. V.)

**Wine—Peculiarities of Carbon Dioxide in.** Presence of carbon dioxide in new wines may introduce large errors in the determination of volatile acidity. All carbon dioxide is removed by boiling the distillate for 1 minute. The titration should be carried out hot. This also reduces the error due to sulfur dioxide in dry wines.—G. L. MARSH. *Wine Rev.*, 4 (1936), 17–18; through *J. Soc. Chem. Ind.*, 58 (1939), 92. (E. G. V.)

**Wines—Polarimetric Assay of.** The following conclusions are given: (1) The reducing matter of clarified wines is principally inverted sugar and not only levulose. (2) The optical rotation of the reducing substances is augmented by the tartrate ion which remains in solution in the filtrate.—E. CANALS and H. COLLET. *J. pharm. chim.*, 29 (1939), 385–390. (S. W. G.)

**Zinc Chloride—Potentiometric Determination of Zinc Oxychloride in.** Zinc chloride (1 Gm.) is dissolved in 9 cc. of water at room temperature, the solution filtered, the residue washed, dried, heated to constant weight and weighed as zinc oxide; the % basic zinc chloride content of the sample is given by $148.8a$, where $a$ is the weight of zinc oxide found. The results thus obtained agree with those given by potentiometric titration (quinhydrone electrode) of the solution with $0.5N$ hydrochloric acid. Titration with $N$ hydrochloric acid (Congo-red) gives higher results than by above methods.—R. M. KULVIARSKAJA. *Zav. Lab.*, 7 (1938), 1040–1041; through *J. Soc. Chem. Ind.*, 58 (1939), 260. (E. G. V.)

**Zinc—Detection of, in the Presence of Iron.** The test is based on the principle that zinc precipitates from hydrochloric acid solution on the addition of a solution of alkali ferrocyanide or ferricyanide. The interference of ferric ions with this test is overcome by first adding a solution of alkali fluoride, which forms the soluble but slightly ionized complex $[FeF_6]'''$ ion, followed by the solution of ferrocyanide or ferricyanide. The test is capable of detecting 0.0000001 Gm. of zinc in a 1:500000 dilution.—G. ERENYI. *Analyst*, 64 (1939), 271. (G. L. W.)

**Zinc—Determination of, in Small Concentrations.** Directions are given for the application of the Alten, Weiland and Loofmann method (*Angew. Chem.*, 46 (1933), 668–669) to the colorimetric determination of small amounts of zinc by coupling the zinc 8-hydroxyquinoline with diazotized sulfanilic acid in alkaline solution to an orange-rose dye. The modified Tzinberg method (*Zav. Lab.*, 4 (1935), 1161–1163) for determining small amounts of zinc in the presence of copper is based on the solubility of zinc 8-hydroxyquinoline and the insolubility of copper 8-hydroxyquinoline in more highly concentrated solutions of tartaric acid.—L. E. KARLSOHN. *Zav. Lab.*, 6 (1937), 300–302; through *Chimie & Industrie*, 40 (1938), 463. (A. P.-C.)

## PHARMACOGNOSY

### A. VEGETABLE DRUGS

**Cape Aloe—Monograph for.** Standards and tests for identity, purity and quality of various aloes, analytical data for 33 commercial samples are given and changes in standards and tests are recommended. A tentative monograph is submitted.—ELMER H. WIRTH and VICTOR LINDBLADE. *Bull. Natl. Formulary Committee*, 7 (1939), 236–255. (H. M. B.)

**Cape Aloes—Production of.** The present-day process of obtaining aloes varies very little from the original process of many years ago; it is conducted under the most primitive conditions in the following manner: A shallow hole is dug in the ground about 20 inches in diameter and 6 inches deep. This is lined with canvas or goat skin and 200–250 aloe leaves which are freshly cut from nearby plants are arranged, cut ends downward, about the hole in such a way that the juice as it exudes has a clear drop into the canvas. That is, the leaves overlap each other at their cut ends and gradually taper toward the top in the shape of a pyramid. The leaves may be cut and tapped at any season of the year, but periods of drought and windy weather are to be avoided, since the leaves become dried and shrunken, reducing the flow of aloetic juice, which is then thick and hardens too quickly. The optimum time is a few days after rain, when a more copious and thinner juice is obtained.—J. H. FARRER and G. E. TREASE. *Pharm. J.*, 142 (1939), 249. (W. B. B.)

**Cascara Bark from Kenya—Quality of.** Clinical tests in two London hospitals of extract prepared from cascara bark from Kenya (ash on oven-dry bark 6.9%, aqueous extract on sample as received 23.3%) indicated that it is therapeutically active and that there is little to choose between it and the extract made from North American bark, the Kenya bark extract possessing a somewhat lower laxative efficiency.—ANON. *Bull. Imp. Inst.*, 36 (1938), 461–463. (A. P.-C.)

**Castor Oil Plant (Ricinus Communis L.)—Results of the Acclimatization of, in the Pharmacognostic Garden of Joseph Pilsudski University in Warsaw.** From the seeds of *Ricinus communis* L. var. *minor* planted in the open (52° 15′ N. latitude) plants were obtained each of which bore 3–4 well-developed clusters of fruit yielding 114–274 ripe seeds having an average weight of 0.347 Gm. The nucleus amounted to 72.55–73.34% of the weight of the

seed. The oil content of the whole seed was 44.9–47.38% and that of the nucleus 61.89–64.61%. The oil had a density of 0.9658, saponification number 178–180, iodine number 84–85, acid number 2.83–4.22, $[\alpha]_D^{20}$ 4.32 and Engler viscosity 18–19°.—ANTONI OSSOWSKI and JAKUB DERYNG. *Kron. farm.*, 36 (1937), 297–301; through *Chem. Abstr.*, 33 (1939), 8695. (F. J. S.)

**Cephalanthus Occidentalis L.—Studies on the Anatomy of. I.** The leaf, the fruit, the peduncle, the young stem, the older stembark, the cambium and the wood of the stem were studied. Six diagrams.—MAYNARD W. QUIMBY. *Pharm. Arch.*, 10 (1939), 37–48. (H. M. B.)

**Clover—Biochemistry of.** Contents of proteins, carbohydrates, fats and components of ash in different parts and in different types of the plant are given. Clover hay contains vitamins (a high content of A and C), cyanogen glucosides and other substances in its hay. The percentage of the main amino acids and of the main nitrogen forms in proteins is given. The influence on the yield and on the chemical composition of clover of fertilizers, of $p_H$ and of the soil is illustrated, as well as the dynamics of the accumulation and of the transformation of substances in the field and in storage.—M. I. SMIRNOVA and M. M. KURGATNIKOV. *Biokhimiya Kul'turnykh Rastenii*, 2 (1938), 193–235; through *Chem. Abstr.*, 33 (1939), 9363. (F. J. S.)

**Coffees—Several False, of Tropical Africa.** The false coffees yield fruits closely resembling the fruits of true coffees, but the former contain no caffeine. The following false coffees are described: *Genus Tricalysia* Rich.—The plants and the fruits of the coffees of this genus have been sold as true coffees. They are found in the Sudan, in Guiana and Madagascar. The roasted grs. give an infusion resembling that obtained with true coffees. *Genus Randia* Houst.—The plants of this genus are readily distinguished, but the fruits closely resemble those of true coffees. No statement is made as to its caffeine content, nor whether any is present. *Genus Cremaspora and Genus Polysparia.*—A coffee classed under these genuses is being studied at the experimental gardens at Madagascar and at Reunion. *Genus Delonophora* Hook.—Many species of this genus are found in the Belgian Congo. Other false coffees differ greatly from the true varieties, but, although they do not contain caffeine, the leaves have the property of fixing nitrogen from the air and are therefore used in soil amelioration.—ANON. *Agr. coloniale*, 32 (1938), No. 9; through *J. pharm. Belg.*, 21 (1939), 200. (S. W. G.)

**Colors—Method of Designating.** In 1931 the first chairman of the Inter-Society Color Council, E. N. Gathercoal, proposed on behalf of the United States Pharmacopœial Revision Committee the problem of devising a system of color designations for drugs and chemicals. He said, "A means of designating colors in the United States Pharmacopœia, in the National Formulary and in general pharmaceutical literature is desired; such designation to be sufficiently standardized as to be acceptable and usable by science, sufficiently broad to be appreciated and used by science, art and industry, and sufficiently commonplace to be understood, at least in a general way, by the whole public." With the assistance of the AMERICAN PHARMACEUTICAL ASSOCIATION, and following plans outlined in 1933 by the Inter-Society Color Council, there has been worked out a solution for this problem, which substantially fulfils the requirement laid down by Dr. Gathercoal.—D. B. JUDD and K. L. KELLY. *J. Research Natl. Bur. Standards*, 23 (1939), 355. (F. J. S.)

**Derris—Cultivation of.** Rotenone contents of derris roots are given.—E. SUCKERT. *Agr. coloniale*, 32 (1938), 28–38; through *J. Soc. Chem.*, 58 (1939), 86. (E. G. V.)

**Derris Root—Determination of Ether-Soluble Constituents in Sections of.** The authors describe their work in an effort to find a microscopical method for the evaluation of derris root. (1) A brief review of the literature concerning the relation between the anatomical structure and the content of poisonous constituents is given. (2) A microscopic investigation of 25 samples of derris root and two samples of lonchocarpus is described. (3) A direct proportion could be determined between the constituents extracted with ether and the following reactions: (*a*) color reaction of Jones and Smith; (*b*) the quantity of material which, in water, is extracted from the root as a white mist; (*c*) and the surface area of the tissues in a cross section of the root which are hyaline in Venice turpentine: and an inverse proportion between the content of ether-soluble constituents and the reaction for starch with iodine-potassium iodide. (4) A proportion (relation) between rotenone itself and the above reactions could not be demonstrated. (5) By means of the microscopical method described it is not possible to differentiate derris roots of the so-called *elliptica* type, with much rotenone and relatively little ether extractive from those of the so-called *malaccensis* type, with little rotenone and much ether extractive. It appears possible thus to estimate the substances extracted with ether by approximation. (6) The samples of lonchocarpus root examined differ from the samples of derris root in that, as a whole, they respond weakly, or not at all to the above reactions, notwithstanding the high ether extractive.—A. DIAKONOFF and C. M. L. SMULDERS. *Pharm. Weekblad*, 75 (1938), 1097. (E. H. W.)

**Drugs in European Commerce—Most Important, Their Identification, Adulteration and Use.** Part I deals with the roots which are divided into (*a*) true roots, (*b*) root stocks (rhizomes), (*c*) tubers and (*d*) bulbs. Under (*a*) is discussed aconite, arazee, *Arum maculatum* L., alkanna, althæa (four varieties), angelica (two types), arnica, *Asarum europaeum* L., bardana, belladonna, Bulgarian belladonna, calumba and calamus. Fourteen illustrations and six references are given.—FRANZ BERGER. *Scientia Pharm.*, 10 (1939), 51–57. (H. M. B.)

**Drugs—Insect Infestation of.** Pharmacognostical aspects of infestation and experimental data on the rôle of *Tribolium* beetles as drug pests are presented. Bibliographical research has made possible a compilation of forty-seven infesting insects and eighty drugs which they attack and drugs resistant to infestation. The author will furnish information about them. The following are discussed: constituents and structures removed from drugs by insects, physical changes associated with infestation, analytical procedure for identification of insect fragments in drugs, *Tribolium* infestation in drugs. Experiments are reported in detail. Apparently drugs containing carbohydrates are quite susceptible to attack. *Tribolium* is not a serious pest. U. S. P. XI lists thirteen drugs as liable to insect attack but only ergot and linseed permitted this beetle to reproduce while several sustained life. *Tribolium* could not be cultured in capsicum, nutmeg, cinnamon or mustard. Elm bark did not seem to be an auxiliary food. Tannic acid and calcium oxalate individually are unfavorable to *Tribolium;* aloin had little effect. More information on chemical and botanical alterations is needed; also an analytical method is reviewed.—BERNARD H. BLUMBERG. *J. Am. Pharm. Assoc.*, 28 (1939), 483. (Z. M. C.)

**Drugs—Standardization of, and the Growing of Medicinal Plants.** A lecture narrating certain

instances of variation in quality and value of drug plants, and the difficulty of arriving at a basis for fixing the price.—K. BOSHART. *Heil-u. Gewürz-Pflanzen*, 18 (1939), 30–41; through *Chem. Abstr.*, 33 (1939), 9544. (F. J. S.)

**Ephedra.** A complete monograph with a detailed assay is submitted.—L. D. HINER. *Bull. Natl. Formulary Comm.*, 7 (1939), 297–298. (H. M. B.)

**Euonymus—Fermentation of.** On fermentation at 40–60°, with a moisture content maintained at 45–70% by daily addition of water, euonymus increased in percentage content of substances extractable by chloroform and decreased in substances extractable by acetone. This was caused by the decomposition of carbohydrates and nitrogen-containing portion of the bark which thus lost about 50% of dry substances. The data are tabulated.—A. V. IPATOV. *J. Applied Chem.* (U. S. S. R.), 12 (1939), 908–912 (in German, 912); through *Chem. Abstr.*, 33 (1939), 8919. (F. J. S.)

**Field Poppy (Papaver Rhœas)—Constituents of the.** The seeds of *P. rhœas* contain approximately 45% of oil, about half of which is obtained by cold-pressing. The only known alkaloid present in the seed is rheadine, $C_{21}H_{21}O_6N$. The constitution and formation of opium alkaloids are discussed.—W. AWE. *Forschungen u. Fortschr.*, 15 (1939), 117–118; through *Chem. Abstr.*, 33 (1939), 8679. (F. J. S.)

**Ginger—Nigerian.** The failure of much of the 1937 crop of Nigerian ginger to meet the standards of the B. P. caused an investigation of the method of preparation. The results showed that the deficiency in water soluble extractive was due to excessive soaking of the dried, peeled ginger.—G. T. BRAY, F. MAJOR and E. L. HILL. *Analyst*, 64 (1939), 176. (G. L. W.)

**Horseradish Root and Some Common Adulterants—Histological Study of.** Examination of samples of grated root microscopically showed that they were not identical. Hence a general study was undertaken of horseradish root and also the red beet, turnip and parsnip. The study covers morphology and microscopy of horseradish, microscopy of beet root, white turnip root and parsnip root. The summary tabulates the following points: parenchyma, stone cells, tracheids and starch.—CHARLES W. BALLARD and FRANK J. POKORNY. *J. Am. Pharm. Assoc.*, 28 (1939), 376. (Z. M. C.)

**Leaf, Fruit and Seed Drugs—Preliminary Report on the Length-Breadth Ratio as a Possible Description for.** Length and breadth measurements and ratios are reported for Uva ursa (100 parts measured; av. 2.175), Senna (100 parts measured; av. 3.421), Coriander (50 parts measured; av. 1.018), Caraway (50 parts measured; av. 3.286), Nutmeg (68 parts measured; av. 1.350), Areca (70 measurements; av. 0.876). Comments and a summary in the form of a table are offered.—RALPH BIENFANG. *Bull. Natl. Formulary Committee*, 7 (1938), 68–75. (H. M. B.)

**Linden—Notes on.** The linden flowers used in pharmacy and perfumery are obtained from different species of linden widely distributed in the temperate zone. The flowers contain essential oil, tannin, glucose and gum. They exercise sedative and antispasmodic actions, and are slightly astringent and emollient. The water is prepared by distilling 5 liters of water from 1 Kg. of dried flowers. The oil is present to the extent of 0.038% in the fresh flowers. Petroleum ether extraction yields 0.33% of concrete essence in the form of a hard, brittle wax having little relation, with respect to odor, to the perfume of the fresh flowers. Steam distillation gives 5.7% of a thick yellowish essence having the following characteristics: $d$ 0.913; $\alpha_D$ 3.2°; acid number 44.8; ester value 112.22; soluble in all proportions in 95% alcohol. The presence of farnesol, substances forming oximes and reducing substances has been reported.—G. IGOLEN. *Parfums France*, 11 (1938), 111; through *J. pharm. Belg.*, 21 (1939), 96. (S. W. G.)

**Medicinal and Root Plants—Organizational and Cultural Precautions Increasing the Yield and Improving the Quality of the.** These improvements may be accomplished by observing the following conditions: (1) discovery of native drug substitutes and valuable varieties, (2) acclimatization, (3) selection of varieties and selection and breeding, (4) determination of the favorable conditions of cultivation, (5) fertilizer requirements and (6) proper time of harvesting.—O. DAFERT. *Scientia Pharm.*, 10 (1939), 33–39. (H. M. B.)

**Monocotyledonous Plants.** A review of the pharmacognosy of the following plants: *Imperata exaltata* Brongniart (Sape), *Saccharum officinarum* L., *Andropogon schœnanthus* (Capim Limao), *Vitiveria sizanioides* Stapf (Capim Vitiver) *Oryza sativa*, *Avena sativa*, triticum, wheat and barley.—J. P. G. DA CRUZ and O. DE A. COSTA. *Rev. flora med.*, 4 (1938); through *J. pharm. Belg.*, 21 (1939), 269. (S. W. G.)

**National Formulary Synonyms of Plant Drugs—Study of the.** Trends in Latin titles as well as synonyms have been in the direction of simplification. Table I lists the N. F. vegetable drugs by Latin title, present official synonym, name used in commerce and selected common name from standard plant names. The following observations are made: (1) Drug catalogs and price lists retain the "plant part" designation more often than they do the official synonym, (2) the term "gum" applied to guaiac and turpentine while scientifically incorrect, is definitely established in common usage, (3) price lists often use the designation "N. F." when the drug is not in the National Formulary, (4) the standard common name follows the trend in modern English, (5) both N. F. VI synonyms and common names are often scientifically incorrect. Changes in synonyms are proposed for fifty-six of the N. F. drugs (Table II).—E. H. WIRTH. *Bull. Natl. Formulary Committee*, 7 (1938), 53–64. (H. M. B.)

**Pharmacognosy—Field Trips Augment Interest in.** The author sets forth a number of rules to be observed and enumerates the results to be expected.—VICTOR LEVITUS. *J. Am. Pharm. Assoc.*, 28 (1939), 373. (Z. M. C.)

**Plants of the Belladonna Family—Storage of, and Their Alkaloid Content.** Test on three kinds of leaves of *Atropa causica* Kr. showed alkaloidal contents of 0.7, 0.8 and 0.9%. The alkaloidal content of leaves dried at 50–60° remained practically unchanged for five years.—M. M. MOLODOSHNIKOV and E. N. TARAN. *Farmatsiya i Farmakol.*, (1937), No. 5–6, 30–31; through *Chem. Abstr.*, 33 (1939), 9545. (F. J. S.)

**Poppy Seeds.** The seeds contain no opium. They occur in three colors (slate, red and white) and have a nutty flavor. The oil contains oleic 28.3 and linoleic acid 58.5%.—H. S. REDGROVE. *Food Manuf.*, 14 (1939), 24; through *J. Soc. Chem. Ind.*, 58 (1939), 203. (E. G. V.)

**Psithacanthus Dichrous Mart.—Substitute for Viscum Album L.** The author reports that *P. dichrous* contains the same chemical principles as does *V. album* (mistletoe). The plant lives on the branches of several xyloid plants, but does not attack the palm nor the bamboo. Its manner of propagation is similar to that of mistletoe. The tannin which is present in large proportion may be

used commercially. Alkaloids and glycosides are absent. Saponin is present. Ursone is present. This substance is insoluble in water, very slightly soluble in alcohol, ether and chloroform; very soluble in toluene and xylene. The crystals melt at 265°. Choline was isolated. The author states that this is the first report on the presence of phloroglucine derivatives in the plants of the *Lorentaceæ*.—O. DE A. COSTA. *Rev. flora med., Brazil*, 5 (1939), No. 4; through *J. pharm. Belg.*, 21 (1939), 347. (S. W. G.)

**Radix Bryoniæ.** The cathartics, podophyllum, gamboge, colocynth, elaterin, jalap, ipomea, euonymus and leptandra are prepared from imported material and a German raw material for the preparation of a hydragogic cathartic of this type was sought. Radix bryoniæ (I), long known as a drastic purgative, and the object of many chemical and pharmacological investigations was reinvestigated but attempts to prepare crystalline active material were unsuccessful. Details are given for the separation of an amorphous fraction with purgative action. Although I has the action of jalap, about 6000 Kg. of resina jalapæ was consumed in Germany in 1912 and the production of the necessary 120,000 Kg. of I to produce 6000 Kg. of resin seems questionable from an economic standpoint.—W. KÜSSNER and H. KREITMAIR. *E. Merck's Jahresber.*, 52 (1938), 56–60; through *Chem. Abstr.*, 33 (1939), 9541. (F. J. S.)

**Resin of Jalap—Tests for.** Fourteen lots of the drug were found to yield from 9.50–15.33% (average 12.47%) resin which was soluble 27.85% (average) in chloroform, average moisture content 2.31%. It is recommended that the N. F. monograph be changed to read that the chloroformic extract "weighs not more than 0.45 Gm."—LUDWIG A. HALUSKA. *Bull. National Formulary Committee*, 7 (1939), 225–226. (H. M. B.)

**Safflower (Carthamus Tinctorius L.)—Culture of.** The culture of safflower in Italian East Africa is described. Analyses are given (the data in parentheses are those of safflower cultivated in Italy, Forli Province, for comparison): oil extracted from the seeds 26.26–31.07 (27.94); average weight of the seed 0.04–0.05 (0.05) Gm.; water of the seeds 3.28–5.52 (3.45), ether extract 58.62–63.57 (61.75), protein 21.96–25.73 (24.60), ash 2.11–2.26 (2.10) %.—E. MORGAGNI. *Agr. coloniale* (Italy), 33 (1939), 301; through *Chem. Abstr.*, 33 (1939), 7039. (F. J. S.)

**Saraca Indica.** *Saraca indica* is a leguminous tree growing throughout India. The bark contains tannin and catechol. It has been used as an astringent and uterine sedative, because of direct action on the muscular fibers of the uterus.—S. K. GUPTA. *Indian Med. Record*, 59 (1939), 112–113; through *Chem. Abstr.*, 33 (1939), 8917. (F. J. S.)

**Sardinia—Medicinal Flora of. I. A New Drug from Ephedra Vulgaris Rich. from Some Regions of Sardinia.** This new drug presented the same characteristics as the Chinese Ma-huang.—ALDO LA FLORESTA. *Arch. farmacol. sper.*, 68 (1939), 66–71; through *Chem. Abstr.*, 33 (1939), 9544. (F. J. S.)

**Tanacetum Balsamita.** This plant (illustrated in part) finds application in the form of powder, simples and essence prepared from the fresh plant for gall trouble. The chemical examination revealed the presence of mineral substances, essential oil and minute amounts of an alkaloid. Thirteen references are given.—W. PEYER and U. WEBER. *Suddeut. Apoth.-Ztg.*, 79 (1939), 668–672; through *Chem. Abstr.*, 33 (1939), 9543. (F. J. S.)

**Uva Ursi Leaves—Evaluation of.** In order to explain the therapeutic action of uva ursi, other constitutents especially methylarbutin (A), which has an action similar to arbutin (B), must be considered. Since A is not considered in previously proposed methods, a new one is described in detail whereby A and B may be determined simultaneously. This depends on the extraction of the drug with anhydrous acetone, polarization of the extracted glucosidal mixture and the chemical determination of B as hydroquinone. Micro- and macro-methods are given which may also be used for the evaluation of the tincture. A table of results for A and B in ten samples from middle Germany, Tyrol, Spain and Poland as well as three samples of other drugs containing B is offered.—A. KUHN and G. SCHÄFER. *Scientia Pharm.*, 10 (1939), 47–51. (H. M. B.)

## PHARMACY

### GALENICAL

**Ammonium Acetate, B. P.—Strong Solution of.** The following method of manufacture of Strong Solution of Ammonium Acetate, B. P., is of interest for the purpose of preventing deterioration of the solution: Place 400 Gm. of ammonium carbonate in a wide-mouth bottle, add 350 cc. of distilled water and then 453 Gm. of glacial acetic acid in small quantities at a time. Set aside for a couple of hours—do not shake the mixture as it may overflow. After the reaction has subsided shake the mixture occasionally and keep it over night. If there is a residue of ammonium carbonate, decant the mixture and add to the liquid sufficient of the strong solution of ammonia and proceed as directed in the B. P. If, however, the whole of ammonium carbonate has gone into solution, add about 20 Gm. of ammonium carbonate and shake the mixture. In any case there should be an excess of solid ammonium carbonate in the reaction mixture before the liquid is decanted and neutralized with strong solution of ammonia.—R. D. KOTWAL. *Pharm. J.*, 142 (1939), 276. (W. B. B.)

**Ether—Anesthetic.** Storage of anesthetic ether over solid potassium hydroxide in dark bottles is recommended. Peroxidation is retarded and aldehyde formation accelerated by iron; decomposition of ether is increased still more in light. Ether may be preserved for 8–9 months without a stabilizer, and even longer in the presence of iron, which, however, is effective only when products of reduction of initial peroxides are removed.—A. MANKOV, Z. LARIONOV and N. S. GORJAINOVA. *Prom. Org. Khim.*, 1 (1936), 161–162; through *J. Soc. Chem. Ind.*, 58 (1939), 212. (E. G. V.)

**Ferrous Chloride Pills—Stability of.** A Swedish formula for ferrous chloride pills containing dried $FeCl_2$, licorice root and simple syrup was examined as to stability of the products and it was found that the ferrous iron was rather rapidly oxidized to ferric iron on standing either in white or brown glass, Bakelite-capped containers. The decrease in content of $FeCl_2$ was 3.9% in 3 weeks, 6.6% in 5 weeks and 10% in 3 months. Alternative formulæ were considered. The most stable of these was: Ferrosi Chlorid. Siccat. 7.5 Gm., glucose 2 Gm., talcum 2 Gm., Syr. Sacchar. *q. s.*, 100 pills. The formula could be mixed if desired with an excipient of equal parts of talcum and sucrose. This formula showed a loss of only 0.6% of $FeCl_2$ in 3 months. Purity tests for $FeCl_2$ are cited. Assay was made, after dissolving the pills and filtering the solution, by: (1) A titration for preformed $Fe^{III}$ by iodimetry with $N/10$ thiosulfate, and (2) Oxidation of all the iron to ferric form with $N/10$ $KMnO_4$ in the presence of $H_2SO_4$, and iodimetric titration with thio-

sulfate. Subtracting titer 1 from titer 2, and dividing by the number of pills represented by the aliquot taken, and multiplying by the factor 0.005584 gave the Gm. of $Fe^{II}$ per pill.—G. OLIN. *Farm. Revy*, 38 (1939), 189. (C. S. L.)

**N. F. Pepsin Preparations—Assay of.** Elixir of Pepsin N. F. V and VI, Elixir of Pepsin and Rennin N. F. V and VI, Compound Elixir of Pepsin N. F. VI and Glycerite of Pepsin N. F. VI were prepared and subjected to varying storage conditions for one year on an open shelf, in a dark cupboard and in a refrigerator. It was found that the preparation which was kept in the refrigerator showed the greatest activity. At the end of the storage time all N. F. VI preparations retained more than 80% of their proteolytic activity. A revision of the N. F. VI assay process on Elixir of Pepsin is given in detail.—ANON. *Bull. Natl. Formulary Committee*, 7 (1938), 82–85. (H. M. B.)

**Nicotinic Acid Diethylamide—Stability of Solutions of.** Determinations of the content of nicotinic acid in solutions of nicotinic acid diethylamide (Coramine) showed the degree of hydrolysis. Method: To 2.00 cc. of 25% solution of nicotinic acid diethylamide was added 2 cc. of 2*N* NaOH and the solution shaken twice with a mixture of 3 volumes $CHCl_3$ and 1 volume isopropyl alcohol. The extract was discarded. To the aqueous solution remaining was added 1 drop of methyl orange indicator solution and then dilute sulfuric acid to color change. The solution was now extracted 4 times with the $CHCl_3$-isopropyl alcohol mixture. The extract was evaporated on the water bath to dryness, the residue was dissolved in warm water and titrated with 0.1*N* NaOH (phenolphthalein indicator). 1 cc. was equivalent to 0.01781 Gm. of hydrolyzed nicotinic acid diethylamide. Solutions of the amide in water or dilute acids (between $p_H$ about 3–7.5) were found not to have hydrolyzed after autoclaving or after a year's standing. Acid solutions of the amide which have been warmed or which are long aged, often have a yellow color. This was not due to decomposition but was due to an original content of 3-nitro-5-(3-pyridyl)pyrazol, a precursor in the synthesis of nicotinic acid diethylamide. This dye was isolated and its spectrographic properties studied. The extinction curve is given. It was not formed (or only traces formed) if acids acted on pure solutions of the amide. Recommendations are made for revised purity rubrics for nicotinic acid diethylamide in the Dan. Phar. and test methods recommended for content of free nicotinic acid (by titration) and of nitropyridylpyrazol derivatives (by colorimetry).—F. REIMERS. *Dansk Tids. Farm.*, 13 (1939), 9. (C. S. L.)

**Tannic Acid—Compound Solution of.** This solution deteriorates on aging and when exposed to daylight will contain about 75% of the original acid in a year's time; this deterioration may be reduced by protecting the solution from light.—REPT. AM. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Comm.*, 7 (1939), 298–300. (H. M. B.)

**Tincture of Quinine—Stabilization of.** The precipitates which form in the official tincture of cinchona consist for the most part of cinchona tannic acid or cinchona red. The precipitate contains from 9 to 13% alkaloids. The precipitate formation is due to oxidation phenomena. It can be prevented by chilling the tincture strongly and filtering into fully-filled bottles. Addition of acids such as acetic, formic and hydrochloric exert an inhibiting action on precipitate formation. While the samples treated with hydrochloric and acetic acids show some loss of alkaloid after a time, tinctures treated with formic acid are stable. Extraction of the drug with 42% alcohol containing 1% of formic acid yields a preparation rich in alkaloids. Fully-filled bottles show no precipitate formation on storage; the alkaloid content remains constant.—H. WOJAHN. *Deut. Apoth.-Ztg.*, 52 (1937), 1485–1488; through *Chimie & Industrie*, 40 (1938), 938. (A. P.-C.)

## NON-OFFICIAL FORMULÆ

**Cosmetics—Hydrogenated Oils and Their Application in.** Typical formulæ are given for the use of hydrogenated oils in lipstick, tissue cream, brushless cream and shaving cream.—GEOFFREY H. ALLEN. *Soap, Perfumery Cosmetics*, 12 (1939), 502–504; through *Chem. Abstr.*, 33 (1939), 9543. (F. J. S.)

**Hair Washes.** A discussion of the various types of hair washes. A wash, depending on the action of oils for its cleansing effect, consisting of mineral oil 90 parts, oleic acid 7 and triethanolamine 3 is recommended. The value of glycols and glycol ethers is mentioned.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 44 (1939), 714–715. (H. M. B.)

**Nail Bleach.** The following preparation is said to be affective for removing ink, dye and other colored stains from the nails: hydrochloric acid 4, glycerin 100, triple rose water 900.—ANON. *Am. Perfumer*, 37 (1938), No. 5, 32. (G. W. F.)

**Shampoos—Foaming Soapless.** The advantages of soapless shampoos are its neutrality, ability to be washed out completely, foaming in hard water and lack of precipitation in hard water. Wetting agents are often poorly soluble in water or form gels. Other substances employed in addition to wetting agents are: lecitlun, cetyl alcohol (emollients), sugar, sorbitol, glycerin (clarifiers), alcohols or glycols (solvents), mineral or vegetable oil or oleic acid (superfatting). Sulfonated oils may be used as high as 50%. Often two wetting agents may be incompatible. The following general formula is given: Wetting agent 15 to 25%, Sulfonated oil 5 to 50%, Glycerin 5 to 10%, Cetyl alcohol and/or lecithin 1 to 50%, Alcohol 0 to 50% and Distilled water, *q. s.*, 100%.—M. G. DENAVARRE. *Am. Perfumer*, 37 (1938), No 5, 31–32. (G. W. F.)

**Shaving Aids.** Shaving lotions usually contain alcohol with further additions of borax, oils and astringents. Formulæ are given for pre-shaving lotions, after-shaving lotions, styptic preparations and creams.—HUGO JANISTYN. *Soap, Perfumery Cosmetics*, 12 (1939), 492–495; through *Chem. Abstr.*, 33 (1939), 9543. (F. J. S.)

**Shaving Cream.** A discussion of lathering and latherless shaving creams. Potassium soaps have greater lathering capacity than sodium soaps; salts of triethanolamine and sulfonated fatty alcohols enhance the lathering capacity; addition of sulfonated oil does not produce favorable results. Formulæ are given for two lathering creams: (1) Coconut oil 30, stearine 73, caustic potash (7° Bé) 48, glycerin 15, caustic soda (38° Bé) 9.5 and water 95. (2) Coconut oil 6, olive oil 6, stearine 15, potassium hydroxide (38° Bé), glycerin 1–2 and water 16. Lathering creams can also be prepared from fatty acids. Two formulæ are given for latherless creams: (1) Cream for sensitive skin: white paraffin 10, white petrolatum 20, stearine 10, triethanolamine 1, glycerin 20 and water 40. (2) Cream for oily skin: stearine 18, triethanolamine 1, glycerin 15 and water 40.—J. DAVIDSOHN and A. DAVIDSOHN. *Am. Perfumer*, 38 (1939), No. 4, 35–38. (G. W. F.)

**Shaving Cream.** *2,148,285*—A jelly-like cream is formed by mixing 50 parts of stearic acid, 3 parts of triethanolamine, 9 parts of lanolin, 160 to 212 parts of water, 2.5 to 3.5 parts of gum tragacanth, and 1 part of boric acid. *2,148,286*—A shaving cream comprises a homogeneous mixture of 50 parts of stearic acid, 7 parts of lanolin, 6 parts of

mineral oil, 2 parts of triethanolamine, 2 parts of borax, 240 parts or more of water (sufficient to impart fluidity to the mixture), 2/3 to 4 parts of gum tragacanth or tragasol, 1 part of boric acid and 1.5 to 7 parts of glycerin.—STAMFORD WHITE. U. S. pats. 2,148,285 and 2,148,286, Feb. 21, 1939. (A. P.-C.)

**Suntan Creams and Lotions.** Methods of preparation of various types of suntan creams, together with formulæ, are given.—HENRY LEE-CHARLTON. *Soap, Perfumery Cosmetics*, 12 (1939), 238–244; through *Chem. Abstr.*, 33 (1939), 9543. (F. J. S.)

**"Third Skin."** A recent patent consists of specifications for preparing a "third skin" for hands which is said to be invisible, elastic, permits passage of perspiration and persists for at least eight hours. It consists of sodium soap 128 oz., water glass 110 oz., glycerin 100 oz., potato starch 100 oz., distilled water 2 oz., cottonseed oil 32 lbs. and perfume.—ANON. *Am. Perfumer*, 37 (1938), No. 5, 32. (G. W. F.)

## DISPENSING

**Boric Acid and Microörganisms.** Pharmaceutical boric acid 3% solutions contained a red *Torula*, a "black" yeast, and other organisms even after storage for 1 year, unless the preparations were made with distilled water.—H. SCHNEGG and K. WEIGAND. *Zentr. Bakt. Parasitenk*, 95 (1936), 154–167; through *J. Soc. Chem. Ind.*, 58 (1939), 324. (E. G. V.)

**Calamine Lotion—Improved Formula for.** Eleven lotions were prepared using 2% bentonite as a suspending agent and adjusting the $p_H$ by dilution of the lime water with varying amounts of distilled water. The amount of separation at the end of a week and after six weeks was determined by measuring the amount of the supernatant liquid (in mm.). The lotion with a $p_H$ of 9.00 (using 5-cc. lime water and 90-cc. distilled water) showed the least separation.—ANON. *Bull. Natl. Formulary Committee*, 7 (1939), 65. (H. M. B.)

**Camphor in Aqueous Solvents—Preparation of Injectable Solutions of.** Camphor was dissolved in benzyl alcohol-ethylene glycol mixture up to a concentration of 15–18%. This solution was too viscous for injection and was diluted with an equal amount of distilled water. Addition of salts of camphorsulfonic acid increased the solubility of the camphor.—A. MOSSINI. *Ateneo parmense*, 11 (1939), 4–5; through *Chem. Abstr.*, 33 (1939), 8913. (F. J. S.)

**Cantharides—Further Study of Tincture of.** A previous paper on the subject is briefly reviewed. Study was continued in order to confirm previous results and also to determine minimal concentration of hydrochloric acid. This was found to be 1% of absolute acid. Some objectionable features of tinctures in which hydrochloric acid had been used led to this investigation which showed that alcohol and lactic acid were just as efficient and the tincture was not objectionable in odor or appearance. The optimum concentration of lactic acid was found to be about 3%. A modified percolation process was found to be superior to maceration.—L. M. OHMART and E. F. MORGAN. *J. Am. Pharm. Assoc.*, 28 (1939), 385. (Z. M. C.)

**Emulsions.** Historical consideration with 52 references.—C. O. LEE. *Pharm. Arch.*, 7 (1936), 53–60, 8 (1937), 25–29. (H. M. B.)

**Gelatin—Use of, in Emulsion Products.** Pharmagel A and Pharmagel B are two types of gelatin, applicable for use in making emulsions under varying conditions. Formulæ are given and suggestions are made as to how these products may be utilized for the manufacture of various kinds of emulsions.—L. F. TICE. *Am. J. Pharm.*, 111 (1939), 4. (R. R. F.)

**Paraffin—Determination of Small Amounts of Medicaments in Liquid.** Methods are given for the determination of the constituents, separately and combined, of dilute solutions in liquid paraffin of iodine, menthol and oil of cinnamon, and ephedrine, menthol and thymol, respectively. An incompatibility arising between iodine and oil of cinnamon is discussed, and an improved formula suggested.—E. M. HENDERSON. *Australasian J. Pharm.*, 20 (1939), 185. (A. C. DeD.)

**Pharmaceutical Preparations—Surface Tension as a Method of Investigating.** The following observations were made in the determination of the surface tension of infusions and tinctures (adonis, digitalis, valerian, etc.) by the stalagmometric method of Traube (*Chem. Abstr.*, 6, 2766). With increasing concentration the surface tension noticeably decreases and the concentration of tinctures can be obtained from the surface tension. The surface tension of infusions and tinctures prepared from concentrated extracts is greater than that of solutions of equal concentration prepared directly from the plant material. No decision can be stated regarding the constancy of the values of the surface tension of infusions, etc., of the same materials but prepared by different methods. Aquæ fœniculi, menthæ piperitæ, etc., show a decrease in surface tension with increasing concentration of the ethereal oil. The quality of the preparation can be judged from the surface tension. The addition of certain amounts of such salts potassium iodide, sodium iodide, sodium benzoate or codeine salts to tinctures changes the surface tension only slightly. Determination of the concentration by means of surface tension measurements is therefore possible in the presence of salts. In emulsions of sweet almond the surface tension likewise decreases with the increase in the concentration of almond. At normal concentratons (3–5 parts per 100), however, the change in surface tension with concentration is insignificant. The value changes, moreover, with the use of different types of almonds. It is more expedient to use viscosity measurements in judging emulsions. The surface tension of aqueous solutions of phenol changes considerably with the concentration. The surface tension of solutions of water in phenol changes only slightly with concentration. Tables are given from which the concentration of solutions of phenol and chloral hydrate can be determined from the surface tension.—Y. A. FIALKOV and M. I. ETINGER. *Farmatsiya i Farmakol.*, (1937), No. 8, 6–14; through *Chem. Abstr.*, 33 (1939), 9546. (F. J. S.)

**Polysulfide Solutions Suitable for Injection.** A process of preparing a solution of a polysulfide for injection purposes, the solution having a $p_H$ value of 7.8 to 8.0 so that upon contact with the blood colloidal sulfur is formed, comprises heating an aqueous solution of a polysulfide and grape sugar in ampuls at a temperature of about 100° C. and for a time sufficient to reduce the $p_H$ of the original mixture to the stated value.—VOLKMAR KLOPFER. U. S. pat. 2,135,642, Nov. 8, 1938. (A. P.-C.)

**Pomades with a Cod Liver Oil Base.** Formulæ are given for pomades of various types. White wax 10 Gm., spermaceti 10 Gm., and 80 Gm. cod liver oil (I) give a firm pomade; and yellow wax 20 Gm., petrolatum 50 Gm. and 40 Gm. I yield a suitable ointment for wounds and sores. Water (50 Gm.), or aqueous solutions can be incorporated in a mixture of wax 20 Gm., glycerol 20 Gm., petrolatum 30 Gm., lanolin 30 Gm. and I 100 Gm. Another suitable ointment contains yellow wax 10 Gm., triethanolamine stearate 10 Gm., lanolin 25 Gm.

and I 75 Gm. Suppository bases containing wax 1.5 Gm., cocoa butter 4.5 Gm. and I 4 Gm. or wax 3 Gm., triethanolamine stearate 4 Gm. and I 20 Gm. are suggested.—ANGELO FERRARIS. *Boll. chim. farm.*, 78 (1939), 379–381; through *Chem. Abstr.*, 33 (1939), 9539. (F. J. S.)

**Sulfanilamide Solution for Injection.** A solution for intravenous injection, intended for veterinary use, is prepared as follows: Sulfanilamide, 4 Gm.; sodium dihydrogen phosphate, 0.5 Gm.; glucose, 12.5 Gm.; warm, boiled, sterile water, to 250 Gm. The solution is prepared aseptically and filtered into a flask; a current of sterile carbon dioxide is passed through the liquid to remove dissolved air, the flask is closed, and heated for one hour in steam. If air is not removed from the solution it acquires a yellow color either on heating or after standing. This solution is actually supersaturated, but does not tend to crystallize.—A. LANNUNG. *Arch. Pharm. Chem.*, 95 (1938), 615; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 153. (S. W. G.)

**Sulfur Suspension—Homogeneous.** In order to produce a more or less stable suspension or lotion containing sulfur, spirit of camphor, glycerin and water, the addition of a quantity of tincture of soapbark equal in weight to the amount of sulfur used is recommended. This produces a fine suspension which does not become curdy.—*Gazette Pharm.*, (Jan. 1939); through *J. pharm. Belg.*, 21 (1939), 166. (S. W. G.)

**Tinctures—Concentrations of Alcohol in Some, and the Time Required for Their Extraction.** Tinctures of digitalis, adonis and strophanthus can be prepared in 7 days with 40° alcohol or in 3 days with 60° alcohol. The amount of digitoxin extracted is proportional to the alcoholic concentration. Tinctures are, therefore, best prepared using 70° alcohol with a 7-day extraction period.—A. A. GAVRILYUK. *Farmatsiya i Farmakol.*, (1937), No. 5–6, 27–29; through *Chem. Abstr.*, 33 (1939), (1939), 9545. (F. J. S.)

**Vasolimentum Iodatum in the Polish Pharmacopœia II.** Directions for compounding the preparation are: Mix 10 parts iodine, 30 of oleic acid, 50 liquid paraffin, 5 alcohol and 5 ammonium hydroxide (10%). When 10% ammonium hydroxide is used, as here directed, the preparation is stable no more than three weeks. With the use of 25% ammonium hydroxide the preparation can be kept in a dark flask at least two months.—J. WOJCIECHOWSKI. *Wiadomosci Farm.*, 64 (1937), 628–629. **Vasolimentum Iodatum from the Polish Pharmacopœia II and Iodized Oleate.** The substitution of iodized oleic acid for vasolimentum iodatum in pharmacy is discussed. The vasolimentum iodatum prepared in accordance with directions in the Polish Pharmacopœia contains 0.44% ammonium iodide after one month; the formation of this salt depends upon the manner of storage. Shaking the solution reduces the amount of $NH_4I$ formed; its formation is also dependent upon the action of light. Iodized oleate cannot be used to replace vasolimentum iodatum entirely.—*Ibid.*, 65 (1938), 3–4; through *Chem. Abstr.*, 33 (1939), 9546. (F. J. S.)

## PHARMACEUTICAL HISTORY

**Apothecaries of Ostmark as Writers and Poets. V.** A historical discussion dealing with Karl Schönherr.—RODERICH WALD. *Wien. Pharm. Wochschr.*, 72 (1939), 281–284. (H. M. B.)

**Apothecaries' Position as a Copy of German History—Development of the.** Historical.—WOLFGANG SCHNEIDER. *Wien. Pharm. Wochschr.*, 72 (1939), 323–324. (H. M. B.)

**Apothecary in Stendal—200-Year Old.** L. STORBECK. *Deut. Apoth. Ztg.*, 54 (1939), 258–259. (H. M. B.)

**China and Japan—A Chronology of Some Events of Pharmaceutical Interest in Ancient.** These events begin as early as 2838 B.C. and extend to 1093 A.D.—L. K. KAUFMAN. *J. Am. Pharm. Assoc.*, 28 (1939), 544. (Z. M. C.)

**Genus Monarda—History of the Revision of the.** Historical with 26 references.—C. C. ALBERS. *Pharm. Arch.*, 8 (1938), 81–93. (H. M. B.)

**German Apothecary as a Pioneer in Culture.** A biographical sketch of Willabald Müller.—ANON. *Wien. Pharm. Wochschr.*, 72 (1939), 297. (H. M. B.)

**Investigators—Ideas and History of.** A historical discussion.—FRANZ STRUNZ. *Scientia Pharm.*, 10 (1939), 93–97. (H. M. B.)

**Pharmacy—History of. Handbook of Pharmaceutical Botany.** This handbook published in 1804 is reviewed.—OSWALD KOFLER. *Wien. Pharm. Wochschr.*, 72 (1939), 330–332. (H. M. B.)

**Sal.** A list of special items mostly of historical interest in which the world "Sal" has been used.—EDWARD KREMERS. *Pharm. Arch.*, 7 (1936), 60–64; 8 (1937), 29–32, 46–48, 94. (H. M. B.)

**Salz.** A list of special items mostly of historical interest in which the word "Salz" has been used.—EDWARD KREMERS. *Pharm. Arch.*, 8 (1937), 95–96; 9 (1938), 80; 10 (1939), 16, 32. (H. M. B.)

**Society of Apothecaries—An Account of the Attempt of the, to Establish the Drug Trade in Colonial America.** An interesting bit of history about an attempt to introduce drug plant cultivation in Georgia.—JOSEPH KRAFKA. *J. Am. Pharm. Assoc.*, 28 (1939), 616. (Z. M. C.)

**Wetherill Family in Philadelphia Pharmacy.** Some interesting history of the connection of this family with the beginnings in pharmaceutical education in the United States.—JOHN E. KRAMER. *J. Am. Pharm. Assoc.*, 28 (1939), 614. (Z. M. C.)

## PHARMACEUTICAL LEGISLATION

**Chemistry and Patents in Jugoslavia.** Laws affecting chemical patents are listed.—ANON. *Riechstoff-Ind. u. Kosmetik*, 14 (1939), 34–35. (H. M. B.)

**Drug Control in India.** The Biochemical Standardization Laboratory was established in 1937 to control the quality of drugs on the Indian market. In this report, results of the bioassay of ergot preparations on the rabbit uterus and the colorimetric assay of the Brit. Pharm. addendum, 1936, were used. Of 108 samples of liquid extract of ergot, 96 were below strength and 54 were inert. Of this number 86 were indigenous and 22 were of foreign manufacture. Of a total of 130 ergot preparations (including the 108 listed fluidextracts) 112 were below strength and 58 showed no activity. The samples were obtained from all provinces of British India or directly from the Customs Office.—BUREAU OF PUBLIC INFORMATION. *Calcutta Med. J.*, 35 (1939), 170–171; through *Chem. Abstr.*, 33 (1939), 8916. (F. J. S.)

**Fair Trade Legislation—Some Economic and Social Implications of.** There is no conflict in the ethic of Confucius, "What I do not wish men to do to me, I also wish not to do to men," and Christ's injunction, "Do unto others as you would have them do unto you" and supplementing each other they cover all implications of Fair Trade. Fair Trade is defined and four premises are developed. They are social control, growing complexity of society, exercise of social control restricts property rights and free competition and tends to clarify and sim-

plify business relations. Under the fourth premise, increasing employment of Social Control Legislation, these specific topics are discussed: increasing consumer consciousness, waste in distribution, price and profit determination, private brand, the deal, the trade-in.—LEAVITT C. PARSONS. *J. Am. Pharm. Assoc.*, 28 (1939), 531. (Z. M. C.)

**Pennsylvania Fair Trade Law in the Drug Trade—Background and Operation of.** The author traces the legal development of fair trade laws. Taking up the enactment of Fair Trade Laws the following topics are discussed: economics of price maintenance, legal basis of the Pennsylvania fair trade law, its economic significance and trade practices after its enactment. Survey of sixty stores led to the following conclusions: Reliable measures of the extent of changes are not obtainable now; Druggists' bookkeeping systems are often inadequate for obtaining necessary information; Expectation of increase in volume rather than increase in net profit; an indication that changes are slowly developing momentum.—STEPHEN WILSON. *J. Am. Pharm. Assoc.*, 28 (1939), 540. (Z. M. C.)

**Substitutions. Its Evils and Need of Better Control.** Substitution and adulteration led to the all-inclusive drug definition in the National Food and Drug Law. Reference is made to some of the history of its inclusion. A summary of state anti-substitution is given. More uniform laws are needed as well as methods for enforcement.—LYMAN F. KEBLER. *J. Am. Pharm. Assoc.*, 28 (1939), 449. (Z. M. C.)

**United States Cosmetic Rules under the New Act.** Section 602, parts *a*, *b*, and *c* of the new act are discussed.—ANON. *Perfumery Essent. Oil Record*, 30 (1939), 19. (A. C. DeD.)

### PHARMACEUTICAL ECONOMICS

**Color of Labels—Change of, from Bronze to Green, and its Prevention.** Labels printed with bronze-powder inks change color when stuck on to bottles with casein glue. Dextrin should be used.—T. A. BELOVA. *Maslob. Zhir. Delo*, 1 (1939), 26–27; through *J. Soc. Chem. Ind.*, 58 (1939), 517. (E. G. V.)

**Hospital Drug Buyer.** Difficulties involved in adequately serving patient and physician and in practicing rigid economy are discussed.—MORRIS DAUER. *J. Am. Pharm. Assoc.*, 28 (1939), 446. (Z. M. C.)

**Hospital Pharmacists' Association—Our.** Objects of the AMERICAN PHARMACEUTICAL ASSOCIATION are quoted. Reasons for supporting the ASSOCIATION and the Hospital Pharmacy Sub-Section are discussed. Organization and work of the Cleveland Society of Hospital Pharmacists is discussed somewhat in detail.—JOHN F. MILLER and RUSSELL H. STIMSON. *J. Am. Pharm. Assoc.*, 28 (1939), 606. (Z. M. C.)

**Nutrition and the People.** The primary object is to make better known to non-scientific people the value of the foods they eat.—M. PYKE. *Chemistry and Industry*, 58 (1939), 463. (E. G. V.)

**Perfume Industry and Business in Great Britian.** A discussion.—ANON. *Riechstoff-Ind. u. Kosmetik*, 14 (1939), 102–105. (H. M. B.)

**Pharmacy—Back to.** The author relates how he set about checking the tendency of physicians to prescribe ready-made preparations and increased the proportion of prescriptions actually requiring compounding.—EMERSON D. STANLEY. *J. Am. Pharm. Assoc.*, 28 (1939), 603. (Z. M. C.)

**Prescription Pharmacies—Value of Various Promotional Methods for.** The author points out some of the methods which he believes are effective, in the light of twenty years experience. What physicians would consider ethical should be considered first. A professional pharmacy must look the part and this necessitates an inviting comfortable reception room; an attractive prescriptions laboratory table; a good library and conference room. The service should include complete prescription and laboratory service; gas anesthesia, resuscitation gas and oxygen therapy; complete biological service; surgical supplies. Delivery service, night and day should be maintained. Direct promotional work is effective. Health talks in newspapers, directing people to see a physician and asking that ethical pharmacists be allowed to fill the prescription needs have been good. Radio broadcasting which dramatizes some medical or pharmaceutical incident gives opportunity to point out the service a pharmacy can render. It increases the number of prescriptions and makes physicians more prescription conscious.—M. A. CHEHAK. *J. Am. Pharm. Assoc.*, 28 (1939), 387. (Z. M. C.)

**Professional Pharmacy—Qualifications of the Personnel for.** Points to be considered in selection of men are education and intelligence, degree of interest in pharmacy, a professional manner, personality, character, personal habits, coöperation.—J. K. ATWOOD. *J. Am. Pharm. Assoc.*, 28 (1939), 602. (Z. M. C.)

**Retail Pharmacy—Commercial and Professional Problems in, are Distinct but Inseparable.** The author points out a good many instances to show that commercial activities must proceed simultaneously with professional practice.—PAUL C. OLSEN. *J. Am. Pharm. Assoc.*, 28 (1939), 609. (Z. M. C.)

### MISCELLANEOUS

**Bottle Washing.** A booklet published by Imperial Chemical Industries, Ltd. The subject is treated in three sections dealing with the various types of bottles and their impurities, bottle washing machinery and detergents.—ANON. *Chemistry and Industry*, 58 (1939), 462. (E. G. V.)

**Cellular Film—A Cellulose Acetate.** An invention which relates to an improved type of scented article which will allow escape of odoriferous substances over an extended period of time is given. The odoriferous materials are interiorly combined with a composition which will allow its escape in a particularly desirable manner. An initial step in the process comprises forming a cellulose acetate solution which may be done by adding cellulose acetate flakes to an organic solvent such as acetone to produce a thick solution of relatively high viscosity but which may be poured or worked as desired. Before the cellulose acetate solution is cast there is added to it a compatible scenting agency such as the essential oils of various flowers or synthetic elements. After mixture of the scented material with the cellulose acetate solution, the solution is cast or otherwise shaped into films, sheets, or the like, and allowed to dry. The solvents by which the cellulose acetate is maintained in solution evaporate, leaving a composite article of durable form. In drying, the cellulose acetate sets up a film of very small cellular structure and the perfume material is interiorly incorporated in the film in such a manner as to permit escape at a slow rate. That is, the essential oils are bound into an integral mass with the cellulose acetate, thereby preventing rapid escape. It will be found that the cellulose acetate film will give off the incorporated odor even after months of use.—ANON. *Perfumery Essent. Oil Record*, 30 (1939), 11. (A. C. DeD.)

**Cetyl and Stearyl Alcohols.** Comparisons of cetyl and stearyl alcohols in cosmetic and similar preparations indicate that a little less of the latter

is required in most formulæ to perform emulsifying and analogous functions. Formulæ are given for liquefying, massage, cleansing, vanishing and liquid emollient creams containing fatty alcohols.—FRANK H. SEDGWICK. *Soap, Perfumery Cosmetics*, 12 (1939), 161–163; through *Chem. Abstr.*, 33 (1939), 9543. (F. J. S.)

**Copper Fungicide—New.** A non-caustic, non-hygroscopic material (a copper-zeolite containing 25% copper) is described. It is stable and retains its chemical and physical properties when subjected to weathering, and can be used without supplementary wetting and spreading agents. The material is compatible with calcium oxide-sulfur, sulfur, arsenic, oil, pyrethrum, derris and nicotine preparations, gave good control of a number of apple diseases, and caused less injury than standard copper preparations.—J. F. ADAMS and A. A. NIKITIN. *Trans. Peninsula Hort. Soc.*, (1935); *Bull. State Board Agric. Delaware*, 25 (1936), 73–80; through *J. Soc. Chem. Ind.*, 58 (1939), 192. (E. G. V.)

**Cosmetics—Higher Fatty Alcohols in.** Sulfonated and phosphated alcohols are useful as detergents and wetting agents. As emulsifying agents they produce oil in water emulsions.—H. S. REDGROVE. *Am. Perfumer*, 38 (1939), No. 3, 34–35. (W. F. G.)

**Cosmetics—Trend of Progress in.** Modern products are discussed. The industry still lacks a good emulsifying agent for the production of fluid acid emulsions of the water-in-oil type.—H. S. REDGROVE. *Chemistry and Industry*, 58 (1939), 591–595. Discussion of the above paper. *Ibid.*, 58 (1939), 700–702. (E. G. V.)

**Emulsions in Industry. IV The Paper Industry.** Use of emulsions in the various stages of paper production are discussed.—H. L. BENNISTER and A. KING. *Chemistry and Industry*, 58 (1939), 220–223. (E. G. V.)

**Fresh Plants—Production of Triturations from, or Parts Thereof.** Trituration is effected in presence of insoluble inorganic adsorptive media (colloidal silicon dioxide, fuller's earth, aluminum hydroxide), drying being subsequently effected in cool (not more than 30°) air of progressively reduced humidity, an alkaline substance being present at this stage, and preferably during the trituration. Optionally present are buffer salts and amorphous carbohydrates or derivatives, substantially insoluble in water but prone to swell therein.—G., F., and H. MADAUS (DR. MADAUS & CO.). Brit pat. 503,633; through *J. Soc. Chem. Ind.*, 58 (1939), 791. (E. G. V.)

**Fruit Juices and Syrups.** A group of abstracts of papers covering development, composition and manufacture and standardization.—*Chemistry and Industry*, 58 (1939), 548–552. (E. G. V.)

**Manicure Preparations.** Based on the physiology of the nail, the formulation of the following types of preparations is considered and illustrated: cuticle remover, nail white, abrasive polishes, lacquer polishes and enamel remover.—RALPH G. HARRY. *Mfg. Perfumer*, 4 (1939), 108–111, 114, 134; through *Chem. Abstr.*, 33 (1939), 8919. (F. J. S.)

**Methyl Cellulose in Soap Making.** Methyl cellulose used as a filler for hard and soft soaps improves the lather, making it smoother and softer. By its use, the fatty acid content may be reduced 30 to 32%. The material is also valuable as an emulsifying agent.—P. I. SMITH. *Am. Perfumer*, 38 (1939), No. 3, 43–44. (G. W. F.)

**Nitrogen Compounds and Their Application in Cosmetics.** Monoethanolamine can be used in permanent wave lotions in place of ammonia, because its boiling point is high. Its use is indicated also in depilatory preparations because of its great absorptive power for sulfur compounds. Diethanolamine is thought to be suitable for similar purposes. Triethanolamine creams discolor more rapidly in the presence of glycerol, but this is prevented by the addition of 3% sodium alginate solution. The triethanolamine salts of the fatty alcohols are alkali-free and may be used in cosmetics. Ethylenediamine is suitable to neutralize acids in oils and in soap formation. Morpholine, diethylenetriamine and triethylenetetramine are not definitely established for use in cosmetics. Polyethyleneamines neutralize large relative proportions of fat acids and yet give soaps of high lather power. They absorb $CO_2$ and $H_2S$ in aqueous solution, giving up the gases on heating. Lecithin, albuminol and keratin are important cosmetic materials containing nitrogan. Dinitrophenol, on account of its toxic properties, should not be used in cosmetic preparations.—A. LEWINSON. *Soap, Perfumery Cosmetics*, 12 (1939), 253–256, 344–345; through *Chem. Abstr.*, 33 (1939), 9543. (F. J. S.)

**Sea Algæ—Utilization of, for the Cosmetic and Related Industries.** Composition of the algæ is discussed. The salts of the free acids are of technical value and are divided into the water-soluble, water insoluble but soluble in ammonia and the water and ammonia insoluble groups. Properties and uses of the same are given in detail. Twenty references are given.—H. FRANK. *Riechstoff-Ind. Kosmetik*, 14 (1939), 15–19. (H. M. B.)

**Soap—Organic Solvents for.** A discussion of solvents used in laundry and toilet soaps including naphtha, kerosene, ethylene dichloride, carbon tetrachloride, denatured alcohol, ethylene glycol, glycerin and mono-alkyl ethers of glycols.—P. I. SMITH *Am. Perfumer*, 37 (1938), No. 5, 37, 70. (G. W. F.)

**Soap—Peculiarities of, Made from Hardened Rape Oil.** 47% soap made from hardened rape oil rapidly deteriorates when exposed to temperatures less than 0°, or when stored under conditions favorable to evaporation. The effects are ascribed to its high content of unbound water.—I. IGNASCHEV. *Maslob. Zhir. Delo*, 6 (1938), 24–27; through *J. Soc. Chem. Ind.*, 58 (1939), 169. (E. G. V.)

**Sodium Alginate.** Use of the compound in toothpastes, lotions, pastes and polishes is discussed. Four formulæ and eight references are given.—GORDON A. BERGY. *Am Professional Pharmacist*, 5 (1939), 494–495; through *Chem. Abstr.*, 33 (1939), 9541. (F. J. S.)

**Theatrical Make Up.** A review of grease paints and removers, theatrical powder and wet white, theatrical eyeblack, rouge, etc., is given.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 30 (1939), 128. (A. C. DeD.)

**Violet Odor—Sources of.** A discussion of violet odor, botanical distribution, methods of extraction, cost of manufacture and synthetic violet odors.—K. BOURNOT. *Am. Perfumer*, 37 (1938), No. 5, 38–40. (G. W. F.)

**Volatile Oils—Formulæ for Strong Aqueous Solutions of.** Although volatile oils are insoluble in water, the presence of soap in the water allows them to form concentrated solutions which may then be diluted with large quantities of water without producing cloudiness. The most suitable soaps for the purpose are potassium oleate, triethanolamine linoleate and ammonium ricinoleate sulfate.—ADRIEN ALBERT and R. K. WYBURN. *Soap, Perfumery Cosmetics*, 12 (1939), 498–500; through *Chem. Abstr.*, 33 (1939), 9543. (F. J. S.)

**Zinc Compounds for Cosmetics.** Uses are discussed.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 44 (1939), 295, 305. (H. M. B.)

## PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

### PHARMACOLOGY

**Adrenal Cortical Extract—Assay of.** The guinea pig is the most suitable animal for assay of cortical hormone because it is easy to operate (the technic of operation is described) and handle; it has no accessory adrenal cortical tissue, and required small amounts of extract to maintain in an apparently normal state.—R. J. SCHACHER and M. O. BEBEE. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 541. (A. E. M.)

**Alangium Lamarckii—Chemical Composition and Pharmacodynamic Action of.** The drug exercises a selective action on the parasympathetic system: a slow and lasting lowering of the blood pressure, reducing pressure on the heart; but in very small doses the action is reversed showing a stimulation. The plant increases the respiratory movements, but in time the respiration becomes spasmodic. The blood accumulates in the splenic region, and the tonus of the intestinal musculature is augmented. The action is most noticeable on the gastro-intestinal tract.—ANON. *Rev. Flora Med.*, (June, 1938); through *J. pharm. Belg.*, 21 (1939), 23. (S. W. G.)

**(*p*-Aminophenylsulfamido)pyridine—Elimination of, from Both Animal and Man.** The authors have found that when 693 is administered *per os* it passes rapidly into the blood and the cephalo-rachidic liquid, the maximum of which is attained during the fourth hour. The compound is almost totally eliminated by the renal route in 48 to 72 hours. When introduced into the body by the parenteral route in the form of the sodium salt, 693 is found in a greater concentration than when given by oral route but the rate of absorption and elimination is similar. A part of the compound is present and eliminated in certain species of animals as a conjugated (acetyl) derivative.—B. N. HALPERN, P. DUREL, P. DUBOST and M. ALLINNE. *Soc. de Biol.*, Feb. 25, 1939; through *Presse Medicale*, 18 (1939), 346. (W. H. H.)

**Androgenic Hormones—Absorption and Titration of, in Alcoholic and Oily Solutions Administered Percutaneously.** The hormone dissolved in alcohol is more readily absorbed than that in oil. Brushing the combs in the chick comb test showed that it is possible to detect quantities of 0.5 gamma testosterone. In the recovery test on castrate rats the oily solution proved to be more effective, when applied percutaneously.—BERNHARD ZONDEK and FELIX SULMAN. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 633. (A. E. M.)

**Anesthetics—Choice of.** S. called attention to the fact that the newer surgical anesthetics were not being used to the extent their usefulness warrants. The circumstances and conditions which have a bearing on the choice of an anesthetic were discussed and some of the uses and advantages of spinal anesthesia were pointed out. Cyclopropane, ethylene, nitrous oxide, tribromethyl alcohol and some of the barbiturates were discussed from the standpoints of the technic for their administration as well as their advantages and disadvantages in producing anesthesia.—H. B. STEWART. *Southern Med. J.*, 32 (1939), 766–770. (W. T. S.)

**Aneurin (Vitamin $B_1$)—Excretion of Injected.** The excretion of aneurin in the urine can be estimated with sufficient accuracy to be of clinical value by the thiochrome method without the use of a fluorimeter. A rapid excretion of aneurin takes place in the first three hours after intramuscular injection. It is suggested that a certain amount of injected aneurin is excreted before there is time for it to be stored in the tissues.—J. MARRACK and H. F. HÖLLERING. *Lancet*, 236 (1939), 325. (W. H. H.)

**Benzedrine (Amphetamine) and Derivatives—Physiological Action of, on Daphnia Magna.** From tests made, it is indicated that benzedrine sulfate is more active physiologically than paredrinol sulfate or hydrobromide, while paredrinol sulfate is rated more active physiologically than paredrine hydrobromide.—ARNO VIEHOEVER and ISADORE COHEN. *Am. J. Pharm.*, 110 (1938), 526. (R. R. F.)

**Benzedrine Sulfate in Persistent Hiccough.** Benzedrine sulfate was found to be of value in relieving two cases of persistent hiccough. The explanation seems to lie in its specific action in relaxing smooth muscle.—M. S. SHAINE. *Amer. J. Med. Sci.*, 196 (1938), 715; through *Brit. Med. J.*, 4078 (1939), 490C. (W. H. H.)

**Caffeine—Effects of, on Human Sugar-Tolerance Curves.** Large doses of caffeine depress the peak of the human sugar-tolerance curve and slightly delay the return to normal. The amounts of caffeine commonly ingested with tea or coffee have no significant effect on the blood sugar.—MARTIN DEAKINS. *Proc Soc. Exptl. Biol. Med.*, 40 (1939), 588. (A. E. M.)

**Chazuta Curare and Curare Plants.** A study was made on certain curares and plant ingredients. The extracts were tested in frogs, mice, and cats for their paralyzing potency, toxicity, and effect upon blood pressure and respiration. To evaluate the results, a clinically tested curare was taken as a "standard" for comparison. When compared with this standard curare, a Chazuta curare from Peruvian Amazonia has been found to be too toxic for clinical experimentation. This Chazuta curare is said to be derived from *Chondodendron tomentosum*, *Annona ambotay*, *Aristolochia rumicifolia*, and an unidentified plant (not of *Strychnos* or *Menispermaceæ*). Tests have shown that all the toxic properties exhibited by this curare may be ascribed to *Chondodendron tomentosum*. "Pareira brava" and *d*-berberine are derived from *Chondodendron platiphyllum*. An extract of herbage of *Aristolochia rumicifolia* showed a weak paralyzing activity. No curare-like action could be observed from extracts made from *Chondodendron limaciifolium*. *Telitoxicum minutiflorum* was shown to contain only traces of alkaloids which cause curare action. *Strychnos cogens* has been found free of alkaloids and appears to be of little significance to Macusi curare. Alkaloids of curare-like action are reported for the first time in *Elissarrhena grandifolia*.—K. FOLKERS and K. UNNA. *Arch. intern. pharmacodynamie*, 61 (1939), 370. (W. H. H.)

**Choline Hydrochloride—Depression of Polycythemia by.** Oral administration of choline hydrochloride depresses hematopoiesis in polycythemic dogs, and tends to return the red cell number to normal.—JOHN EMERSON DAVIS. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 445. (A. E. M.)

**Colchicine—Activation of Circulatory Effects Produced by Sympathomimetic Substances by.** Colchicine reinforces the hypertensive action of adrenaline and the principal sympathomimetics in general. This activation is definite in the dog and pronounced in the rabbit. Such activation equals the hypotension produced by yohimbin on the sympathomimetics on the dog. This hypotension, which moderates hypertension caused by adrenaline in normal conditions, does not exist in the rabbit and this

peculiarity explains why in the latter animal the activation of hypertension is greater than in the dog.—H. BUSQUET. *Soc. de Biol.* (March 4, 1939); through *Presse Medicale*, 20 (1939), 383. (W. H. H.)

**Coumingine Hydrochloride—Effect on the Electrocardiogram of, a New Alkaloid with Digitalis-Like Action.** Coumingine is the alkaloid of *Erythrophleum coumingo*. The parenteral administration of the hydrochloride produced electrocardiographic disturbances in dogs and cats similar to those of digitalis. The cat unit was found to be 0.159 mg. The effect of daily sublethal doses was slower than that of analogous doses of digitalis. The toxic actions were milder. Local inflammatory reaction following intramuscular injection of moderate or large doses was marked.—STEVENS J. MARTIN and BRUCE COMINOLE. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 412. (A. E. M.)

**Cryptolepine—Hypotensive and Vasodilator Effects of.** Cryptolepine produces (in dogs) in a dose of 5 mg. per Kg. a strong and lasting hypotension. This is due principally to a very strong and prolonged vasodilatation. This should justify a therapeutic study of this alkaloid.—M. RAYMOND-HAMET. *Compt. rend.*, 207 (1938), 1016. (G. W. H.)

**Cyclopropane with Spinal Anesthesia.** A combination of percaine spinal with cyclopropane general anesthesia was used in seventy major operations, mostly abdominal. The pre-anesthetic used throughout the series was omnopon gr. $^1/_3$, scopolamine gr. $^1/_{150}$ and coramine 0.85 cc. The spinal anesthetic was a 1 in 2000 solution of percaine. The general anesthetic was cyclopropane delivered through a Heidebrink continuous-flow machine. Oxygen was usually necessary. The advantages of this method are the tranquil respiration, a rapid return to consciousness and the absence of nausea and vomiting during the operation and of major thoracic postoperative complications. Cyclopropane tends to keep the blood pressure from falling and has no toxic effect on the liver or the kidneys. The postoperative sedative was morphine gr. $^1/_6$ (or alternatively heroin gr. $^1/_{12}$) and coramine 0.85 cc. Three patients died: one after a complete gastrectomy; two after a partial gastrectomy. The addition of cyclopropane "sleep" to spinal anesthesia is an undoubted improvement, a pleasant and effective anesthetic for the patient, and a material aid to the surgeon in operations on the upper abdomen.—H. DODD and J. T. HUNTER. *Lancet*, 236 (1939), 685. (W. H. H.)

**Digitalis.** Clinical observations were made on sixty-five patients with heart failure and normal rhythm, and on thirty patients with heart failure and auricular fibrillation. When all rheumatic cases were excluded, the effect of digitalis was equally good in the two groups. Rheumatic cases responded better than any other etiological group, irrespective of the rhythm, though cases of rheumatic fibrillation gave a much better response than rheumatic cases with normal rhythm. It is suggested that the tradition of the more powerful effect of digitalis on failure with fibrillation derives from observations on rheumatic cases.—C. J. GAVEY and J. PARKINSON. *Brit. Heart J.*, 1 (1939), 27; through *Brit. Med. J.*, 4080 (1939), 598F. (W. H. H.)

**Digitalis—Deterioration of.** The deterioration of digitalis probably rests chiefly upon the fundamental phenomenon of hydrolysis of the active principles, be they the "genuine" glycosides of Stoll or the more simple generally recognized ones. Evidence of deterioration is shown much more definitely by the frog method than by the cat method. It should be established once and for all and to the satisfaction of all concerned, if possible, which of these two methods more clearly reflects the clinical efficiency of digitalis, particularly on aging. Both by the frog method and by the cat method the dry powdered digitalis leaf seems to be stable for many years. The same probably holds for tablets, capsules and pills of the dry leaf. To be entirely safe and free from criticism digitalis infusion should not be dispensed after one week of storage and the supply of tincture of digitalis should be replenished every six months to one year. While little is known about the rate of deterioration of liquid proprietary preparations of digitalis, it is known that they deteriorate and it is best that they too do not be dispensed after one year.—H. B. HAAG. *Am. J. Pharm.*, 110 (1938), 456. (R. R. F.)

**2,4-Dioxo-Thiazolidine and 2,4-Dioxo-Oxazolidine—Narcotic Properties of Some Derivatives of.** The narcotic action of dimethyl-, diethyl-, dipropyl-, diallyl-, phenyl-ethyl- and diethyl-N-methyl-2,4-dioxothiazolidines; dimethyl- and diethyl-2-thion-4-oxo-thiazolidine; and methyl-ethyl and diethyl-2,4-dioxo-oxazolidine was tested on dogs using Sodium Luminal and Dial as controls. The 5,5-diethyl-2,4-dioxo-thiazolidine and the corresponding dipropyl compound showed the strongest action corresponding in strength about to the action of diethyl-barbituric acid.—H. ERLENMEYER. *Helv. Chim. Acta*, 21 (1938), 1013. (G. W. H.)

**Diuresis—Effect of Ergotoxine, Ergotinine and Pseudoergotinine upon.** Intramuscular injections of ergotoxine reduces the quantity of urine emitted after the ingestion of water or a solution of urea. It augments the volume of urine emitted during fasting or after the ingestion of a solution of sodium chloride. The intramuscular injection of ergotinine increases the quantity of urine emitted during fast and after the ingestion of either water or sodium chloride solution. It reduces the quantity of urine emitted after the ingestion of a solution of urea. The intramuscular injection of pseudoergotinine increases the quantity of urine emitted during fast and after the ingestion of either water or a solution of urea. It does not modify in an appreciable manner the volume of urine emitted during sodium chloride diuresis. Ergotoxine, ergotinine and pseudoergotinine hinder the gradual diminution of the rate of chlorides in urine during the course of aqueous diuresis. Ergotinine and pseudoergotinine exaggerate somewhat the gradual reduction in the rate of urea in urine during the course of aqueous diuresis. Ergotoxine does not modify this phenomenon. The gradual augmentation of the rate of chlorides in urine during fast is increased by ergotoxine, ergotinine and pseudoergotinine. Ergotoxine and ergotinine tend to diminish in the majority of cases the increase in the quantity of chlorides and the rate of chlorides in the urine during sodium chloride diuresis; pseudoergotinine exaggerates on the contray this phenomenon. The gradual augmentation of the rate of urea in urine during fast is hindered by ergotoxine, ergotinine and pseudoergotinine. Ergotoxine, ergotinine and pseudoergotinine exaggerate somewhat the gradual diminution of the rate of urea in urine during sodium chloride diuresis. The augmentation of the rate of urea in urine during urea diuresis is more often exaggerated under the influence of ergotoxine and ergotinine, hindered on the contrary under that of pseudoergotinine. Ergotoxine, ergotinine and pseudoergotinine do not determine the modifications in a constant sense of the gradual diminution of content of chlorides in urine during the course of urea diuresis.—E. ZUNZ and O. VESSELOVSKY. *Arch. intern. pharmacodynamie*, 60 (1938), 466. (W. H. H.)

**Diuretic.** The individual substances acting as diuretics are discussed in detail.—M. A. LESSER. *Drug and Cosmetic Ind.*, 44 (1939), 437–440. (H. M. B.)

**Epinephrine Substitutes—Smooth Muscle Actions of.** Degeneration of the postganglionic sympathetic nerve fibers supplying the iris of the cat and the rabbit and the small intestine of the rabbit sensitized these organs to the action of epinephrine, epinine, *meta*-hydroxyphenylpropanolamine, *para*-hydroxyphenylpropanolamine and 1, 3-dihydroxyphenylpropanolamine. There was sensitization of the denervated intestine to phenylpropanolamine (propadrine), but not to the denervated iris. Denervated rabbit iris was sensitized to *levo-meta*-synephrine (neo-syneprine), but not to the denervated intestine of the rabbit or the denervated iris of the cat. *Dextro-meta*-synephrine and *dextro-para*-synephrine failed to dilate the pupil. *Para*-hydroxybenzedrine (paredrine) contracted the intestine and had no effect on the cat iris. This drug produced mydriasis of the normal eye of the rabbit, but had no effect on the denervated iris of the rabbit. A comparison of these effects with the effect of cocaine on the pressor actions of these drugs is discussed.—M. E. DRAKE, R. JOHN, F. RENSHAW and C. H. THIENES. *Arch. intern. Pharmacodynamie*, 61 (1939), 494. (W. H. H.)

**Ergot with Various Moisture Contents under Different Conditions of Storage—Changes in.** Present U. S. P. requirements have been subjected to criticism. The literature is reviewed and experimental work reported. Examination of old ergot seemed to indicate that there is a relation between physical condition and quality of the drug as measured by the colorimetric and U. S. P. XI cock's comb assay. It was necessary to study assay methods in order to make the other work worthwhile. The colorimetric and cock's comb assays were found to agree fairly well. Several tables tend to show that ergot stored in airtight containers with moisture content from 6.6 to 12.1% deteriorates slowly, the change usually being too small to measure biologically. Study of specimens with moisture content of 3.2 to 10.2% stored in open and closed containers showed that deterioration was too small to be measured. Apparently it is not necessary to store ergot in air-tight containers. Specimens stored with various amounts of moisture and at different temperatures showed a remarkably constant relationship between ergonovine and total alkaloids, averaging 17% (both calculated as ergotoxine). With two possible exceptions, samples did not indicate that ergonovine deteriorates faster than other alkaloids. The change in physical condition when moisture is more than 8% is more pronounced than the deterioration indicated by either assay method. The moisture content in air-tight containers does not change. The U. S. P. procedure for fluidextract of ergot seems to extract about half of the ergonovine and about half of the total alkaloids. Activity of fluidextract on cock's comb is less than half the activity of the total alkaloids of the drug when measured in the same way. Fifty to 80% of the total alkaloids are as active in bluing the cock's comb as ergotoxine ethanesulfonate. The colorimetric method is better for measuring deterioration than the cock's comb method. If it is desirable to keep ergot for several years, moisture content should be reduced to about 4% and then stored in air-tight containers, or a dry place. The drying may be done by spreading in a thin layer in a drying oven at 38° C. for 24 hours. If the drug is to be used in a year a moisture content of 8% will permit slight deterioration. If stored in a dry place, moisture will decrease. There probably is more deterioration with moisture above 8% in airtight containers than in open containers; for this amount of moisture open containers are recommended.—B. V. CHRISTENSEN and J. A. REESE. *J. Am. Pharm. Assoc.*, 28 (1939), 343.
(Z. M. C.)

**Folia Digitalis—Relative Efficiency of the Most Generally Used Standard Preparations for the Titration of.** The German, English (international) and American digitalis standard preparations were compared by the Houghton-Straub 24-hour method on frogs and by the usual infusion method on cats and gave comparative figures of 1, 1.4 and 1.5 and 1, 1.5 and 1.4 for the three standards by the two methods. The ratio of cat unit to frog unit is not constant for the various standard preparations and consequently estimations of the efficacy of folia digitalis and digitalis glucosides made by comparison with data in a given unit must be transferred to another unit in the light of the above findings.—W. SIECKMANN. *E. Merck's Jarhesber.*, 52 (1938), 61–64; through *Chem. Abstr.*, 33 (1939), 9541.
(F. J. S.)

**Gum Arabic.** To the dangers connected with a gum infusion already known a new one is added, namely, the possibility of a calcium fixation in the blood. There may be a disturbance of the physiological balance of the plasma ions, with consequent effects upon the heart.—J. A. MAAS. *Quart. J. Exptl. Physiol.*, 28 (1939), 315; through *Brit. Med. J.*, 4074 (1939), 256H. (W. H. H.)

**Heparin—Application of the Tissue Extract Method for the Standardization of.** Blood is drawn from a vein into paraffined centrifuge tubes calibrated at 4 cc. containing 0.2 cc. of heparin solution of various concentrations. The blood and heparin must be thoroughly mixed. To 4 drops of the centrifuged plasma, add 1 drop of different dilutions of human brain extract and determine the concentration, $K$, necessary to produce clotting in 3 minutes. With a constant concentration of heparin, the value of $K$ depends on the relative prothrombin content, but for the same plasma this depends upon the heparin concentration. In this way various heparin preparations can be compared with the standard perparation and their proper dosage adjusted by multiplying by a factor.—HENRIK DAM and JOHANNES GLAVIND. *Skand. Arch. Physiol.*, 82 (1939), 221–224; through *Chem. Abstr.*, 33 (1939), 8916. (F. J. S.)

**Histamine and Anaphylaxis.** These experiments seem to show a casual relationship between anaphylaxsis and histamine. On the other hand it is improbable that after the injection of the antigen the histamine in the tissues is set free and passes into the circulation, as is generally assumed at present.—S. SISIMA. *Fukuoka Acta Med.*, 31 (1938), 178; through *Brit. Med. J.*, 4080 (1939), 598G.
(W. H. H.)

**Hormones—Sex, Biological Assay of the.** Microscopic illustrations of the comparative activity of natural and synthetic oestrogens and the biological assay of the corpus luteum hormone. Also showing illustrations of the normal rat uterus (immature and adult) and the rat uterus after treatment with anterior pituitary hormones.—ANON. *Pharm. J.*, 142 (1939), 435. (W. B. B.)

**Male Hormones—Cock's Comb Test for Measuring.** A new method for measuring the activity of male sex hormones upon the cock's comb has been given, which involves changes in the comb volume. The earlier observation made by the author, that the local addition of hormones to the comb gives a larger value, was confirmed.—P. ENGEL. *Arch. intern. Pharmacodynamie*, 61 (1939), 354. (W. H. H.)

**Morphine—Influence of the Acid Combined with, on the Urinary Elimination of the Alkaloid.** In rabbits, morphine phenylpropionate was excreted in the urine a little more rapidly than the citrate or the hydrochloride.—J. REGNIER and SUZANNE LAMBIN. *Compt. rend. soc. biol.*, 127 (1938), 294–297; through *Chimie & Industrie*, 40 (1938), 530.
(A. P.-C.)