PHARMACEUTICAL ABSTRACTS

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CONTENTS

PHARMACY

DISPENSING (*Continued*)

Drug Extraction. XI. The Extraction of Jalap. This report covers study of fineness of powder, variation in solvents, comparison of U. S. P. X and N. F. methods of preparing resin of jalap and comparison of results by three assay methods. Results are tabulated and discussed. The authors summarize their findings as follows: "Percolation tests show that within the limits of No. 20 and No. 80 powder, the fineness of powder is of minor importance in the extraction of jalap. The N. F. VI menstruum for resin of jalap (alcohol 9 volumes + water 1 volume) has no advantage over the menstruum of the U. S. P. X (alcohol) from the standpoint of rate of extraction, purity and yield of resin. The N. F. VI menstruum has the disadvantage of causing a great increase in total extracted matter, thus increasing the bulk of syrupy extract to be handled and greatly increasing the proportion of impurities to be removed during the precipitation and washing of the resin. Comparative results on the assay of resin of jalap by several assay methods are presented."—WILLIAM J. HUSA and PAUL FEHDER. *J. Am. Pharm. Assoc.*, 26 (1937), 121. (Z. M. C.)

Emulsions—Water-in-Oil and Oil-in-Water. Lin. Calcariæ, Lenolinum and Ungt. leniens of the German Pharmacopœia are discussed as to disperse phases, dispersion medias and emulsifiers. Two ointment dispersing agents are offered: (1) water 100, liquid petrolatum or fatty oil 100, cholesterin 5; (2) water 100, oil 75, lanolin 25.—KARL BECHER. *Apoth. Ztg.*, 51 (1936), 1820–1821. (H. M. B.)

Ether—Chemical Stability of Anesthetic. Report is made concerning the changes which occur in this ether when a container has been partially emptied and stoppered with a cork and set aside for use at a later time. Regardless of containers, neither aldehyde-free nor peroxide-free ether remain unchanged: both aldehydes and peroxides develop. Details of tests used, types of packages and discussion of findings are given.—J. E. AURELIUS, E. S. HERLONG and F. W. NITARDY. *J. Am. Pharm. Assoc.*, 26 (1937), 45. (Z. M. C.)

Gentian Brandy—Preparation of, from Dried Gentian Roots. The roots should not be too finely divided, but the fibers should be thoroughly separated. They are then soaked in water for 1–2 days. Little increase in the yield of ethyl alcohol is effected by the use of pure yeast cultures, etc., and by inversion. During manufacture the temperature should not rise above 25°, and the roots should be dried at as low a temperature as possible.—A. FREY. *Z. Unters. Lebensm.*, 72 (1936), 64; through *J. Soc. Chem. Ind.*, 55 (1936), 1122B. (E. G. V.)

Glycerin Suppositories—Study of. Comparison is made of the changes in the U. S. P. formula since its introduction. **Excess of alkali in various formulas of the U. S. and other pharmacopœias.** The main objection to the U. S. P. X formula is that the product is not always transparent. A formula recommended for U. S. P. XI presents serious difficulties for small scale production. The present study undertook direct incorporation of sodium stearate into the glycerin. Experimental work included determination of water content, of consistency, of the suppository mass, and of p_H. Experiments were also made to determine the effect of increased amounts of distilled water upon clarity of these suppositories. Determination was made also of hygroscopicity and the effect of prolonged heating. Results of these series of determinations are tabulated. The following formula was selected as most desirable: glycerin 92, sodium stearate 8, distilled water 5, to make about 30 rectal suppositories. Heat the glycerin to 95° C. in a double boiler. Add the sodium stearate, stirring very gently occasionally until a clear solution is effected. Then add the distilled water, mix thoroughly and pour the mass into suitable molds. Remove the suppositories when they are completely cold and preserve them in tightly stoppered glass bottles in a cool place.—WILLIAM A. PROUT. *J. Am. Pharm. Assoc.*, 25 (1936), 1123. (Z. M. C.)

Kallikrein Preparation. In the preparation of a physiologically active Kallikrein preparation which simultaneously causes decrease of the blood pressure and increase of the blood circulation in the lungs, brain, skin and muscles, the active substance is precipitated out of an albumin-free kallikrein concentrate by adding acetone in presence of a small quantity of sodium chloride while cooling the solution. The precipitate is washed with acetone and ether and dried at a low temperature.—FRITZ SCHULTZ, assignor to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,069,-019, Jan. 26, 1937. (A. P.-C.)

Lime Water. The technic of preparing medicinal lime water is described and purity

standards for the lime to be used are given.—R. MONNET. *Bull. sci. pharmacol.*, 43 (1936), 204–213; through *Chimie & Industrie*, 36 (1936), 776. (A. P.-C.)

Liver Preparation Protecting against Necrosis from Chloroform or Carbon Tetrachloride Administration. A concentrated aqueous extract of liver representing approximately 9 Gm. of liver per cc. is warmed in a hot water-bath to a temperature of about 60° C. Two and four-tenths volumes of commercial 95% alcohol, at approximately the same temperature, is added to this with stirring. The precipitate formed is filtered off after cooling. A saturated aqueous solution of ammonium sulfate, in quantity equal to two volumes of the liver extract, is added to the filtrate and the mixture well shaken. On standing, this separates into two layers; above, an alcoholic layer and below, a watery layer containing a large amount of precipitated ammonium sulfate. The upper layer is siphoned off and alcohol added to it in amount equal to 1.5 volumes of the liver extract used. This precipitates the excess ammonium sulfate. After being cooled in a refrigerator for several hours, or preferably over night, the solution is filtered. It is then evaporated under reduced pressure to about one-seventh of the original volume of liver extract. This causes the formation of considerable precipitate. The solution containing the precipitate is placed in a refrigerator at about 5° C. over night, after which it is centrifuged at high speed. The supernatant fluid is decanted and the precipitate is extracted several times with boiling alcohol. The alcoholic solution is evaporated under reduced pressure until all of the alcohol has been evaporated off. The residue is dissolved, as far as possible, in a relatively small amount of warm water and the volume made up to one-tenth that of the original extract used. (One cc. represents approximately 90 Gm. of fresh liver.) The solution is treated with sodium bicarbonate until the reaction is just acid to litmus. It is then ready for use. As long as the preparation is kept warm, most of the material is in solution at this concentration, but a considerable precipitate forms when it is cooled. In an acid solution, as prepared above, the material may be sterilized with steam at 15 pounds pressure without appreciable deterioration. Similar treatment in alkaline solution destroys its activity. When this material was injected subcutaneously into white rats, it protected them to a marked extent against carbon tetrachloride and chloroform poisoning, as verified by histological studies of the liver. The active principle is not choline, glucose or the pernicious anemia factor.—J. C. FORBES, R. C. NEALE and J. H. SCHERER. *J. Pharmacol.*, 58 (1936), 402. (H. B. H.)

Mandelic Acid and Its Salts. The author makes a plea that the compounding of mandelic acid preparations be retained in the pharmacy. He describes the preparation of ammonium mandelate, its therapeutics and its posology. Ammonium mandelate is very hygroscopic and must be kept in hermetically sealed glass containers. An aqueous solution is obtainable on the market. Since the taste of ammonium mandelate is very disagreeable mixtures containing it must also contain flavoring substances. A type formula is given. It is also suggested that concentrated solutions of the salt may be dispensed in gelatin capsules provided the inside of the two halves of the capsule, as well as the joint is painted with pill varnish. Such capsules may be kept for about a week.—H. J. VAN GIFFEN. *Pharm. Weekblad*, 73 (1936), 1542. (E. H. W.)

Medicinal Substances—Is Dispensing and Preparation of, a Lost Art? A discussion of many of the fine points that have a bearing on professional pharmacy.—MAX N. LAMBERGER. *J. Am. Pharm. Assoc.*, 26 (1937), 46. (Z. M. C.)

Morphine Extraction. Raw material such as opium is digested in an aqueous solution containing 5 to 25% of acid such as sulfuric to liberate the morphine held in chemical combination with organic materials, and the acid is subsequently neutralized (suitably with sodium hydroxide) and the morphine is extracted from the salts produced (suitably by use of chloroform and alcohol). —GEORGE E. MALLORY, assignor to the GOVERNMENT OF THE UNITED STATES, as represented by the Secretary of the Treasury. U. S. pat. 2,062,324, Dec. 1, 1936. (A. P.-C.)

Paraffin—Emulsion of, with Agar. The method described in the B. P. C. for Emulsion of Liquid Paraffin with Agar is said to be unsatisfactory. The following procedure, using the formula of the Codex and the quantities in the Imperial system, produces a thick white emulsion which separates only very slightly: Mix the acacia, tragacanth and vanillin thoroughly in a mortar and triturate with $2^1/_2$ fluidounces of liquid paraffin. Add in one portion, $1^1/_4$ fluidounces of distilled water and stir until thoroughly emulsified. Incorporate the excess oil, about half a fluidounce at each addition, adding a few drops of water if necessary to prevent the emulsion from breaking. Add the agar to 8 fluidounces of distilled water and boil until dissolved; dissolve the benzoic acid

in the mucilage and strain while hot. Gradually add the mucilage to the emulsion with continued trituration. Then add the glycerin, oil of lemon and sufficient distilled water to produce the required volume. In carrying out empirical experiments on emulsification it was found that the inclusion of a small amount of an inert powder, such as kaolin or kieselguhr with the gums, produced an emulsion of very uniform globule size.—C. GUNN. *Pharm. J.*, 138 (1937), 6. (W. B. B.)

Pills—Composition of, Further Studies on. In further study of pill formulas for making pills of good decomposition rate (*Farm. Revy*, 10 (1936), 141 ff.) formulas and decomposition times are cited for 30 species of pills, each prepared with several variant combinations of excipients. It is concluded that a good formula for powders and pills is: Gum arabic 8 Gm., Extractum glycyorrhizæ crudum 5 Gm., milk sugar 87 Gm. If the pills are to contain less than 6 Gm. of active ingredient, 12 Gm. of the above powder may be used, and as much sugar syrup to bind as may be necessary. If there is to be more than 6 Gm. of active ingredient a mixture of one part licorice extract and two parts of glycerol salve may be used.—H. SVENSSON. *Farm. Revy*, 11 (1937), 3, 17, 37, 57. (C. S. L.)

Prescription Difficulties. It Can Be Done. Series No. 5. Twenty-four difficult prescriptions with detailed directions for compounding.—J. LEON LASCOFF. *J. Am. Pharm. Assoc.*, 26 (1937), 37. (Z. M. C.)

Quinine Basic Hydrochloride and Basic Formate—Water Solubility of, in Presence of Antipyrine or Urethane. At concentrations above 17.5% for the basic hydrochloride and above 9.20% for basic formate of quinine, solubility in water is increased more rapidly by addition of urethane than of antipyrine. Therefore, in preparing solutions for injection, the use of urethane instead of antipyrine is advised, since the concentrations of the salts are already high. The solubility coefficient of quinine salt under the influence of urethane or antipyrine increases much more rapidly with the hydrochloride than with the formate; thus, when urethane is used, a 50% aqueous solution of the hydrochloride can be prepared containing only 25% of urethane; when antipyrine is used, a 23% aqueous solution of the formate necessitates the presence of 50% of antipyrine. Hence, the use of the basic hydrochloride with urethane, rather than the basic formate, is of advantage and should be adopted by the pharmacopœias.—MUSSO and MONNET. *J. pharm. chim.*, 22 (1935), 504–551; through *Chimie & Industrie*, 36 (1936), 779. (A. P.-C.)

Rotenone—Cold Extraction of, in Derris and Cubé Root. Previous methods for extraction and determination of rotenone in derris root and cubé root have employed Soxhlet extraction at the boiling point of a low boiling solvent such as ether. Results are very variable. Cold extraction with toluol is studied. A curve shows the solubility of rotenone in toluol between 10–25° C. The rotenone in the residue from toluol extraction is recrystallized from carbon tetrachloride. *Method:* 30 Gm. pulverized root (100 mesh) is packed in a funnel with a glass wool plug, moistened with toluol and then extracted with six 20-cc. portions of toluol, draining each portion completely. The combined extracts are made to 150 cc. and a 50-cc. aliquot is placed in a 150-cc. short-necked, flat-bottom flask and the toluol distilled off using an oil-bath (130° C.). The yellow residue is dissolved in 7–8 cc. of warm carbon tetrachloride saturated with rotenone at 10° C. The fluid is transferred to a cylindrical weighing flask and the distillation flask rinsed with two small portions of carbon tetrachloride making a total of 12–15 cc. solvent. The flask is cooled with stirring till crystallization begins, stoppered and set in the cold (10° C.) over night. The crystals are filtered on a Gooch crucible, flask and crystals washed twice with carbon tetrachloride saturated with rotenone at 10° C., and once with the pure solvent. The crystals are dried at room temperature (24 hrs.) and weighed. They contain solvent of crystallization: $C_{23}H_{22}O_6.CCl_4$. The rotenone content of 10 Gm. of root is obtained by multiplying the weight found by 0.719.—F. L. BEGTRUP. *Dansk Tids. Farm.*, 11 (1937), 6. (C. S. L.)

PHARMACEUTICAL HISTORY

Adolf Liebens—100th Birthday of. Biographical.—ANON. *Pharm. Monatsh.*, 17 (1936), 229–230. (H. M. B.)

Apothecaries—History of the Privileged, of the Lower Rhein.—B. SCHUMACHER. *Apoth. Ztg.*, 51 (1936), 1753–1754. (H. M. B.)

Charles Rice. Information about Dr. Rice, dictated by John Uri Lloyd and presented to the Historical Section of the AMERICAN PHARMACEUTICAL ASSOCIATION by J. T. Lloyd, after his father's death.—JOHN URI LLOYD. *J. Am. Pharm. Assoc.*, 25 (1936), 1143. (Z. M. C.)

Herb Medicine of the Aztecs. A historical sketch of some of the medicines used by these people.—EMILY WALCOTT EMMART. *J. Am. Pharm. Assoc.*, 26 (1937), 42. (Z. M. C.)

Historian—The Perfect. The author tells how a story told into a microphone may be permanently recorded on a record which may be used many times in after years. Rutgers University, College of Pharmacy had Dr. Hommell tell the story of the founding of the College and so has saved a first-hand story for posterity.—ROBERT W. RODMAN. *J. Am. Pharm. Assoc.*, 26 (1937), 65. (Z. M. C.)

H. Zörnig—70th Birthday of. Biographical.—P. CASPARIS. *Apoth. Ztg.*, 51 (1936), 1854–1855. A similar article also appears in *Pharm. Monatsh.*, 17 (1936), 232. (H. M. B.)

J. Meyenberg, Prescription Druggist. A historical sketch of a German-born pharmacist and other interesting historical facts connected with Germans who were prominent in the early history of Texas.—MARGARET COUSINS. *J. Am. Pharm. Assoc.*, 26 (1937), 62. (Z. M. C.)

Medieval Medicine—Cameo of. A historical sketch involving Nicolaus Salernitanus.—WILLIAM KIRKBY. *Chem. and Drug.*, 126 (1937), 189 (E. V. S.)

Pure Food and Drug Legislation Started in the United States One Hundred Years Ago. The author traces briefly the beginnings of this sort of legislation and then its beginning in the United States in 1835. Massachusetts led and Michigan followed in 1838 with still others at irregular intervals.—LYMAN F. KEBLER. *J. Am. Pharm. Assoc.*, 26 (1937), 140. (Z. M. C.)

Rudolph Hanke. Biographical.—ANON. *Pharm. Post.*, 70 (1937), 2–3. (H. M. B.)

Victor van Itallie—Biography of. Upon the occasion of the forty-year jubilee celebration of Victor van Itallie as a pharmacist, general secretary of der Nederlandsche Maatschappij ter Bevordering der Pharmacie (Netherlands Pharmaceutical Association), Professor P. van der Wielen has contributed this brief history covering the forty years' service to the association by this well-known Dutch pharmacist. The jubilee celebration was held on December 23, 1936. A photograph of Victor van Itallie is included.—*Pharm. Weekblad*, 73 (1936), 1681. (E. H. W.)

PHARMACEUTICAL EDUCATION

Challenge of To-day. The sub-titles indicate somewhat the scope of this address: One cannot merchandise a profession, people like to take medicine, a professional degree, nomenclature, pharmacy and public health, the retail pharmacy as a public health institution, professional pharmacy journal, suggested studies for the future, the pharmaceutical curriculum, theory and practice of pharmacy plus. Some seventeen topics are given as suitable for consideration for a college curriculum.—ANTON HOGSTAD, JR. *J. Am. Pharm. Assoc.*, 26 (1937), 143. (Z. M. C.)

Colleges of Pharmacy—Some Problems and Responsibilities of. The author discusses the question of when practical drug store experience can be secured to the best advantage. He points out that requiring that it be secured following graduation is not parallel to the interneship of the medical profession because it is *general* store experience not *professional* experience that is desired. Vacation periods which dovetail practical work and college work should be best. Requiring that experience follow college tends to prevent this vacation work and tends to promote illegal practice. If a system of approved and unapproved stores is to prevail, courage and wisdom will be necessary for if done at all it must be done well.—ERNEST LITTLE. *J. Am. Pharm. Assoc.*, 25 (1936), 1009. (Z. M. C.)

Hospital Administration—Pharmacy from the Standpoint of. The author discusses the advantage of using U. S. P. and N. F. preparations, the usefulness of a formulary in avoiding waste, duplication and saving in expense. Such a compilation also assists physicians in writing more rational prescriptions.—B. J. HOWTLER. *J. Am. Pharm. Assoc.*, 26 (1937), 49. (Z. M. C.)

Laboratory—Teaching, with the Beginning Pharmacy Course. The author discusses the advisability of using laboratory work with a beginning course in pharmacy and explains how some experiments are conducted.—INA GRIFFITH. *J. Am. Pharm. Assoc.*, 26 (1937), 69. (Z. M. C.)

Next Step. Accomplishments which have been the basis for improvement in pharmacy are briefly evaluated. What "the next step" should be is the question in the mind of each group but American pharmacy must agree soon on what some of the major objectives shall be. In the opinion of the author there must be fewer graduates, fewer new registered pharmacists, reduction of the number of stores and prohibition of new stores.—W. F. RUDD. *J. Am. Pharm. Assoc.*, 25 (1936), 1140. (Z. M. C.)

Organic Chemistry—Objective Examinations in Elementary, Application of. The author

stresses the importance of setting up objectives for any course; this needs to be done in order to determine whether what is being taught is best for fitting the student for a life's undertaking in pharmacy. Objectives should be based on the requirements of the profession and they serve as the basis for examination for student achievement. Organic chemistry has a mass of factual knowledge but effort was made to shape examinations so as to cultivate reasoning power. Types of questions used were True-False, Completion, Multiple Choice and Match-List; also completion and balancing of organic reactions and reactions in elementary syntheses. Details of how the course was taught, frequency of examinations, how personal elements were eliminated, analysis of effects on class are all discussed. The more important facts observed are these: "The objective examination requires an unusual amount of time and consideration for its preparation; the objective examination, if properly prepared, affords an accurate means of following any given list of objectives, and testing each student's knowledge of those objectives; in preparing to take an objective examination, students have a tendency to memorize facts and to discount the importance of reasoning; the objective examination is perhaps the fairest yardstick for the measurement of relative achievement."—CARL J. KLEMME and JAMES H. HUNTER. *J. Am. Pharm. Assoc.*, 26 (1937), 156. (Z. M. C.)

Pharmacist—Education of a. Professional education may be subdivided as follows: Knowledge (that which the student should know); skill (that which the student should be able to do); attitude (the way in which a student should behave professionally). These headings are discussed. Besides preparing a student for the practice of his profession an institution should do more. Its purpose should be threefold: Prepare its students to earn a living, to live a life and to mold a world. Something of what these things mean is considered.—ERNEST T. STUHR. *J. Am. Pharm. Assoc.*, 26 (1937), 57. (Z. M. C.)

Teaching a First Course—Newer Ideas in. The author questions some of the modern methods used in beginning chemistry. One of these is the presentation of electronic reactions in the first year. Fundamental chemistry has not been altered and whether the theory of the internal operation of reactions helps the student to understand the points is debatable. Formulas and their relation to facts present difficulties because of the likelihood of students memorizing formulas without really understanding. A student gets a better conception of acids, bases and salts if actual reactions are taken up immediately after the subject of equilibrium and both early in the course. The author believes in using structural formulas in the presentation of inorganic chemistry and also insisting that the student use them. Actual chemical identity of acids and bases, except the matter of degree, is shown. Partial and complete hydrolysis of salts are more easily explained. The author illustrates his points with specific examples that add very much to the value of the paper.—ELDIN V. LYNN. *J. Am. Pharm. Assoc.*, 26 (1937), 70. (Z. M. C.)

MISCELLANEOUS

Ambergris—Function and Application of, in Perfumes. Black ambergris has the most pronounced indole odor, the infusion is dark in color with a coarse but strong smell. Some varieties of ambergris which are light in color have little odor, and the resulting tinctures are of little value, being weak. Qualities should be selected in which the indole odor is not excessively strong and the sea-smell present, but not pronounced. Ambergris is tested by taking small quantities from different pieces, reducing to a fine state of division and making a tincture of 1 gram in 40 cc. of 96% alcohol. After two or three days a test slip is immersed in the tincture, allowed to dry—the odor should not be fœcal; after 12 hours the odor should be fully developed and should subsist for several days. The strength of tincture is 25 Gm. of ambergris to 1 L. of alcohol; 1,000 Gm. of powdered ambergris are placed in a wide-mouthed vessel of 10–12 L. capacity and 8 L. of 96% alcohol are added, allowed to digest for eight days, with occasional stirring. The supernatant liquid is decanted and reserved, and replaced by 8 L. of fresh alcohol, which is decanted after 8 days. In all five such extractions are made, and the combined 40 L. of alcoholic extract are filtered and placed in a warm spot to mature for six months. The marc is covered with 10 L. of alcohol and allowed to stand until it is necessary to extract a further quantity of ambergris, when this alcohol is used for the first extraction. The exhausted residue is placed to dry in the air, ground and preserved in metal containers for use in sachet powders and musk powders. For good results in perfumes it is necessary to use 30 to 80 cc. of this tincture to 1 L. of perfume.—ANON. *Perfumery Essent. Oil Record*, 28 (1937), 22. (A. C. DeD.)

Antiseptics with a Pine Oil Base. The collection from its natural sources, the production, properties, constituents and uses of pine oil are described. Its antiseptic action is discussed and different methods of determining the phenol number (estimated to be 4.5 to 5.5) are compared.—Y. R. NAVES. *Bull. inst. pin* (1936), 83; through *J. Soc. Chem. Ind.*, 55 (1936), B., 669. (E. G. V.)

Cetyl Alcohol Cosmetics. It is claimed that cetyl alcohol is an auxiliary rather than sole emulsifier. This is proved by the author's experiments. Formulas for skinfood, hand cream, milky lotion, lipstick and eye shadow are given. A brief consideration of acid creams is also contained in the article.—S. P. JANNAWAY. *P. E. O. R.*, 27 (1936), 154; through *Am. Perfumer*, 33 (1936), No. 3, 64. (G. W. F.)

Chemicals and Pharmaceuticals—Progress of Fine, during the Last Two Years. The introduction of mandelic acid and its salts for the treatment of infective conditions of the urinary tract, the discovery of "Ergometrine," the protective and curative action of *p*-aminobenzenesulfonamide against streptococcal infection, the production of vitamin D_3, the combining of insulin with protamines, the isolation of "Anahæmin," the development of new reagents for biochemical research and the production of indolylacetic acid are listed as important advances in the field of chemico-medical research.—T. T. COCKING. *J. Soc. Chem. Ind.*, 55, No. 50 (1936), S 2. (E. G. V.)

Clinic Pharmacy. A very excellent description of the conduct of the Winona Clinic consisting of six physicians, as well as a discussion of the advantages of such an arrangement.—JOSEPHINE NICHOLS. *J. Am. Pharm. Assoc.*, 25 (1936), 1129. (Z. M. C.)

Dentifrice. A dentifrice in paste form contains as the abrasive constituent finely powdered mica in its natural crystalline lamellar form together with the usual ingredients of tooth-pastes.—JEAN RIPERT, assignor to THIBAUD, GIBBS & CIE. U. S. pat. 2,059,396, Nov. 3, 1936. (A. P.-C.)

Ergometrine—New Ergot Preparation. The ergometrine used for these studies was prepared by the method of Dudley and Moir and is identical with their substance. It appears superior to preparations of ergot used hitherto.—E. HAUCH and E. MÖLLER-CHRISTENSEN. *J. Obstet. Gynæcol. Brit. Empire*, 44 (1936), 1145–1151; through *Chem. Abstr.*, 31 (1937), 1879. (E. V. S.)

Ferrum Pulveratum and Divalent Iron in Therapy. A. recommends that iron powder prepared from iron pentacarbonyl ($Fe(CO)_5$) with a minimum content of 99.5% iron be admitted to the German Pharmacopœia as "Ferrum pulveratum" and that Ferrum reductum be deleted. The iron powder so prepared because of its high degree of purity dissolves slowly in dilute acids. He also recommends the preparation of a *stabilized syrup of ferrous chloride* and offers a monograph that should be admitted.—WALTHER AWE. *Apoth. Ztg.*, 51 (1936), 1768–1772. (H. M. B.)

Fluorescence Testing of Pharmaceutical Products. Essential and fixed oils may be enclosed between glass slides or spotted on filter paper and the fluorescence noted under the ultraviolet lamp. The difference between Jap and English peppermint oil is readily observed, as is the difference between refined and virgin olive oil, and between oil of almond and oil of mirbane. The fluorescence between artificial and natural citrus oils is too small to differentiate. A table of intensity of fluoresence for many alkaloids is given. A bright blue fluorescence results with only 0.003% morphine, an amount too small to give a reaction with Mayer's reagent. The ultraviolet lamp is valuable in the comparison of samples submitted with the bulk delivered, and in the differentiation of non-alkaloidal drugs, such as gentian, ipecac, rumex and condurango. Upon extraction with hot water, or petroleum ether, and subsequent acidification, or evaporation, certain components of ointments may be detected under the ultraviolet lamp. Mineral oils, fats and greases may be detected by their intense bluish fluorescence.—J. A. RADLEY. *Mfg. Chemist*, 7 (1936), 310–311; through *Scientif. Abstr.*, 7 (1936), 414–415. (E. V. S.)

Fungi—Uses of. The presidential address, Botany Section British Association, Blackpool meeting includes edible fungi; wood infected with fungi used for commercial purposes; fermented drinks or foods caused by fungi; yeasts in fermentation producing such commercial substances as Taka-diastase, citric and gluconic acids, glycerol; processes covering leather substitutes, aging of green coffee, production of ergosterol, acetone, fumaric acid, etc.; and use in organic synthesis.—J. RAMSBOTTOM. *Nature* (Sept. 12, 1936); through *Australas. J. Pharm.*, 51 (1936), 1241. (E. V. S.)

Gargles—Agents Used for, and for Disinfection of the Mouth. Agents in gargles are divided into (1) astringents including aluminum compounds and preparations, copper and zinc salts, honey of rose, oxymels, oak bark, salvia leaves, agrimony and tincture of rhatany and (2) disinfectants—36 in number. Eleven agents used in mouth disinfectants are discussed.—ERICH HERMANN. *Apoth. Ztg.*, 51 (1936), 1804–1808. (H. M. B.)

Gelatin—Variations in, as Affecting the Electrophoretic Behavior. Gelatins, depending upon their source but particularly upon their method of preparation, may exhibit distinctly different physico-chemical properties. The gelatins may be referred to as Type I and Type II, depending on their method of manufacture and under certain conditions may produce almost opposite results, specifically when employed in the manufacture of silver halide hydrosols.—L. F. TICE and W. G. BATT. *Am. J. Pharm.*, 109 (1937), 29. (R. R. F.)

Hair Waving Permanently. For permanently waving hair while cold, it is treated with a softening composition containing a basic compound of an amphoteric metal such as sodium stannite and the softened hair is waved and treated with a fixing composition containing acid material such as aluminum and zinc sulfates and then with a composition such as magnesium sulfate solution to remove remaining excess of the treating compositions.—JULIAN Y. MALONE, JOSEPH H. CARROLL and CHARLES R. MCKEE, assignors to PERWAV CO. U. S. pat. 2,061,709, Nov. 24, 1936. (A. P.-C.)

Hormone Creams. A discussion of hormone creams and their formulation. Formulas are given for creams for men and women and several proprietary hormone-containing materials are mentioned and described.—H. JANISTYN. *Seifensieder Ztg.*, 63 (1936), 25, 504; through *Amer. Perfumer*, 33 (1936), No. 3, 64. (G. W. F.)

Lecithin Preparation—Stable. Lecithin is dried to a high degree (suitably in thin layers to a moisture content of not over 1%) and then mixed with 5 to 6% of alcohol for forming into tablets or other desired shapes, which may be coated with refined beeswax, palmitin, stearin or a similar substance if desired.—CARL H. BUER. U. S. pat. 2,064,727, Dec. 15, 1936. (A. P.-C.)

Liniments. Modern liniments (embrocations) are solutions or mixtures of drugs with oily, soapy or alcoholic vehicles, which facilitate the rubbing and are used as counterirritants. Cutaneous irritants are listed. The official preparations are discussed and 16 formulas are offered.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 40 (1937), 54–56, 69. (H. M. B.)

Machinery Used in Pharmacy. Descriptive.—FRIDO KORDON. *Pharm. Post.*, 70 (1937), 5–8, 21–24. (H. M. B.)

Microscopic Technic—Significance of a New Development in, for the Pharmaceutical Industry. The so-called "schlieren" method of Toepler and the inclined illumination of Hauser are discussed. The camera microscope, the metaphot, an apparatus using illumination by polarized light and other modern appliances are described.—A. KARSTEN. *Pharm. Monatsh.*, 17 (1936), 245–249. (H. M. B.)

Open-All-Night Policy in a Retail Pharmacy—Establishment and Operation of. The author relates many details about how this was done, some of the difficulties and how the business has thrived.—HERMAN and ROBERT ELICH. *J. Am. Pharm. Assoc.*, 26 (1937), 52. (Z. M. C.)

Perfumery—Grasse Products in. A brief account of the more important uses of the various flower absolutes, flower oils and other Grasse products, in practical perfumery.—ANON. *Perfumery Essent. Oil Record*, 28 (1937), 44. (A. C. DeD.)

Pharmacy in Prison. The author describes the conduct of a pharmacy in the hospital of a United States penitentiary. The pharmacist has no financial worries, no show windows to decorate, no soda fountain, no magazines or candy. Stock is restricted to items in U. S. P., N. F. and N. N. R. He does the compounding. He needs to be a detective as well as pharmacist to prevent the diversion of drugs for other purposes.—CHARLES L. PICKENS. *J. Am. Pharm. Assoc.*, 26 (1937), 54. (Z. M. C.)

Preservation—Chemical. Preservatives are defined as chemical agents which serve to retard, hinder or mask the changes in foods which (1) disturb production, completion and storage of foods or (2) reduce or destroy the value or usefulness of the product whereby the substances or their chemical transformation products in the prepared food are arrived at. With this definition as a basis an extensive review of these agents is given including sixty-one references.—TH. SABALITSCHKA. *Pharm. Monatsh.*, 17 (1937), 237–245. (H. M. B.)

Pseudobufotalin (Heart Medicine). "Senso" (a Chinese medicine obtained from the

secretion of the toad) is lixiviated with alcohol, the solution is shaken with addition of petroleum ether, the petroleum ether layer is removed and ether is poured into the aqueous layer. The resinous matter thus separated is removed, and the remaining ether-alcohol solution is volatilized into alcohol solution again, poured into water, and the precipitate that forms is lixiviated while cold with ethyl acetate and its distilled residue is converted into an alcoholic solution to crystallize out the active ingredient.—HEIZABURO KONDO, SHUNICHI IKAWA and YOSHITO KOBAYASHI. U. S. pat. 2,062,667, Dec. 1, 1936. (A. P.-C.)

Raman Effect and the Concept of Odor. Substances such as hydrocyanic acid, benzaldehyde and nitrobenzene with odors which, in appropriate concentration, are similar in many ways, possess some property in common and may be correlated with their effect on the osmic sensory processes. The gross chemical structure of compounds cannot be the linking or underlying property which conditions the odor. Some property of the single molecule must be searched for since the very mechanism of odor perception involves the vapor of substances, volatility being a prerequisite for the normal osmic sensation. When considering this relation between physical properties and the odor of organic compounds, the author several years ago was able to arrive at the conclusion that the fundamental source of osmic sensation is bound up with the internal vibrations of the molecule. There is a general consensus of opinion that the only property which can be correlated with odor is the periodic movement of the atoms or groups of which the molecules of odorous substances are built. A mental picture of a molecule of an odorous substance may be taken as that of an assemblage of atoms arranged in the accepted configuration of the organic chemist—but these atoms are not static; they move about a mean position and are dynamic in the sense that they have a periodic motion with regard to their fellow atoms. Not all such motions are perceptible by the osmic sensory system, but certain of them which are so perceptible constitute the osmic frequencies of the molecule and it is these which are able to effect the sensitive membranes of the nose and so give rise to the sensation of smell. If the fundamental principle of the concept of odor as the perception of intramolecular osmic frequencies be adopted, then the approach to the basic scientific analysis and measurement of odor lies in the measurement of these intramolecular frequencies. The Raman Effect discovered by Sir C. V. Raman in 1928 is used for the measurement of the vibrations set up inside the molecule. The following topics are discussed: The nature of the Raman effect, extension to aromatic compounds, effect of saturation and the influence of oxygen.—G. MALCOLM DYSON. *Perfumery Essent. Oil Record*, 28 (1937), 13. (A. C. DeD.)

Rare Earths Used in Cosmetics. Cerium salts have antiseptic and tonic properties; the oxide can form colored lakes used as nail-polishing powders. Radioactive thorium salts possess but little toxicity; they are astringent, tonic and can cure certain parasitic skin infections; they can be used in creams and lotions. The oxide is used in dental creams and powders. Its sol- and gel-forming properties are also used. It is used in creams in the form of stearate or oleate. Lanthanum salts possess a bactericidal action; they are used in some beauty lotions. Præseodymium salts are bactericidal. Erbium salts are tonic and astringent.—H. JANISTYN. *Deut. Parfümerie-Ztg.*, 22 (1936), 165–166; through *Chimie & Industrie*, 36 (1936), 975. (A. P.-C.)

Rotenone. A review of its properties and of its applications as an insecticide.—H. GUÉRIN. *Industrie Chimique*, 23 (1936), 883–885. (A. P.-C.)

Skin Treatment or Cosmetics—Vehicle for Medicines for. A composition consisting of a silicic acid xerogel having at least for the most part a grain size ranging from 1 to 100 μ and containing a compound of fluorine in adsorptive combinations which react with water to release fluorine in bound form only very gradually and in a highly diluted form, are suitable for use as vehicles for sulfur, boric acid, metal salts, etc.—ARTHUR SAUER, assignor to FISSAN EXPORT CO., JULIUS BLOCH & SOHN. U. S. pat. 2,059,811, Nov. 3, 1936. (A. P.-C.)

Tooth-pastes—Modern. The raw materials for tooth-pastes must be regarded from every possible angle and every factor, such as chemical, physical and æsthetic suitability and cost. Raw materials may be divided into the following groups: *Base or Polishing Agents.*—Precipitated chalk, calcium phosphate, tricalcium phosphate, talc, prepared chalk, magnesium oxide, magnesium carbonate, fuller's earth, bentonite, wilkinite, kieselguhr, amorphous silica, calcium silica. *Liquid Vehicle.*—Water, glycerin, glycols, syrups and gum mucilages, alcohol. *Binders.*—Starch, glycerite of starch, gum mucilages (tragacanth, karaya, acacia), Irish moss, quince seed, colloidal clays, bentonite, wilkinite, powdered soap, silica gel, pectin. *Sweeteners.*—Sugar, honey, saccharin,

glucose. *Lubricants.*—Usually liquid paraffin. The general structure of tooth-paste formulas is discussed paying special attention to the relative proportions of base, liquid vehicle, etc. The various ingredients for the preparation of tooth-pastes are discussed. A number of recommended formulas are given.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 28 (1937), 48.
(A. C. DeD.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Aphrodisiacs and Antiaphrodisiacs—Determination of, by Biological Test. A general discussion of the availability of the various substances recognized as aphrodisiacs is given. From the tests suggested to evaluate this property, the Glaser and Haempel fish test is considered best suited and is used throughout the paper. The fish are held in a rubber bath sponge and the material in question injected intraperitoneally. The drugs investigated are: Yohimbine, cantharidin, damiana, muira puama, ginseng, mandragora and hyoscyamus. Of them, yohimbine is the most potent and the aqueous decoction of damiana is shown to be the next most active of the various preparations. It is shown also that combinations of these exhibit synergistic action, the combination of yohimbine, damiana and mandragora being 7 times as active on castrated and 19 times as active on uncastrated fish as yohimbine alone. Lupulin and camphor are found to be antiaphrodisiacs when given by themselves. However, they do not always counteract the effect of aphrodisiacs when combined with them but may even intensify the effect of the latter.—E. GLASER. *Scientia Pharm.*, 8 (1937), 1. (M. F. W. D.)

Atropine Alkaloids—Bioassay of, New Method for. Description of a simple biological method, requiring no extraction of the alkaloids and suitable for the ordinary galenical preparations. It consists essentially in determining on the isolated frog heart the antagonism between the alkaloidal solution and a solution of acetylcholine which has been standardized with a solution of atropine of known strength. The isolated heart is treated with 1:5,000 to 1:10,000 acetylcholine in Ringer's solution to produce vagal inhibition of the heart contractions which decrease rapidly and become barely perceptible; at this point the acetylcholine solution is replaced by one containing both acetylcholine (at the same concentration) and atropine. The toxic phenomena recede in a degree proportional to the concentration of the alkaloid. The frog heart possesses the advantage of being easily and quickly detoxicated; after treatment with acetylcholine and then acetylcholine plus atropine, it can be restored to its normal condition by Ringer's solution and can be used for further tests after about 20 min. Moreover, the acetylcholine-atropine antagonism is very sharp on the frog heart, even with very low atropine concentrations.—C. TRABUCCHI. *Atti. Soc. Med. Chir. Padova*, 13 (1935), 172–179; through *Chimie & Industrie*, 36 (1936), 708–709.
(A. P.-C.)

Bromine—Urinary Elimination of, after Ingestion of Sodium Bromide. The bromine content of the urine of a normal subject was determined daily after a single dose of 1.0 Gm. of sodium bromide was administered orally. The elimination of bromine was extended over 31 days, reaching a maximum of 158.5 mg. in 4 days, then gradually decreasing. The same subject received 33 Gm. of sodium bromide in the course of two weeks. In this case, the elimination of bromine extended over 69 days or 55 days after the last dose of sodium bromide. The curve of the content of bromine in the blood is parallel to that of the urinary elimination of bromine. The proportion of blood chlorine is not modified by the presence of large quantities of bromine.—CAMILLE CHATAGNON. *Compt. rend.*, 204 (1937), 72. (G. W. H.)

Catechol Derivatives—Physiological Effects of More Non-amino. Ten non-amino catechol derivatives caused a rise in the blood pressure of the intact cat. Acetylation of catechol and the α-(3,4-dihydroxyphenyl)ethanone derivatives does not destroy the vasopressor activity.—RAYMOND L. OSBORNE. *Proc. Soc. Exptl. Biol. Med.*, 35 (1937), 567. (A. E. M.)

Digitalis—Comparative Study of the Absorption of, When Given Orally and Rectally to Cats. Investigation revealed that digitalis is absorbed when given either orally or rectally to cats. Absorption is slow and varies greatly in different cats. No significant difference in absorption rate in the two modes of administration was observed. Details of experimental work are reported.—W. ARTHUR PURDUM. *J. Am. Pharm. Assoc.*, 26 (1937), 17. (Z. M. C.)

Epicaine—Effect of, on Blood Pressure. α-(3,4-Dihydroxyphenyl)β-(*p*-aminobenzoyl-

β-diethylaminoethanol)-α-ethanone hydrochloride, called epicaine, causes in cats an abrupt rise of blood pressure of 20–40 mm. mercury for doses of 2–10 mg. Subsequent doses continue to elicit the same effect.—RAYMOND L. OSBORNE. *Proc. Soc. Exptl. Biol. Med.*, 35 (1937), 571. (A. E. M.)

Estrin-Stimulation—Effects of Prolonged, on the Cervix Uteri. Metaplastic changes occur in the cylindrical epithelium of the cervix uteri of rhesus monkeys receiving estrone injections for long periods (about three months), the columnar epithelium being replaced in places by squamous cells which invade the myometrium. The metaplastic process is an orderly one, and the patches of squamous cells are insulated by a remarkably thick basement membrane. The process does not possess the general characters of malignancy and it is reversible. Thus it was not displayed by a monkey that was given estrin daily in successive courses of treatment (totaling 322 daily injections) over a period of 399 days. It is suggested that in clinical practice the hormone should be given in courses of two to four weeks, with intervals between courses to allow of estrin-withdrawal uterine bleeding.—S. ZUCKERMAN. *Lancet*, 232 (1937), 435. (W. H. H.)

Gelsemium—Biological Assay of. No acceptable means for standardization of gelsemium preparations has been reported. There is still confusion as to the number and names of alkaloids. Reference is made to some previously reported biological assays. The method here reported is of emesis in pigeons. Work reported covers tabulation of data concerning gelsemium preparations used in experimental tests, method for physiological assay, alkaloidal determination and several tabulations of dosage with results of alkaloidal assays. The authors point out that alkaloidal content and physiological activity are not always parallel. It may be that determination of minimum emetic dose in pigeons might serve as an adequate measure of physiological activity. There are indications that the drug gathered from the cultivated plant in Florida is more potent than that usually on the market. If the determination of M. Em. D. proves satisfactory for measuring pharmacological activity, the method is economical, simple and rapid and has a definite end-point. —B. V. CHRISTENSEN and L. G. GRAMLING. *J. Am. Pharm. Assoc.*, 26 (1937), 32. (Z. M. C.)

p-Hydroxyphenylisopropylamine—Action of, on Induced Cardiac Standstill. The drug, when administered by mouth, is effective in the prevention of cardiac arrest. It is more active than ephedrine. In suitable doses, it does not cause stimulation of the central nervous system with resultant unpleasant side effects.—M. H. NATHANSON. *Proc. Soc. Exptl. Biol. Med.*, 35 (1937), 627. (A. E. M.)

Insulin—Action of, on the Uterus. The author who has previously reported that insulin causes in the isolated uterus of the guinea pig an increase in strength and regularity of the spontaneous contractions, as well as considerably increased sensitiveness to applications of posterior pituitary extract, now finds that the same is true of the uterus of the mouse or rat. The response is completely absent, however, in the rabbit's uterus (which also differs from that of other animals in showing not a diminution but an increase of tonus on treatment with adrenaline, and in losing tonus in response to corpus luteum hormone). The insulin effects are given only by crystalline or dry preparations, not by the liquid solutions, which contain preservatives; they have also been obtained in virginal, gravid and puerperal uteri *in situ*, and would appear in the living animal to be obtained partly through the ovary as intermediary. The minimum uterotonic dose is one-quarter unit. Concerning clinical applications of insulin treatment the author speaks hopefully; he recommends it for certain cases of dysmenorrhœa, polyhypermenorrhœa and metropathia hemorrhagica, and for uterine hemorrhage reports an early therapeutic effect from the direct uterotonic action of insulin on the myometrium. For metrostaxis twenty units of insulin are injected mixed with 10 cc. of 10 to 20% calcium gluconate.—E. KLAFTEN. *Zbl. Gynäk.* (Nov. 28, 1936), 2834; through *Brit. Med. J.*, No. 3972 (1937), 430D. (W. H. H.)

Mercuric Chloride—Diuretic Action of. Mercuric chloride in various doses was administered to animals 24 hrs. before the intravenous injection of hypertonic sodium chloride solution (4*N*, 2*N* and *N*). Small doses of mercuric chloride caused an increase and large doses a decrease in the volume of urine eliminated. With 4*N* and 2*N* sodium chloride solutions and with small doses of mercuric chloride, there was also an increase in the chlorides eliminated; with normal sodium chloride solution there was always a decrease.—U. BALDACCI. *Arch. Farm. Sper. Sc. Affini*, 61 (1936), 34–43; *Chimie & Industrie*, 36 (1936), 776. (A. P.-C.)

Onium Salts—Curariform Action of. Onium salts (simple examples are: $(CH_3)_4N$, $(CH_3)_4P$ and $(CH_3)_3S$) have various pharmacological properties of which three are well defined:

(1) a curare-like paralysis of motor nerve endings in voluntary muscle; (2) stimulation of parasympathetic nerve endings (muscarine action); and (3) nicotine properties. In this review only the curariform properties are considered. Such topics as measurement of curariform activity, action on muscle and nerve, chemical and curariform activity, theories of curariform activity, etc., are discussed.—H. R. ING. *Physiol. Rev.*, 16 (1936), 527–544; through *Scientif. Abstr.*, 7 (1936), 419. (E. V. S.)

Panax Ginseng—Active Principles of. Extracts of the leaves act directly on smooth muscle. The active principles are neither alkaloids nor glucosides.—A. BORIANI. *Arch. Farmacol. sper.*, 62 (1936), 53–69; through *Physiol. Abstr.*, 21 (1937), 995. (E. V. S.)

Pharmacology for Pharmacists. The 18th of a series of articles deals with (1) uterotonics (ecbolics) including hypophysin, (2) uterostyptics such as ergot, (3) antomenorrhagics and antidysmenorrhoics including hydrastis, (4) emmenagogues including a discussion of the sex hormones. The 19th article includes a discussion of agents for the treatment of disturbances in internal secretions, metabolism and deficiencies such as (1) antidiabetics especially insulin, (2) antihypothyreotics (agents for thyroid deficiencies)—thyroid gland and iodine compounds, (3) osteoplastics (antirachitics)—calcium compounds, phosphorous and cod liver oil.—H. FÜHNER. *Apoth. Ztg.*, 51 (1936), 1772–1774; 52 (1937), 50–52. (H. M. B.)

Pregnancy—Intradermal Anterior Pituitary-Like Test for. Using the intradermal anterior pituitary-like hormone test for pregnancy, it was shown that some cases of nonpregnant females and males gave the pregnancy reaction. The percentage of error and the slowness of the reaction in tests on known pregnancy cases make this test impractical. The anterior pituitary-like hormone test (antuitrin S test) is not new or rapid, but rather eight years old and unreliable.—A. I. WEISMAN and C. C. YERBURY. *Med. Record*, 145 (1937), 203. (W. H. H.)

Prolactin—Bioassay of, Effect of Route of Administration on. One mg. of prolactin per day for 4 days was injected into pigeons in various situations. Subcutaneous and intracutaneous injections were found to be eleven times as efficient as intravenous injections, five times as efficient as intramuscular and eight times as efficient as intraperitoneal.—R. W. BATES and O. RIDDLE. *Proc. Soc. Exptl. Biol. Med.*, N. Y., 34 (1936), 847–849; through *Physiol. Abstr.*, 21 (1937), 981. (E. V. S.)

Prolactin—Standardization of. Preparations of the hormone may be assayed upon mature pigeons, irrespective of age, sex or body weight, by using groups of 6 birds and injecting the preparation into their pectoral muscles 3 times daily for 4 days. On the 5th day, the birds are killed and the crop glands are weighed. In each experiment 4 groups of 6 birds are used, the doses for the groups being 0.0, 0.25, 0.5 and 1.0 cc. daily per bird. When the average weight of the crop gland is plotted against the logarithm of the dose, the points lie in a straight line, and the equation is the regression line through the points, $y = 3.9\,x + 0.7$, where x is the log of the dose and y is the average weight (Gm.) of the two crop glands in a group of 6 pigeons.—F. J. DYER. *J. Physiol.*, 88 (1936), 6–7; through *Physiol. Abstr.*, 21 (1937), 976. (E. V. S.)

Propylene Glycol—Rate of Disappearance of, from the Blood Stream. The rate of disappearance of propylene glycol from the blood is proportional to its concentration, as contrasted with alcohol, which disappears at a constant rate. Both absorption after gastric administration and disappearance proceed at a rapid rate. About 1,100 mg. % of propylene glycol is necessary to produce about the same degree of narcosis as is caused by blood alcohol of 350 mg. %.—H. W. NEWMAN and A. J. LEHMAN. *Proc. Soc. Exptl. Biol. Med.*, 35 (1937), 601. (A. E. M.)

Red Squill. IV. Bioassay Methods. Studies on red squill powders show great variation in potency. Report is made of a new series of experiments. Procedure is given. Results are tabulated and discussed. The conclusions were: 1. The susceptibility of white rats to red squill powder follows the "standard curve." 2. By using a reference standard red squill powder and evaluating the potency of red squill preparations in terms of such a standard more precise results will be obtained than if attempts are made to determine potency in terms of dosage of body weight of white rats.—JAMES C. MUNCH, JUSTUS C. WARD, ERNEST M. MILLS, ROBERT E. BUCK and FRANK M. JARVIS, *J. Am. Pharm. Assoc.*, 26 (1937), 27. (Z. M. C.)

Strychnine. VII. The Toxicity of Nux Vomica Preparations. In connection with work on variation in physiological activity of strychnine alkaloids previously reported, determinations on total alkaloidal content of tincture, fluidextract and extract of nux vomica by the U. S. P. X method and the toxicity of tinctures were made. Report is made on nine tinctures and three

fluidextracts. Details of experimental work are given and results of assays and toxicity tests tabulated. The conclusions were: 1. Commercial nux vomica preparations have been found to exhibit significant differences in physiological activity. 2. Chemical assays for total alkaloid by the U. S. P. X process failed to agree with physiological potency. Somewhat better agreement was obtained between physiological activity and the U. S. P. XI strychnine assay results. In a few samples the agreement was fairly close. In other samples marked discrepancies were obtained. 3. If adequate methods of chemical assay cannot be developed, the bioassay of nux vomica preparations may be necessary.—JAMES C. MUNCH, JUSTUS C. WARD and F. E. GARLOUGH. *J. Am. Pharm. Assoc.*, 26 (1937), 29. (Z. M. C.)

Taste Tests. IV. Relative Bitterness. Reference is made to the standard method of taste evaluation previously reported. For purposes of investigation, tastes have been arbitrarily divided into four groups: bitter, sour, sweet and salt. The present report is on relative bitterness of brucine, strychnine, quinine, aloin, theobromine, quassia (fluidextract and infusion), condurango (fluidextract), cascara (fluidextract), elixir of iron, quinine and strychnine and sucrose octoacetate. The bitterness of brucine was three or four times that of strychnine and strychnine three times that of quinine. In some preliminary studies the quantities of fluidextract of eriodictyon required to mask these bitter tastes were in the same proportions.—FREDERICK M. SCHOLL and JAMES C. MUNCH. *J. Am. Pharm. Assoc.*, 26 (1937), 127. (Z. M. C.)

Testicular Extracts and Anesthetics—Antagonism between. An antagonism exists between testicular extracts and hypnotics, such as soneryl, with regard to reflex activity of the nervous centers. In the mouse treated with orchitic extract and then submitted to the action of soneryl, the reflexes disappear more slowly than in the untreated animal. Other organic extracts have not the same effect. That of the orchitic extract is specific.—R. FALK. *C. rend. soc. biol. Paris*, 123 (1936), 779–781; through *Physiol. Abstr.*, 21 (1937), 999. (E. V. S.)

Thorium Dioxide—Fate of, in Cerebral Arteriography. Four cases have been described in which histological evidence was obtained of retention after arteriography of thorium dioxide in the lumen or walls of cerebral vessels or in perivascular macrophages. Such retention appears liable to take place in the neighborhood of compressing lesions such as meningioma, a large hemorrhage or chronic abscess. The aggravation of clinical symptoms that was observed in two of the cases, and retardation of recovery from operation in one, may be attributable to this occlusion of vessels by thorium dioxide. The use of thorium dioxide is inadvisable unless exact diagnosis is unattainable without it.—D. W. C. NORTHFIELD and D. S. RUSSELL. *Lancet*, 232 (1937), 377. (W. H. H.)

Thyroglobuline—Eutrophic Action of. Thyroxine lacks certain physiological qualities observed in the whole thyroid and in thyroglobuline, such as stimulation of the smooth muscle of the rabbit's intestine and sensitization of the sympathetic nerve to adrenaline. Small doses of thyroglobuline produce prompt growth development in children of stationary or declining weight. It is free from undesirable by-effects. The diuretic action manifests itself only after larger doses.—ALFREDO BUZZO, A. AGOSTINI DE MUÑOZ and G. BAYLEY BUSTAMANTE. *Semana méd.* (Buenos Aires), 43, II (1936), 1575. (A. E. M.)

TOXICOLOGY

Anthelmintics. II. A Comparison of Certain Ozonides, Chenopodium Oil and Diheptanol Peroxide. Report was made in a previous paper that hydrogen peroxide and certain oxygenated terpenes are like the terpene peroxide ascaridole highly toxic to swine ascarids *in vitro*. It appeared that the anthelmintic effect might be due to the peroxide grouping but it was found that the antiascaridic activity of oxygenated terpenes survived the disappearance of the peroxide function. Report is made now on the action of some organic ozonides and peroxides *in vitro*. They were found to be as effective as oil of chenopodium, one dose effecting complete cure in ascariasis in dogs. Oil of chenopodium caused pronounced toxic symptoms while diheptanol peroxides and the ozonides did not. Experimental work reported includes preparation of the ozonides and diheptanol peroxide and the effects on test animals. There are extensive tabulations of results and discussion of them.—LEWIS W. BUTZ and W. A. LALANDE, JR. *J. Am. Pharm. Assoc.*, 26 (1937), 114. (Z. M. C.)

Benzene Intoxication of Shoemakers Using Certain Mastics. "Mastics" or cements used in footwear factories generally consist of a solution of rubber (with a little rosin or other resin) in

benzene, the evaporation of which produces toxic accidents; they are at present replaced to a considerable extent by harmless gum preparations in water. Comparative toxicological tests carried out on rats proved the high toxicity of the benzene products and harmlessness of the gum preparations; the latter exert a slight irritant action at the start owing to the presence of 1% of ammonia used as a preservative.—G. PANCHERI and I. POGGI. *Medicina Lavore*, 27 (1936), No. 1, 9–16; through *Chimie & Industrie*, 36 (1936), 729. (A. P.-C.)

Benzene Poisoning—Chronic. There is evidence in the literature that benzene may be a causal agent in the production of leukemia. Usually, young people are more apt to suffer than old, and women more than men. A large proportion of cases occur in young girls. Delore reports the case of a man, aged 41, who entered hospital with purpura hæmorrhagica. For fifteen years he had been engaged in the manufacture of chemical products, and for five years had worked in a room where pyramidon was extracted by means of benzene. One month before admission he suffered from abdominal pains, hematemesis, stomatitis, bloody sputum and subcutaneous hemorrhages. The liver and spleen were enlarged. Blood count: red, 3,147,000, leucocytes 542,500. Death occurred three days later. A similar case was reported by Falconer in 1933, in which there was complete recovery. In this case there was a typical picture of lymphatic leukemia. —LAURENCE SELLING and EDWIN E. OSGOOD. *Interat. Clinic*, 3 (1935), 52; through *Medico-Legal Criminol. Rev.*, 4 (1936), 332. (A. P.-C.)

Blood of Workers—Observations on, in Certain Industries. Workers who stay for long periods in an atmosphere containing automobile exhaust or small quantities of benzol exhibit a decrease in the leucocyte count, which is considered to be an adaptation of the organism to its environment rather than a pathological condition.—M. SCHMIDTMANN. *Arbeitsschutz* (1936), No. 1, 23–24; through *Chimie & Industrie*, 36 (1936), 729. (A. P.-C.)

Chloroform—Use of, in Poisoning Animals. Probably chloroform is generally regarded as the kindliest agent for the purpose. An objection to chloroform is that it is apt to produce a preliminary stage of excitement, causing commotion, which may be distressing to the owner. It is better to use a mixture of ether and chloroform, equal parts. The ether seems to have a sedative effect, preventing the period of excitement.—D. B. DOTT. *Chem. and Drug.*, 126 (1937), 134. (E. V. S.)

Dermic Affections of Workers in the Lime Industry. Prolonged contact with lime produces various skin, scalp and nail affections in workers in that industry, especially in summer, but also in winter when it is cold and windy. For prophylaxis, good results are obtained by applying vaseline over the face and hands before starting to work. Treatment of this dermatitis consists in washing the affected parts with 1% hydrochloric acid solution and then covering with vaseline or lano-vaseline. The preliminary hydrochloric acid washing considerably shortens the time required for treatment.—M. S. BRAGUINE. *Hig. Truda i Tekh. Bezopasnosti*, 14 (1935), 94; through *Chimie & Industrie*, 36 (1936), 925. (A. P.-C.)

Diethylene Glycol—Physiological Effect of, Studies on. II. Toxicity and Fate. The acute minimal fatal dose of diethylene glycol for white rats is, by intramuscular injection, 7 cc.; intravenously, 5 cc.; subcutaneously, 15 cc.; and orally, 15 cc. For rabbits the minimal fatal dose is, by intramuscular injection, 4 cc.; intravenously, 2 cc. Rats maintained on a standard diet and receiving concentrations of diethylene glycol of 1 and 0.3% in their drinking water showed a slight enhancement in growth. Concentrations of 0.1 and 0.03% gave growth curves practically identical with the normal controls. Likewise, the growth of rats receiving a 10% solution of glycerin was as good as that of the controls. The ingestion of diethylene glycol in concentrations of 3 and 10% proved rapidly fatal. In the rat both diethylene glycol and glycerin lead to an increase in urinary oxalic acid, although it appears that, quantitatively, glycerin is definitely less prone to do so. In the dog, diethylene glycol fed in the amounts reported herein provoked an insignificant increase in the urinary oxalic acid, much of the drug being eliminated unchanged in the urine.—H. B. HAAG and A. M. AMBROSE. *J. Pharmacol.*, 59 (1937), 93. (H. B. H.)

Gasoline—Toxicity of Ethyl. One hundred and seven tank attendants, 61 mechanics and 47 chauffeurs of Copenhagen, Denmark, were subjected to a clinical examination after being exposed to ethyl gasoline for about 1 yr. The gasoline contained 2.4 cc. of tetraethyl lead per gallon. No symptoms of lead poisoning were found in any of the men examined.—G. LIND. *J. Ind. Hyg. Toxicol.*, 18 (1936), 37–41; through *Chimie & Industrie*, 36 (1936), 728. (A. P.-C.)

Gold Preparation—Fatal Poisoning with. A 65-year-old patient with chronic deforming rheumatism underwent a treatment with allochrysin (once with 0.05 Gm. and five times with 0.1 Gm.) in the course of five weeks and died of agranulocytosis, with secondary necrotic angina. In another case a 60-year-old patient with chronic deforming rheumatism of the joints of twenty years' standing developed agranulocytosis after one month's treatment with solganol (total 3 Gm.). This condition disappeared with treatment (liver extracts, irradiation, nucleotid), but the patient died one month later from an abcess of the lung. These deaths were undoubtedly due to hyperesthesia. The appearance of the slightest contraindications to the treatment, such as erythema, conjunctivitis, bronchitis, neuralgia, etc., are signs for the immediate discontinuation of gold administration.—HEDWIG FATZER. *Schweiz. Med. Wschr.*, 1 (1936), 120; through *Medico-Legal Criminol. Rev.*, 4 (1936), 331. (A. P.-C.)

Heavy Metal Antidote. The author describes the antidote for heavy metals as prepared by Strzyzowski. It is a stabilized solution of hydrogen sulfide in a slightly alkaline solution. It is a boiled and cooled solution of 2 Gm. of sodium hydroxide in 1 liter of distilled water and saturated with hydrogen sulfide added to a solution of 7.5 Gm. magnesium sulfate and 25 Gm. sodium bicarbonate in 1 L. water, cooling to 0° and again saturating with hydrogen sulfide. The solution is stored in rubber-stoppered bottles of 125 cc. capacity sealed with paraffin. The solution is clear and yellow. It is effective against the following metals: antimony, silver, bismuth, cadmium, cobalt, copper, iron, manganese, mercury, nickel, osmium lead, thallium and zinc. Arsenic in solution as in Fowler's solution is also detoxified.—L. FREUDWEILER. *Schweiz. Apoth.-Ztg.*, 75 (1937), 25. (M. F. W. D.)

Intoxication—Dangers of, in the Industries Using Gasoline and Benzin. The effects of gasoline are sometimes manifested slowly when the concentration in the atmosphere is low; at a concentration of 10 mg. per L., the atmosphere is harmful; at 20 to 30 mg. it can produce fainting. There is generally chronic intoxication which produces lesions in the bone marrow through the action of the benzin on the protoplasm; there results aggravated anemia, with decrease in the red corpuscles, hemoglobin and leucocytes in the blood. Pure benzin is more toxic than benzol or gasoline.—M. M. IBANEZ. *Farm. Mod.*, 47 (1936), 707–710; through *Chimie & Industrie*, 36 (1936), 729. (A. P.-C.)

Lysol Poisoning—Histopathological Changes in the Brain Following Acute. In four cases of acute lysol poisoning severe changes in the brain were observed—in the parenchyma, the vascular system and the glia. There was stasis, hyperemia, capillary hemorrhage in the cortex, endothelial fatty degeneration and edema of the cerebral tissues. The ganglion cells showed typical severe acute cell-diseases, as well as fatty degeneration. The glia showed reactive and regressive morphosis. These findings prove the great affinity between cresols and the cerebral lipoids, *i. e.*, their ectodermotropic action.—I. INEZE. *Beit. Gericht. Med.*, 13 (1935), 56; through *Medico-Legal Criminol. Rev.*, 4 (1936), 238. (A. P.-C.)

Magnesium Poisoning—Case of. A 21-year-old woman, who suffered from severe headaches due to frontal sinus trouble at the age of 14, received a 2-cc. dose of 20% magnesium sulfate solution intravenously. This was followed by severe cramps in body and the extremities. Various restoratives and afenil were given without any result, and she was then admitted to hospital. While she was suffering from the cramp spasms the headaches entirely disappeared, but when the cramps had subsided after the administration of 0.7 Gm. of calcium gluconate and 0.3 Gm. of calcium levulinate, the headaches again returned. The condition was obviously tetany, due to a relative or absolute lack of lime in the serum, and not to magnesium sulfate poisoning, as the typical phenomena were missing, *viz.*, narcosis, paralysis of the respiratory organs, spasms, etc.—DIETRICH ROLLER. *Wien. Klin. Wschr.*, 1 (1936), 241; through *Medico-Legal Criminol. Rev.*, 4 (1936), 331–332. (A. P.-C.)

Perchlorates—Toxicity of. The perchlorate ion is a weak muscular poison. It is not cumulative, and does not seem to be reduced in the animal organism. In rabbits the intravenous injection of 0.3 Gm. of sodium perchlorate per kilo body weight produces no serious effects. Larger and repeated doses cause liver damage and violent diarrhea. Goldfish live indefinitely in a 0.1% solution; a 1% solution causes death with symptoms resembling asphyxia.—E. KAHANE. *Bull. soc. chim. biol.*, 18 (1936), 352–357; through *Chimie & Industrie*, 36 (1936), 776. (A. P.-C.)

Red Squill. V. The Susceptibility of Hogs to Red Squill. Further studies have been made because of continued reports of losses of hogs. Test hogs were starved for from 24 to 72

hours but in every case they had to be forcibly fed. Both red squill powder and red squill extract were tried. Procedure is described and effects given in some detail. Conclusions reached were as follows: "Red squill powder is lethal to hogs when given by stomach tube in doses of 175 mg./Kg. and above; red squill extract is lethal to hogs when given by stomach in doses of 500 mg./Kg.; most hogs will not eat enough red squill rat poison voluntarily to cause death; red squill powder causes emesis in hogs, which tends to protect the animals, when baits are consumed normally."—JUSTUS C. WARD, CLIFFORD W. BARBER, F. E. GARLOUGH and JAMES C. MUNCH. *J. Am. Pharm. Assoc.*, 26 (1937), 137. (Z. M. C.)

Strychnine. VIII. The Relationship of Borax and Certain Other Chemicals to Toxicity. It is known that certain chemicals modify the bitter taste of strychnine. The present study grew out of the fact that it is known that certain procedures affecting the bitterness of strychnine modify its toxicity; for instance, reduction in bitterness by addition of the methyl group to form methyl strychnine. Several other theories were given even more attention than the taste-toxicity relationship. A reference standard has become necessary since it was discovered that supposedly identical strychnines vary decidely in killing efficiencies. A summary of the detailed bioassays during a year are given as an introduction to other studies. The system of testing is described in detail. Chemically unrelated substances were used in the experiments. Results are grouped as substances which seem to potentiate strychnine action, substances which increase the speed of strychnine action due to some modification of physiological function and substances which delay strychnine action. All these results are carefully tabulated and discussed. Sodium azide and sodium nitrite are most effective in speeding up the toxic action of strychnine; tannic acid, ethyl alcohol and activated calcium were the most effective in retarding its toxic action.—JUSTUS C. WARD, D. A. SPENCER and F. E. GARLOUGH. *J. Am. Pharm. Assoc.*, 26 (1937), 129. (Z. M. C.)

THERAPEUTICS

Amyl Salicylate—Treatment of Minor Burns by. Clinical tests in a hospital out-patient department have indicated that amyl salicylate possesses analgesic properties, and can be satisfactorily employed in the treatment of minor burns. It lacks the coagulant effect of tannic acid on the tissues, and is therefore unsuited to the treatment of severe and extensive burns where there is danger of toxemia and shock. The ester has little if any bactericidal power and it therefore requires the addition of an antiseptic. In this series a mixture of isomeric substituted phenols (known by the trade name "abracide") has proved suitable. The method is applicable to the treatment of infected as well as non-infected burns and scalds, provided the initial infection is not too severe. Standardization of technic is very necessary if the best results are to be obtained. Amyl salicylate has an extremely penetrating smell, but the results obtained with other less pungent salicyl esters have been inferior.—L. STEWART. *Brit. Med. J.*, No. 3972 (1937), 380. (W. H. H.)

Anesthetic Agents. An address including some of the non-volatile agents, such as avertin, sodium amytal, nembutal and pernocton; short-acting barbiturates, such as sodium evipan and pentothal; and volatile agents, such as cyclopropane and vinyl ether.—F. B. PARSONS. *Chem. and Drug.*, 126 (1937), 56. (E. V. S.)

Anesthetic Composition—Local. 3,4-Dihydroxyphenyl-α-propanolamine is used as a vasoconstricting agent with local anesthetics such as novocaine or the like.—MAX BOCKMÜHL, OTTO SCHAUMANN, GUSTAV EHRHART and LEONHARD STEIN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,061,557, Nov. 24, 1936. (A. P.-C.)

Bismuth Salts—Oil Solutions of, Suitable for Medicinal Purposes. An oil such as olive oil is used for dissolving bismuth salts such as the bismuth salt of camphanilanic acid together with a small proportion of a carboxylic acid such as salicylic acid to avoid turbidity.—FRIEDRICH HAMPE and WALTER PERSCH, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,061,320, Nov. 17, 1936. (A. P.-C.)

Circulation—New Substances Acting on the, during the First Half of 1936. A continuation of a review dealing with (1) central and peripheral acting analeptics, (2) the purine group with agents (*a*) of the digitalis group and (*b*) having a sedative action, (3) preparation of organs and (4) such substances as taurin, acetyl-β-methylcholine and "heavy water." (18 references).—K. KOCH. *Apoth. Ztg.*, 51 (1936), 1875–1877. (H. M. B.)

Cobra Venom—Use of, in the Treatment of Hypertension. The venom was standardized

by physiologic units, one unit representing the smallest quantity causing death of a mouse of 20–25 Gm. within 7 hours. A solution containing 10 units per cc. was used and the dose applied was slowly increased from one to 10 units. A prompt drop in blood pressure was obtained concomitant with a gradual improvement of subjective symptoms. The improvement persists for a long time. No secondary effects of any significance were observed. Only fresh solutions should be used as the toxin is not stable in solutions.—Víctor Mastronardi and Francisco Bagnasco. *Semana méd.* (Buenos Aires), 43, II (1936), 1745. (A. E. M.)

Emetine Hydrochloride—Treatment of Soft Chancre with. A persistent chancre disappeared under treatment with daily injections of 0.3 Gm. emetine hydrochloride for 10 days, followed by two other series with 8 days of rest in between.—Carlos Visconti. *Semana méd.* (Buenos Aires), 43, II (1936), 1595. (A. E. M.)

Estradiol Benzoate Therapy in Depressions at the Menopause. Seventeen cases of depression occurring at the menopause were treated with twice-weekly injections of 5 mg. estradiol benzoate. The total amount given varied from 60 to 140 mg. Six of the patients made a good recovery within five months and have resumed their normal lives. The somatic symptoms were relieved in all the patients who had them. In eleven cases showing excessive amounts of gonadotropic hormone in the urine estradiol benzoate reduced the amount excreted.—M. S. Jones, T. N. MacGregor and H. Tod. *Lancet*, 232 (1937), 320. (W. H. H.)

Eunarcon Intravenous Anesthesia. The author reports very favorably on the use of eunarcon as an anesthetic for minor gynecological surgery in domestic and consulting-room practice after an experience of 250 cases. Eunarcon is a 10% solution of the water-soluble sodium salt of C-C-isopropyl-β-bromallyl-N-methylmalonylureid. The solution is put up in ampuls of 5 and 10 cc. ready for use, and is given intravenously in the usual way. The author recommends slow injection, not exceeding 1 cc. per minute; a very fine needle ensures painless puncture and slow administration. Dosage depends on the length and depth of anesthesia required and upon individual reaction. The author considers overdose impossible if no more than 10 cc. are given. The average duration of sleep is fifteen minutes, the maximum forty. With these small doses, excitement or other ill effects are not seen and recovery is rapid. Preliminary opiates are not necessary and only prolong the narcosis. Diseases of the liver or kidneys are contraindications and caution in dosage must be exercised in prolonged illness.—K. Frege. *Med. Welt* (Nov. 7, 1936), 1624; through *Brit. Med. J.*, No. 3963 (1936), 1296C. (W. H. H.)

Ferrous Gluconate—Preparation of, and Its Use in the Treatment of Hypochromic Anemia in Rats. The authors describe a method for the preparation of ferrous gluconate. This is a water-soluble compound containing 12% iron. Concentrated aqueous solutions do not precipitate protein. When ferrous gluconate is fed to or injected intramuscularly into young anemic albino rats, rapid and marked reticulocyte, red cell and hemoglobin responses were obtained. Ferrous gluconate fed to anemic rats at the rate of 1 mg. of iron daily caused a hemoglobin response in 3 weeks of approximately 0.4 Gm. per 100 cc., of blood per mg. of iron. When injected intramuscularly in the same dosage, 0.6 Gm. of hemoglobin per 100 cc. of blood per mg. of iron was obtained in 2 weeks. The authors concluded that these results compare very favorably with those reported in the literature.—Paul Reznikoff and Walther F. Goebel. *J. Pharmacol.*, 59 (1937), 182. (H. B. H.)

Gargling. Experiments to determine the efficacy of gargling have been carried out at Guy's Hospital, London. Twelve volunteers in the ear, nose and throat department gargled with solution of potassium permanganate of sufficient strength to stain mucous membrane with which it came into contact. In only one case was there any staining on the tonsils or pharynx. In four cases the anterior pillars of the fauces were stained while in the remaining seven cases the mucous membrane behind the last molar teeth was normal. It appears, therefore, that even in the hands, or throats, of experts whose gargling left little to be desired, the efficiency of the method was very low. In spite of this result, states A. Bowen-Davies, in *Guy's Hospital Gazette*, No. 1257 (1936), 359, the practice will continue, because in certain cases it brings relief to the patient. Anyone who has had a mild pharyngitis or tonsillitis has experienced the relief which follows a gargle with potassium chlorate and iron mixture. This mixture is more than a gargle because it is finally swallowed. For this reason a less cautious method may be employed, but in the light of the recorded observations the preliminary gargle could be dispensed with in the majority of cases. Hot gargles are soothing to those afflicted with

acute inflammatory conditions in the throat. In most cases, these lotions are not gargled in the true sense of the word, because the swallowing reflex is so much in abeyance that a hot mouth-wash may remain in contact with the pillars of the fauces without risk of being swallowed. It is not denied that in certain cases a gargle may penetrate to the epiglottis without being swallowed, but these are few. Bowen-Davies believes that if this number were to be increased, the horror of swallowing the mixture should be removed by prescribing only innocuous gargles, or preferably those which should be swallowed.—Through *Pharm. J.*, 137 (1936), 417. (W. B. B.)

Germicidal Preparation. *o*-Hydroxyphenylmercuric chloride, in such concentration that alone it would be merely bacteriostatic, is mixed with an alkylated cresol.—MERRILL C. HART, assignor to THE UPJOHN CO. U. S. pat. 2,070,080, Feb. 9, 1937. (A. P.-C.)

Gonadotropic Hormones—Treatment of Imperfect Descent of the Testis with. Twenty patients with imperfect descent of the testis have been treated with gonadotropic hormones. Hypertrophy of the external genitalia has been obtained in nineteen patients. Descent of the testes has been obtained in six patients (five bilateral, one unilateral). It is suggested that, in view of complications, treatment with gonadotropic hormones should be used only in bilateral cases with subnormal genital development.—T. W. MIMPRISS. *Lancet*, 232 (1937), 497. (W. H. H.)

Gonorrhea Treated with a Specific Antitoxin. In this preliminary report the results obtained with this experimental gonococcus antitoxin have been distinctly encouraging. Acute and chronic cases, complicated and uncomplicated, respond equally well, which is in marked distinction to other biological preparations hitherto available. Reactions and results indicate that this antitoxin possesses specific therapeutic properties; properly regulated controls confirm this. Clinical evidence suggests that active as well as passive immunity is established. Sufficient data are available to indicate that a remedy for the treatment of gonorrhea has been evolved which offers considerable promise.—T. ANWYL-DAVIES. *Brit. Med. J.*, No. 3971 (1937), 321. (W. H. H.)

Hand Washing—New Method, for Workers Making or Using Paints. The hands are first washed with dilute perborate or soft soap solution; while still damp they are sprinkled and rubbed with sodium thiosulfate, rinsed with pure water and covered with lanolin. Experiments over a period of 18 months failed to reveal any irritation, even in persons having a hypersensitive skin or subject to eczematous affections. The process is preferable to the use of bleaching powder and bisulfite.—K. KÖTZING. *Arbeitsschutz* (1936), No. 1, 21–23; through *Chimie & Industrie*, 36 (1936), 729. (A. P.-C.)

Hormones in Allergic Diseases. The author stresses the importance of the two factors of the allergic constitution, namely, the predisposition of the individual and the noxious agent. The last factor, however, cannot always be ascertained. But the reactivity of the organism can be altered in such a way as to decrease its allergic sensitivity. The main characteristics of the allergic constitution are an increased permeability of the endothelium and the degeneration and fibrinoid tumefaction of the stroma of the connective tissue. These manifestations are the result of a lack of calcium ions in the blood of the allergic individual. The author has tried to influence the allergic state by means of a substance called "quotientin," and his experience with this substance has been uniformly good. Quotientin alters the potassium-calcium balance of the blood in favor of calcium. It consists of a combination of hormones of parathyroid, adrenals and hypophysis. It is given in intramuscular injections and is generally well tolerated. It has been found particularly useful in the different forms of urticaria.—F. LIPPERT. *Derm. Wschr.* (Dec. 26, 1936), 1694; through *Brit. Med. J.*, No. 3973 (1937), 482C. (W. H. H.)

Insulin—New. A clinical study of the effects of protamine insulin in 83 diabetic patients of widely different ages.—RUSSELL M. WILDER. *Minnesota Med.*, 20 (1937), 6–15; through *Chem. Abstr.*, 31 (1937), 1882. (E. V. S.)

Manganese Iodomercurate—Action of, on Avian Malaria. The toxicity of iodomercurates as the lowest among several mercury compounds tested. The manganese compound proved the best therapeutic agent as a hemopoietic and stimulant of leucocytosis. This manganese salt shows a clear prophylactic action against malaria produced by anopheles, but less action against the infection transmitted by injection of infected blood. It is recommended as a prophylactic and as a remedy for chronic malaria.—BIANCA FRATTINI. *Arch. Inst. Biochim. Ital.*, 8 (1936), 3–38; through *Chimie & Industrie*, 36 (1936), 964. (A. P.-C.)

Oxygen and Carbon Dioxide—Several Recent Methods for the Administration of. Apparatus and methods of administration are described in detail. Illustrations are given.—E. PHILIPPOT. *J. pharm. Belg.*, 18 (1936), 927–931, 949–953, 971–976. (S. W. G.)

Progesterone in Pre-Eclamptic Toxemia. Certain experiments in which toxic conditions leading to death were produced in pregnant rabbits are described; these conditions were associated with a failure in the secretion of the luteal hormone. The results obtained following the administration of progesterone in twelve cases suffering from severe pre-eclamptic symptoms are given. Clinical improvement appears to have been produced in these cases. It is evident that the numbers are too small to establish formal proof of the efficacy of the treatment, and the results are published at this stage because it would take many years to collect adequate data in a single hospital. The results appear to be sufficiently encouraging to deserve testing on a wider scale without delay.—J. M. ROBSON and S. J. PATERSON. *Brit. Med. J.*, No. 3971 (1937), 311. (W. H. H.)

Prontosil Album in Puerperal Sepsis. Out of a series of seventy cases of puerperal sepsis twenty-two were treated with the "sulfonamide" preparation prontosil album. Four of these had, in addition, occasional doses of prontosil soluble by injection. The other forty-eight cases were not considered sufficiently serious for chemotherapy. Eleven of the twenty-two cases treated with prontosil album had septicemia, eight proved by blood culture to be due to hemolytic streptococci, and a further three cases of peritonitis without septicemia all yielded hemolytic streptococcal colonies on culture of the peritoneal fluid. The balance—seven cases—showed a hemolytic streptococcus on bacteriological examination of the vaginal discharge. The dosage of promtosil album was high, ranging from 3 Gm. (ten tablets) to 14.4 Gm. every twenty-four hours, but the preparation was well tolerated and toxic effects were minimal. The fall in temperature and the general improvement were rapid and striking. The success of the treatment is evidenced in the mortality rate of 1.4% (one death) in the whole series, as compared with 13.4% in a five-year period in the same hospital.—M. A. FOULIS and J. B. BARR. *Brit. Med. J.*, No. 3973 (1937), 445. (W. H. H.)

Strophanthin-like Action—New Remedy with. Helborsid is a crystalline glucoside obtained from *Helleborus niger*. It gives a stable water-soluble solution which withstands boiling. One cc. of a 0.5% solution contains 1,000 frog doses. It can be administered intravenously alone, but for intramuscular injection procaine is recommended with it. It is of no value *per os*. Its action is rapid and of longer duration than that of strophanthin and compares favorably with it. Electrocardiographic records of its action on patients are given.—D. SCHERF. *Med. Klin.*, 33 (1937), 20–22; through *Chem. Abstr.*, 31 (1937), 1883. (E. V. S.)

Zinc Sulfate as a Chemoprophylactic Agent in Experimental Poliomyelitis. The application of a 0.5% solution of zinc sulfate to the nasal mucosa protected monkeys against artificial infection with poliomyelitis virus better than picric acid.—E. W. SCHULTZ and L. P. GEBHARDT. *Proc. Soc. Exptl. Biol. Med.*, 35 (1937), 524. (A. E. M.)

NEW REMEDIES

SYNTHETICS

Nourilax (N. V. Nourypharma, Deventer) are laxative tablets containing 5 mg. diacetyl-bisoxy-phenylisatin per tablet. The dose is 1–4 tablets in the evening. The tablets are packed 50 to a box.—*Pharm. Weekblad*, 73 (1936), 1577. (E. H. W.)

Perandren Ciba is testosterone propionate, a synthetic, chemically pure testicular hormone. It is marketed in ampuls for intramuscular or subcutaneous injection, 1 cc. containing 5 mg. Perandren in sterile oil solution, corresponding to 250 international units. It is indicated for use in prostate diseases, disturbances of puberty development, insufficiency of the germinal vesicles and impotency.—*Pharm. Zentralh.*, 78 (1937), 108. (E. V. S.)

Proseptacine (Pharmaceutical Specialities Ltd., Dagenham, Eng.), *p*-benzylaminobenzenesulfonamide, is indicated for streptococcal infections of all types, also as a prophylactic against onset of septic complications, efficacy established in erysipelas, puerperal fever, tonsillitis and complications of measles and scarlet fever. The tablets (0.5 Gm.) are packed in 25's.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

Revival Ampuls (L. Egger and I. Egger, Budapest) contain from 0.15 to 4.50 Gm. of sodium dioxyaminoarsenobenzenesulfoxylate.—*Pharm. Presse*, 41 (1936), 516. (M. F. W. D.)

Streptocide (Evans, Sons, Lescher and Webb Ltd., Liverpool), *p*-aminobenzenesulfonamide, is indicated for hemolytic streptococcal infections. The dose is 2–6 tablets three times daily. Streptocide is packed in bottles of 25, 100 and 250 tablets, each containing 0.25 Gm.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

SPECIALTIES

Adsorbentol (Dr. Laboschin, G.m.b.H., Berlin) is a mixture of aluminium silicate, hydroxide, magnesium silicate and medicinal charcoal, having adsorptive properties and used in specific stomach and intestinal affections.—*Pharm. Weekblad*, 73 (1936), 1576. (E. H. W.)

Aflukin (N. V. Amsterdamsche Chininefabriek) are quinine pills containing 50 mg. per pill.—*Pharm. Weekblad*, 73 (1936), 1576. (E. H. W.)

Allysomnin Tablets (E. Scheurich, chem.-pharm. Fabrik, Hirschberg i. Schles.), a hypnotic, contain in each 0.1 Gm. allylisopropyl barbituric acid and phenyldimethylaminopyrazolone.—*Pharm. Zentralh.*, 78 (1937), 107. (E. V. S.)

Alycin Tablets (Effervescent) (Wm. S. Merrell Co.) contain in each natural salicylate 10 gr. and alkalinizing salts 20 gr. It is indicated in the treatment of common cold, influenza, post influenzal conditions, sore throat, tonsillitis, rheumatic conditions and arthritis as it reduces fever, relieves pain and alkalinizes the system. Alycin Tablets are supplied in bottles of 25.—*Drug. Circ.*, 81, No. 3 (1937), 35. (E. V. S.)

Ceferron (Nordmark-Werke, Hamburg) is a vitamin C preparation containing biologically active ferrous iron and marketed in pill form or in ampuls. It is used for all forms of anemias due to lack of iron, chloranemia, chlorosis and intravenously for bleeding ulcers and carcinoma of the intestinal tract.—*Pharm. Zentralh.*, 78 (1937), 72. (E. V. S.)

Choleic Capsules (Wm. S. Merrell Co., Cincinnati) contain a combination of bile salts and sodium oleate. The mixture tends to relax the gall duct and stimulate the flow of bile. The capsules are used in the treatment of chronic cholecystitis, cholangeitis, acholia and other related conditions. They are marketed in boxes of 40.—*Am. Drug.*, 95, No. 3 (1937), 78. (E. V. S.)

Colsul (Crookes Lab., Inc., New York) is a 1% solution of elemental sulfur in purest olive oil. It produces marked leucocytosis with very little disturbance of circulation; rigors are not so marked with malaria; may be given safely to patients of all ages. Colsul is designed for the production of pyrexia and is indicated in the treatment of mental disorders, also in arthritis when the production of pyrexia is of benefit. It is supplied in 2-cc. ampuls (boxes of 6, 25, 50 and 100).—*Drug. Circ.*, 81, No. 3 (1937), 35. (E. V. S.)

Davitamon Comfits (Organon Lab., London, W. C. 1) are round dragées containing in each 1500 I. U. vitamin A and 1000 I. U. vitamin D. They are used for maintaining ordinary health and good dentition. The dose is one or two daily. They are packed in bottles of 25, 100 and 500.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

Derophen Liquid (Bayer, I. G. Farben A. G., Leverkusen) contains a standardized extract from derris root in packages of 100 cc.—*Pharm. Presse*, 42 (1937), 31. (M. F. W. D.)

Dextrosol (Corn Products Ltd., London W. C. 2) is a brand of dextrose and of liquid glucose B. P. suitable for preparing solutions for injection in glucose therapy. The dextrose is packed in 1- and 7-lb. containers, the liquid in 2-lb. tins.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

Elbon (Ciba Ltd.), a combination of cinnamic acid and oxyphenylurea, is used for tuberculosis, infectious catarrhs of the respiratory tract, whooping-cough, asthma and hay fever. The initial dose for tuberculosis is 4 Gm. in 24 hrs. by one tablet every three hours, gradually decreasing the dose when the temperature falls. In hay fever prophylaxis, one or two tablets twice daily, commencing four weeks before the hay-fever season, then 2 tabs two or three times a day, decreasing as symptoms gradually disappear. The tablets contain approximately 7¾ gr. in each and are marketed in bottles of 50, 100 and 500.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

Evion Capsules (Merck, Darmstadt) contain vitamin E obtained from wheat germ oil. They are used in habitual abortion, sterility, etc.—*Pharm. Weekblad*, 73 (1937), 1576. (E. H. W.)

Expektysat Bürger (Joh. Bürger, Ysatfabrik G.m.b.H., Wernigerode a.H.) is an extract of primrose, viola and thyme with an addition of potassium guaiacolsulfonate. It is marketed

as drop or syrup preparations. It is indicated for use in bronchial catarrh, especially subacute and chronic bronchitis and tracheobronchitis, chronic catarrh and grippe.—*Pharm. Zentralh.*, 78 (1937), 72. (E. V. S.)

Foligan (Dr. Gg. Henning, chem.-pharm. Werk, G.m.b.H., Berlin-Tempelhof), a cardiac principle, is a specially prepared crystallized form of the active heart glycoside of *Digitalis lanata*. It is marketed in solution, ampul, tablet and suppository forms; 1 cc. of the solution or a suppository contains 0.5 mg., a tablet 0.25 mg. and the ampul 0.4 mg. in 2 cc. It is used for all for ms of decompensation.—*Pharm. Zentralh.*, 78 (1937), 107. (E. V. S.)

Fortamin (Schering Ltd.) contains vegetable bitter 5.9 Gm., sodium glycerophosphate 1.75 Gm., sugar 35 Gm., rectified spirit 13.2 Gm., glycerin 5.7 Gm. and water to 175 cc. It is indicated for use in physical weakness, convalescence, loss of appetite, secondary anemia, depression, mental strain, sexual neurasthenia and gastro-intestinal spasms. The dose is one tablespoonful for adults and one teaspoonful for children, twice daily half an hour before meals, also as a beverage before meals in carbonated water.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

Gestasol (National Drug Co., Phila., Pa.) consists of the follicular luteinizing fractions contained in the human placenta. It is an active extract of the gonad stimulating hormone. Each placenta used is subjected to the Wassermann test before extraction of the active principles. Gestasol is indicated in disturbances of the menstrual cycle, conditions like menorrhagia (functional uterine bleeding), also in inducing typical menstrual periods in secondary amenorrhea and in inducing pregnancy in certain cases of metrorrhagic sterility, in oligomenorrhea, in functional dysmenorrhea, also in human infantilism or delayed puberty, in the treatment of undescended testes. It is supplied in ampuls and vials (10 cc.).—*Drug. Circ.*, 81, No. 3 (1937), 35. (E. V. S.)

Hepextron C (Morse Lab., Inc., New York) is a liver extract containing iron and copper compounds recommended in the treatment of secondary and nutritional anemias. It is supplied in 2-cc. ampuls (box of 6).—*Am. Drug.*, 95, No. 3 (1937), 78. (E. V. S.)

Kao-Gallate (Pitman-Moore Co., Indianapolis) contains in each fluidounce bismuth subgallate 40 gr., colloidal kaolin 80 gr., benzoic acid as preservative 45/100 gr., mucilage and aromatics. It is a smooth, palatable colloidal and thoroughly homogenized suspension; detoxifies and absorbs bacteria and their toxins; produces marked protective, sedative and astringent actions upon the gastro-intestinal tract. Kao-Gallate is indicated in the treatment of gastro-intestinal disturbances such as flatulence, irritations and vomiting, ulcerations for reducing peristalsis, for allaying pain, solitis, absorbing putrefactive material, for reducing toxemia and in food poisoning. It is supplied in bottles of 4 and 12 ounces.—*Drug. Circ.*, 81, No. 3 (1937), 34. (E. V. S.)

Levertranzalf (Cod Liver Oil Salve) (chemische fabriek Collopharma, Utrecht) contains 25% standardized cod liver oil prepared by a special process. It does not become rancid and retains its activity. The ointment is used in skin affections, eczema and for burns.—*Pharm. Weekblad*, 73 (1936), 1576. (E. H. W.)

Lido Capsules (E. Scheurica, chem.-pharm. Fabrik, Hirschberg i. Schles.) contain aminopyrine, caffeine, quinine and phenacetin. It is used for headaches, neuralgia, grippe, toothache and rheumatic pains.—*Pharm. Zentralh.*, 78 (1937), 107. (E. V. S.)

Lukus-Pedes (Lukusta-Labor. M. Stargardt, Breslau), a mixture of sodium bicarbonate, sodium tetraborate, dried sodium carbonate, sodium perborate and saponin, is a foot-bath preparation for sweating feet, corns and bunions, and as a prophylactic against rheumatism and frostbite.—*Pharm. Zentralh.*, 78 (1937), 72. (E. V. S.)

Menthasin Tablets (E. Scheurich), for throat irritations, contain menthol, anesthesin, borax and a homeopathic iodine addition.—*Pharm. Zentralh.*, 78 (1937), 107. (E. V. S.)

Neo-Gynergen (Chem. Fabrik vorm. Sandoz, Basel), a combination of ergotamine tartrate and ergobasine tartrate, is marketed as drops and in ampuls for various gynecological conditions.—*Pharm. Zentralh.*, 78 (1937), 72. (E. V. S.)

Neo-Lucrita (G. M. Campbell Products Corp., New York) is a phenolated liquid preparation of copper sulfate having a phenol coefficient of 0.35. It is a non-irritating antiseptic used in the treatment of *Trichomonas vaginitis* and in similar vaginal troubles. Neo-Lucrita is marketed in 8- and 16-oz. bottles.—*Am. Drug.*, 95, No. 3 (1937), 78. (E. V. S.)

New Remedies. Twenty-three new products are discussed.—R. KIRBAS. *Pharm. Monatsh.*, 17 (1937), 234–236. (H. M. B.)

Œstroglandol Salve (Hoffmann-LaRoche), for pruritus vulvæ, acne vulgaris virginum, eczema and herpes vulvæ contains in 10 Gm. 1,000 international units of œstroglandol, a crystallized sex hormone. (Cf. *Pharm. Abstr.*, 2 (1936), 284).—*Pharm. Zentralh.*, 78 (1937), 107. (E. V. S.)

Panlithol (Armom Lab., Chicago) are tablets containing therapeutically active extracts from the pancreas $2^1/_2$ gr. and the thyroid $^1/_{10}$ gr. This combination has been found to be of value in controlling high blood pressure and is indicated in Raynaud's disease and other disorders in which there is a peripheral vasomotor spasm. Panlithol is marketed in bottles of 50, 100 and 500.—*Am. Drug.*, 95, No. 3 (1937), 78. (E. V. S.)

Pektoral Dragées (E. Scheurich, chem.-pharm. Fabrik, Hirschberg i. Schles.), for coughs and bronchitis, is prepared from phenylmethylaminopropanol hydrochloride, extracts of pimpinella and senega, sucrose, licorice, althea, menthol and anesthesin.—*Pharm. Zentralh.*, 78 (1937), 72. (E. V. S.)

Primustabil (Kleri-Labor., Verwertungsges. alpenländ. Heilpf., Mainz), an expectorant, is a pure primulic acid obtained from the saponin of primrose root in syrup sour cherry.—*Pharm. Zentralh.*, 78 (1937), 73. (E. V. S.)

Primustabil Drops (Kleri-Labor.), an expectorant, is a 0.5% alcoholic solution of primulic acid with oil of orange flowers.—*Pharm. Zentralh.*, 78 (1937), 108. (E. V. S.)

Pro-Med Tablets (E. Scheurich), for pains, contain caffeine, aminophenazone, antipyrine and phenacetin.—*Pharm. Zentralh.*, 73 (1937), 108. (E. V. S.)

Proteocal (chemische fabriek Collopharma, Utrecht) is a calcium-protein-preparation used as a restorative for adults and children. The calcium is bound to the animal albumin in such a manner that the splitting, which takes place in the stomach, is such that the calcium-ion penetrates the stomach wall and is thus taken up by the blood, where it is partly absorbed by the albumins of the serum. Proteocal is a white, glistening powder which gives a clear solution in water. The solution remains clear after boiling as well as after the addition of acetic, hydrochloric and other acids. Esbach's reagent and sulfosalicylic acid give (as with other albumins) precipitates. It is almost tasteless and can be given in milk, chocolate, water, soup, etc., but not with tannic acid-containing substances as tea and coffee. Proteocal can be taken with meals or before or after meals. The dose is one teaspoonful, 2–3 times a day.—*Pharm. Weekblad*, 73 (1936), 1577. (E. H. W.)

Protheonal (Bayer Products Ltd., London, W. C. 2), is a combination of prominal (*n*-methylethylphenyl barbituric acid), theobromine and iodocalcium triethanolamine used for hypertension. The dose is one or two tablets three times daily. Protheonal is packed in tubes of 20 and bottles of 100.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

Provetan (Schering-Kahlbaum) contains the benzoic acid ester of dihydrofollicle-hormone-benzoate (œstradiolbenzoate). It contains 10,000 Benz-units per cc. The preparation is used as an aphrodisiac and in sterility in veterinary practice.—*Pharm. Weekblad*, 73 (1936), 1577. (E. H. W.)

Quinobine (Alba Pharmaceutical Co., Inc., New York) is a quinine bismuth iodide rendered soluble in olive oil by means of lecithin, each 2 cc. containing 0.06 Gm. of bismuth. It is a solution, not a suspension, that is quickly absorbed into the system and practically painless if administered properly. It is indicated in the treatment of all stages of syphilis, usually in alternation with arsenicals. The dose is 1 or 2 cc. once or twice daily intramuscularly into the upper external quadrant of the gluteus maximus. Quinobine is supplied in 2-cc. ampuls (package of 6) and 25-cc. bottles.—*Drug. Circ.*, 81, No. 3 (1937), 35. (E. V. S.)

Santuron (Turon-Gesellschaft, Frankfurt) is a pectin preparation marketed in concentrated solution, "Santuron Liquid," and as "Santuron Powder." The powder is a mixture of pectins easily soluble. A tablespoonful of the solution corresponds to a teaspoonful of the powder. Santuron is used in dyspepsia, diarrhea, etc.—*Pharm. Weekblad*, 73 (1936), 1577. (E. H. W.)

Scilloral (Asta A.-G., Chem. Fabrik, Brackwede), a heart medicament, is also marketed in suppositories containing 0.75 Gm. scilloral in each.—*Pharm. Zentralh.*, 78 (1937), 108. (E. V. S.)

Si-Kalk (E. Scheurich, Hirschberg i. Schles.), is a calcium preparation marketed as tablets,

granules and powder. It contains calcium lactate, tribasic calcium phosphate, silicic acid, calcium carbonate, cacao and sucrose.—*Pharm. Zentralh.*, 78 (1937), 108. (E. V. S.)

Solivron Capsules (Carroll Dunham Pharmacal Co., Orange, N. J.) represent in each, fresh liver 10 Gm., soluble iron 0.065 Gm. and manganese arsenate 0.003 Gm. They are indicated in the treatment of secondary anemia. Solivron is supplied in bottles of 100, 500 and 1,000.—*Drug. Circ.*, 81, No. 3 (1937), 34. (E. V. S.)

Somin Tablets (E. Scheurich, chem.-pharm. Fabrik, Hirschberg i. Schles.), a nerve anodyne hypnotic, contain allylisopropylcarbamide, acetylsalicyclic acid and phenacetin.—*Pharm. Zentralh.*, 78 (1937), 73. (E. V. S.)

Spasmantin (Schuhé & Co., Valvit-Präparate, Frankfurt a. M.), for spastic pain, contains 0.75% extract belladonna, 2% chloral hydrate, 57.25% sugar and starch solution and 40% of an extract valerian spirit containing aromatic substances. The dose is one coffeespoonful two or three times daily.—*Pharm. Zentralh.*, 78 (1937), 73. (E. V. S.)

Succonal (Walther Bock & Co., Fabrik biologischer Heilmittee, Gelsenkirchen) is a liquid preparation containing bryonia, drosera, thyme, potassium guaiacolsulfonate, saponin and ephedrine. It is used for diseases of the respiratory tract, bronchial catarrh, coughs, etc.—*Pharm. Zentralh.*, 78 (1937), 108. (E. V. S.)

Taumageen (Aristopharm, Basel) is marketed in tablets and as drops. The tablets contain an iodine preparation (0.114 mg. iodine per tablet); the drops contain 0.75% arsenic. They are used in the treatment of nervous bronchial asthma, also in other nervous affections, chronic bronchitis, etc. The dose is 2 tablets three times a day during or after meals, and the liquid twice a day 3–4 drops in water three hours after the use of the tablets.—*Pharm. Weekblad*, 73 (1936), 1578. (E. H. W.)

Teltan (Biomalz-Fabrik Gebr. Patermann, Teltow bei Berlin), an expectorant, is a preparation of *Cydonia oblonga, Ribes nigrum, Thymus serpyllum*, vitamin C and the antipneumonia factor J.—*Pharm. Zentralh.*, 78 (1937), 108. (E. V. S.)

Tincture Mercresin (Upjohn Co., Kalamazoo) contains secondary amyltricresols 1/10%, *o*-hydroxyphenylmercuric chloride 1/10%, acetone 10% and alcohol 50%. A surgical germicide and antiseptic combining the bacteriostatic and fungicidal virtues of the organic mercurial with the non-toxic, quick acting, powerful germicidal effect of the phenolic derivative; its germicidal activity is virtually non-selective; it retains the full bacteriostatic potency of its mercurial component, and its toxicity is no greater than that of its mercury constituent; does not react with the chlorides of body fluids or precipitate serum proteins. It is used where a strong, penetrating, quick drying and quick acting germicide is desired. Tincture Mercresin is supplied in bottles of 4, 16 and 128 ounces.—*Drug. Circ.*, 81, No. 3 (1937), 34. (E. V. S.)

Uplex (Dr. Madaus & Co., Radebeul/Dresden) is a powder mixture containing Fagus silvat. cin., bismuth subsalicylate, bismuth subgallate, papaya, magnesium peroxide and lactose. It is used for ventricular and duodenal ulcers, intestinal ectasy, hypersecretion, etc.—*Pharm. Zentralh.*, 78 (1937), 73. (E. V. S.)

Varixol (Evans, Sons, Lescher and Webb Ltd., Liverpool), a quinine and urethane solution, is an injection treatment of varicose veins. The initial dose is 0.5 or 1 cc., subsequently, at each weekly sitting 4–5 cc., in about 1-cc. doses. Varixol is packed in boxes of 6 or 12 (1-cc. or 2-cc. ampuls), or rubber-capped bottles of 25 cc.—*Australas. J. Pharm.*, 52 (1937), 77. (E. V. S.)

Viricorine is the name give to "Herzugrün," a chlorophyll-containing cardiac remedy by Dr. Schwarzhaupt. The medicinal activity of the chlorophyll is explained by its chemical relationship to the red coloring matter of the blood and to vitamin A. Dose, 10–15 drops three times a day.—*Pharm. Weekblad*, 73 (1936), 1578. (E. H. W.)

Vita-Kaps (Abbott Lab.) contain in each soluble gelatin capsule the equivalent in vitamins A and D to 3 teaspoonsful of U. S. P. cod liver oil, in vitamin B_1 to $2^1/_2$ ounces, in vitamin B_2 (G) to $^1/_2$ ounce of average moist, compressed yeast and in vitamin C to approximately 20 cc. of average orange juice. It may be administered at all seasons without disturbance to the individual or interference with the dietotherapy prescribed, since each capsule represents only approximately two calories. The dose is one to three capsules daily. Vita-Kaps are indicated as an acid in establishing proper nutrition in deficiencies of vitamins A, B_1, B_2, C and D. They are supplied in boxes of 25 and 100.—*Drug. Circ.*, 81, No. 3 (1937), 35. (E. V. S.)

Vitox (Vitox, Vitamin-Extrakt G.m.b.H., Berlin W.), a beer yeast extract, contains vita-

mins A, B_1, B_2 and D, mineral salts and egg albumin hydrolytic products such as amino acids, purine, etc. It is used for undernourishment and avitaminosis.—*Pharm. Zentralh.*, 78 (1937), 73. (E. V. S.)

Warondo-Ekzem Salve (Pharmaz. Fabrik Lengerich, Walter Ronsdorf, Lengerich (Westf.)) is prepared from olive oil, lard, zinc oxide, resorcin, salicylic acid and castor oil. **Warondo-Wund Salve** is a specific for lower leg ulcers and is prepared from white petrolatum, lard, cod liver oil, zinc oxide, boric acid and extractions from *Arnica montana*, calendula, *Hypericum perf.* and *Symphytum officinale*.—*Pharm. Zentralh.*, 78 (1937), 73. (E. V. S.)

BACTERIOLOGY

C. Diphtheriæ—Isolation and Typing of, on Tellurite Blood Agar. The inhibitory effect of tellurites on diphtheria bacilli varies with the medium employed and is reduced by the addition of serum or blood. In blood agar the concentration of potassium tellurite should not be much in excess of 0.04%. Rabbit and sheep blood are more suitable for type differentiation than horse blood. Heating tellurite or ordinary blood agar renders it inhibitory to certain strains of diphtheria bacilli owing to an effect of heat on the blood cells.—V. GLASS. *J. Path. Bact.* (British), 44 (1937), 235–245. (A. H. B.)

***p*-Chlor-*m*-xylenol as a Preservative.** *p*-Chlor-*m*-xylenol (1-hydroxy-3,5-dimethyl-4-chlorbenzene) occurs as a white crystalline powder with a phenolic odor. In a saponaceous solvent it has a Rideal-Walker coefficient of about 60, and in 3% saponaceous solutions a coefficient of 1:6. Phenol or cresols, which are normally used for the preservation of vaccines in strengths of about 0.5 and 0.25%, respectively, have been criticized frequently because of their inefficiency. It was desired to use a special antiseptic consisting of phenol 0.5%, and *p*-chlor-*m*-xylenol for a polyvalent vaccine containing about 1,000 million organisms per cc. Five cc. of this vaccine were exposed to a dusty atmosphere and tested at intervals for sterility. The results were compared with the effect of phenol alone as a preservative, and indicate that *p*-chlor-*m*-xylenol has pronounced antiseptic properties and is worthy of further trial in vaccines and other bacteriological products.—E. A. LUM. *Pharm. J.*, 138 (1937), 76. (W. B. B.)

Clostridium Tetani—Agglutination Reactions of the Heat Stable Antigens of. Heat stable O or somatic antigens of *Clostrindium tetani* gave fine granular non-specific agglutination. Agglutinin absorption tests showed that *C. tetani* possessed a heat stable O antigen common to all strains tested regardless of type.—J. B. GUNNISON. *J. Immunol.*, 32 (1937), 63–74. (A. H. B.)

Diphtheria Toxoid—Immunizing Value of, Containing the Diphtheria Bacilli. Diphtheria broth cultures were divided into two parts (I) unfiltered and (II) passed through a Chamberland filter. Formalin was added to each part and both were incubated until detoxicated. Guinea pigs were injected with similar doses of (I) and (II) and later tested with results as follows: (1) the animals injected with I were more resistant to the injection of virulent diphtheria organisms and to diphtheria toxins; (2) the antitoxin titer was higher in animals which received I; (3) the serum of neither group of animals showed any bactericidal value *in vitro*. The higher immunizing value of I is attributed to the nonspecific action of the dead organisms and is analogous to the part played by tapioca, calcium chloride, aluminum hydroxide, lanolin, etc., when these substances are added to plain diphtheria toxoid.—D. D'ANTONA and M. VALENSIN. *Boll. soc. ital. biol. sper.*, 11 (1936), 413–415; through *Chem. Abstr.*, 31 (1937), 1092. (E. V. S.)

Disinfectants—Comparison Test for. The suspension formaldehyde standard method seems to be better than the phenol method. Either distilled water or physiological salt solution can be used as the washing liquid.—DEZSÖ BARTOS and JÁNOS BUCHGRABER. *Magyar Gyógyszerésztud. Társaság Értesitője*, 12 (1936), 425–433; through *Chem. Abstr.*, 31 (1937), 1159. (E. V. S.)

Hemolytic Streptococci—Lytic Action of Certain Strains of, on Fresh Sterile Kidney and Other Tissues. Ninety-four strains of hemolytic streptococci were grown in broth to which pieces of fresh, sterile monkey kidney had been added. Forty of these 94 strains lysed the kidney tissue, and the streptococci of this limited series which produced this nephrolysin were streptococci of Lancefield's Group A. The same strains of hemolytic streptococci which produced a nephrolysin lysed monkey skeletal and heart muscle, spleen and liver, and the kidney tissue of the rat, rabbit, guinea pig and dog. Fifty-nine strains of hemolytic streptococci were tested simultaneously for their production of a nephrolysin, a soluble hemolysin, a fibrinolysin and a "histase" enzyme

(Frobisher). Twenty-nine of these strains produced all four of these lytic effects and 20 of the strains failed to produce any of them.—B. C. SEEGAL and D. SEEGAL. *J. Bact.*, 32 (1936), 621–629. (A. H. B.)

Kaolin and Kaolin-Alumina Mixture—Adsorptive Action of, on Fecal Bacteria. A kaolin-alumina mixture is more efficient than an equal weight of kaolin as an adsorbent for fecal bacteria. When an adequate amount of the kaolin-alumina mixture is present, an almost complete adsorption of the bacteria occurs with entire removal of the *B. coli*. The explanation of these findings appears to lie in the "adsorption" quality and not to be due in any way to a change in the hydrogen-ion concentration, or to a bactericidal effect of the supernatant fluid.—W. SMITH. *Lancet*, 232 (1937), 438. (W. H. H.)

Trichoderma—Culture Filtrate of, Isolation of a Toxic Substance from. The substance which is toxic to certain other fungi, possibly possesses the formula $C_{14}H_{16}N_2S_2O_4$. The decomposition point of the crystals is around 220°. It is moderately soluble in acetone and chloroform; less soluble in hot benzene and hot ethanol; and still less soluble in hot methanol. It is sparingly soluble in cold alcohol, ether and water. In chloroform it is strongly levo-rotatory, $[\alpha]_D^{19°} = -239°$. It has no basic properties. In alkaline solution it instantly decolorizes permanganate with the formation of a green color. Boiling with 5% aqueous potassium hydroxide rapidly splits out sulfur.—R. WEINDLING and O. H. EMERSON. *Phytopathology*, 26 (1936), 1068; through *Chem. Abstr.*, 31 (1937), 1064. (E. V. S.)

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

BOTANY

Drug Planting—Commercial, in Oregon. The author states that nature has prepared a good foundation for the commercial development of many of the native plants of the Pacific northwest. Favorable temperature, rainfall and fertility conditions should be conducive to diversified cultivation of many economic drug plants. Of promising merit for commercial cultivation are digitalis, berberis, scoparius and juniper.—ERNST T. STUHR. *Am. J. Pharm.*, 108 (1936), 415. (R. R. F.)

Flora of the North Part of the Province of Halland, Sweden. A list of botanical species found.—E. BOLGER. *Farm. Revy*, 36 (1937), 149. (C. S. L.)

Plant Growth—Effect of Certain Glandular Products upon. Because of interest in attempts at decreasing the length of the period of dormancy and the speeding up of growth and development in plants, the author undertook a series of experiments using thyroxin and Antuitrin Growth as the glandular products and the basal twigs of the *Populus nigra italica*. Both of the glandular products seemed to have a stimulating effect. From the limited number of observations made, roots seemed to form more readily upon the cut twigs in the culture medium containing the thyroxin than they did in the case of the Antuitrin Growth, but variations in temperature, light, concentration of culture medium and in other particulars may have introduced sources of error which future experience and facilities may eliminate.—MARIN S. DUNN. *Am. J. Pharm.*, 109 (1937), 9. (R. R. F.)

CHEMISTRY

GENERAL AND PHYSICAL

Distillation—Theory of, Some Aspects of. A theoretical discussion of the aspects of distillation intended to supplement an article published in a special number of the *Perfumery Essent. Oil Record*, June 1920.—A. LESLIE BLOOMFIELD. *Perfumery Essent. Oil Record*, 27 (1936), 131, 177, 294, 334, 368, 404, 443, 483; 28 (1937), 24, 59. (A. C. DeD.)

ORGANIC

Alkaloids

Alkaloidal Chemistry—New Contributions to. A review.—K. FEIST. *Apoth. Ztg.*, 51 (1936), 1836–1839. (H. M. B.)

Alkaloids—Identification of, as Picrates. The various crystalline forms of compounds of the alkaloids with picric acid constitute one of the most valuable methods of identifying alkaloids. Of the alkaloid-precipitating reagents, the most generally used and the one giving characteristic crystals is undoubtedly the standard aqueous picric acid reagent; it has been rendered more sensitive by using a solution in a mixture of alcohol and glycerol, and also by reducing it to produce a picramic reagent (reduce a hot 5% aqueous solution of picric acid alkalinized with sodium carbonate by means of 2 Gm. of pure powdered glucose, cool and filter). Of the reagents, the alcohol-glycerol solution of picric acid is the most specific; good results were also obtained in certain cases with the picramic reagent. It can also be used successfully for the microchemical identification of certain synthetic drugs having properties similar to those of the alkaloids. The technic is extremely simple, slow crystallization directly on the microscope slide being generally sufficient. The characteristic crystals formed by the following alkaloids and synthetic drugs with one or more of the reagents are illustrated, and the melting points of a number of them were determined; atropine, m. p. 165° to 166° C.; hyoscyamine, 162° to 163°; nicotine, turns brown at about 200°, melts at 208° to a brown liquid; strychnine, turns brown without melting at about 200°; brucine, morphine, codeine, dionine, heroine, papaverine, contracts at about 150° changing from light yellow to brick red, melts at 154° to a brownish red liquid; sparteine, turns brown at about 195° to 196°, melts at 199° to a deep red liquid; hydrastinine; cocaine, m. p. 154° to 155°; ephedrine (cannot be isolated pure on account of its high solubility); procaine, turns red at about 140°, melts at 146° to 147° to a red liquid which remains red after cooling; stovaine, m. p. 110° to 112°; antipyrine, melts to a blackish liquid at 180° to 182°; pyramidon, m. p. 168° to 170°.—Al. Ionescu-Matiu and E. Iliesco. *J. pharm. chim.*, 23 (1936), 117–141; through *Chimie & Industrie*, 36 (1936), 781. (A. P.-C.)

Cocaine—Composition of the Cuprocyanhydrate of, Obtained with Cherry-Laurel Water. The small amount of slightly ionized cuprohydrocyanic acid present in cherry-laurel water will not precipitate alkaloidal salts but the salt of the acid formed by its reaction with the alkali of the glass container will form insoluble alkaloidal complexes. In the presence of salts of cocaine the complex $CuCN.3(HCN.C_{17}H_{21}NO_4).5HCN$ is formed. When the cuprohydrocyanic acid reagent (*Bull. soc. pharm. Bordeaux*, 74 (1936), 35) is used the complex $CuCN.4(HCN.C_{17}H_{21}NO_4).5HCN$ is obtained.—Pierre Mesnard. *Bull. soc. pharm. Bordeaux*, 74 (1936), 127–131. (S. W. G.)

Cocculus Trilobus—Alkaloids of. The alkaloid obtained from *Cocculus trilobus* corresponds in properties with menisarin, having an empirical molecular formula, $C_{35}H_{32}O_6N_2$, one CH_2 group less than that of menisarin. Accordingly the author named this new compound normenisarin. The compound can easily be methylated to menisarin. The formula could be $C_{32}H_{22}(OCH_3)_2(OH)(NCH_3)(—O—)_3(\equiv N)$, the position of the OH group is unknown. The author indicates that the formula resembles that of the menesarins where the OCH_3 group of the diphenyl-ether is replaced by an OH group.—N. Tomita. *Chem. Zentralb.*, 107 (1936), 1426. (G. B.)

Corydalis Ambigua, Cham. et Sch.—Alkaloids of Chinese, Yen-Hu-So. VI. Identification of Corydalis D and Corydalis M. Corydalis D, $C_{19}H_{17}O_4N$, m. p. 203°, $[\alpha]_D^{18} -305°$ is found to be identical with *l*-tetrahydrocoptisine (Kitasato, *Chem. Abstr.*, 21 (1927), 3622). Corydalis M, another alkaloid in the Chinese Corydalis is similar to β-homochelidonine.—T. Q. Chou. *Chinese J. Physiol.*, 10 (1936), 507–511; through *Chem. Abstr.*, 31 (1937), 1161. (E. V. S.)

Ergot Alkaloids. X. Ergotamine and Ergoclavine. By use of the hydrolytic methods previously described ergotamine has been shown to consist of lysergic acid (I), ammonia (II), *d*-proline (III), phenylalanine and pyruvic acid (IV) joined in amide linkage. The formula for ergoclavine (V) should be revised to $C_{35}H_{30}N_4O_4$ and V apparently consists of I, II, *l*-leucine and IV, also in amide linkage. Ergotoxine also gave III on hydrolysis; hence the isomerization of the various pairs of ergot alkaloids does not involve the proline constituent.—Walter A. Jacobs and Lyman C. Craig. *J. Org. Chem.*, 1 (1936) 245–253; through *Chem. Abstr.*, 31 (1937), 1415. (E. V. S.)

Hordenine—New Synthesis of. Hordenine has been synthesized *in vitro* by a method offering a maximum of biological probability. Tyrosine is decarboxylated to tyramine by heating under reduced pressure at 250°. This action is carried out in nature by the action of *Bacterium coli* and by certain yeasts and is attributed to a diastase, carboxylase. Tyramine is then methylated using a mixture of formaldehyde and formic acid. By heating for 10 hours on a glycerol bath, a yield of 50% hordenine is obtained. The methylation, however, can be carried out at

ordinary temperature, thus more closely simulating natural conditions. After a week of contact, a trace of hordenine can be detected and after a month it is possible to obtain 16% of this alkaloid. —YVES RAOUL. *Compt. rend.*, 204 (1937), 74. (G. W. H.)

Quinine and Strychnine—Germani- and Zirconioxalates of. Quinine germanioxalate, (Ge $(C_2O_4)_3$)-quinine-H_2, is prepared by mixing, in the cold, a solution of germanioxalic acid with a concentrated solution of quinine oxalate. The precipitated salt is first dried *in vacuo*, then to constant weight at 120°. Drying *in vacuo* is necessary, otherwise the salt is decomposed by its water of crystallization. It is a white very deliquescent powder having a solubility in water of about 0.7% at ordinary temperatures. Its solutions which are fluorescent are decomposed by heat with the precipitation of quinine. Strychnine germanioxalate, (Ge $(C_2O_4)_3$)-strychnine-H_2, is prepared by mixing a hot solution of germanioxalic acid with a boiling solution of strychnine oxalate. It is a white micro-crystalline powder, very hygroscopic and soluble about 0.5% in water. The solutions are resistant to hydrolysis. The zirconioxalates of quinine and strychnine are prepared in an analogous manner. The zirconioxalate of quinine is a white powder, very hygroscopic and having a solubility in water of about 0.5%. The solution is resistant to hydrolysis even upon boiling. Strychnine zirconioxalate is a white crystalline powder, very hydroscopic, soluble to about 0.2% in water. Its solutions are resistant to hydrolysis.—ARAKEL TCHAKIRIAN. *Compt. rend.*, 204 (1937), 356. (G. W. H.)

Senecio Genus—Alkaloids of. An investigation of three South African and twelve British species shows both types of alkaloids usually present in this group, the former showing a higher percentage of alkaloids. *Senecio isatideus* (poisonous ragwort) yielded 1.29% of alkaloids (1.14% of a new alkaloid named isatidine and 0.15% of retrorsine); isatidine, $C_{18}H_{25}O_7N$, yielded on hydrolysis a new base isatinecine and a new acid, isatinecic acid. *S. glaberrimus* yielded 0.27% and *S. venosus* 0.01% of retrorsine. *S. vulgaris* yielded senecionine, m. p. 232°. *S. viscosus* yielded 0.06% of pure senecione. *S. squalidus* yielded 0.06% of mixed alkaloids (senecionine and 0.005% of a much more soluble new alkaloid, squalidine). Squalidine is isomeric with senecionine and on hydrolysis gave retronecine and a new acid, squalinecic acid, which is closely related with senecic acid. *S. Jacobæa* (ragwort) gave great difficulty in obtaining a pure alkaloid. In general it is essential to purify senecio alkaloids until constant in optical rotation as the melting point is no criterion of purity. *S. aquaticus* yielded 0.04% alkaloids in July and 0.018% in September. *S. cineraria* gave 0.052% which apart from a slight variation in the optical rotation is identical with jacobine. *S. erucifolius* gave 0.0004% of a pure base subliming in a high vacuum at 100° (40° less than senecionine). *S. paludosus* gave 0.0015% of alkaloid. *S. palustris*, a rare species, gave 0.001% of an alkaloid having the same melting point (169°) as squalidine, but a mixture with that alkaloid showed a depression. The separation of alkaloids from the 12-carbon group presented greater difficulties than those of the 18-carbon group. The alkaloid from *S. sylvaticus* (1 Gm. from 8 Kg.) was precipitated with phosphotungstic acid and a crystalline gold salt obtained from the regenerated purified base. From an acidulated aqueous extract of *S. saracenicus* a volatile base was obtained in a crystalline form. *S. campestris*, var. *maritimus*, gave a small amount of a syrupy base from which two alkaloids were obtained. One base separated from ethyl acetate in prisms. The syrupy mother liquor was distilled in a high vacuum and yielded a glassy solid which was crystallized from benzene. The name compestrine is suggested. The alkaloids containing 18 carbon atoms have all yielded the basic fission product retronecine which is a tertiary base and appears to have a nitrogen atom common to two rings. On reduction it yields a base retronecane, which is isomeric with the base tropane from the solanaceous alkaloids and with heliotridane from a somewhat similar alkaloid heliotrine isolated from *Heliotropium lasiocarpum*. These alkaloids are also similar in being esters. All the senecio alkaloids appear to have a heterocyclic five ring capable of yielding the pyrrole reaction by distilling with zinc dust. A review of previous work on the subject is given.—J. J. BLACKIE. *Chem. and Drug.*, 126 (1937), 134. (E. V. S.)

Essential Oils and Related Products

Monarda—Study of Several Species of the Genus. In the first of a series of papers, report is made on the volatile oils. Properties and constituents are given for the oils of *Monarda fistulosa*, *M. menthæfolia*, *M. pectinata*, Nutt and *M. punctata* var. *leucantha*. *M. fistulosa* contains carvacrol, hydrothymoquinone, a terpene-like substance with boiling point less than 182° and

possibly geraniol and linalool. *M. menthæfolia* contains thymol, carvacrol, acetic acid, cymene, geraniol and, probably, linalool. The amount of *M. pectinata*, Nutt available did not permit an extended investigation but the phenol is probably thymol. *M. punctata* var. *leucantha* oils show distinct annual variations. They contain thymol, carvacrol and hydrothymoquinone. Presence of terpenes was indicated. There were no positive tests for geraniol, linalool or aldehydes.—B. V. CHRISTENSEN and ROBERT S. JUSTICE. *J. Am. Pharm. Assoc.*, 26 (1937), 11. (Z. M. C.)

Thymol and Carvacrol—Synthetic, Manufacture and Uses of. A discussion of the syntheses of thymol and carvacrol from *p*-cymene, *m*-cresol and piperitone and carbone from an industrial point of view and the uses of these phenols.—Y. MAYOR. *Rev. prod. chim.*, 39 (1936), 549; through *Chem. Abstr.*, 31 (1937), 1016. (E. V. S.)

Glycosides, Ferments and Carbohydrates

Bile Acids—Glucosides of. Methyl desoxycholate (20 Gm.) and acetobromoglucose (20 Gm.) are condensed in absolute benzene (230 cc.) with mercuric acetate (6.9 Gm.) by refluxing for 2 hrs. The resinous product is dissolved in 30 cc. methanol and a little sodium methylate added. After 20 min. the mixture is neutralized with hydrogen chloride in methanol. After the methanol is removed the residue crystallized from acetone is 6 Gm. of methyl desoxycholate-3-glucoside, m. p. 136°. Hydrolysis with alcoholic potassium hydroxide gave desoxycholic acid-3-glucoside, m. p. 217°.—ELISABETH DANE and THOMAS BRADY. *Z. physiol. Chem.*, 244 (1936), 241; through *Chem. Abstr.*, 31 (1937), 1051. (E. V. S.)

Digitalis—Saponins of. The authors make an attempt to prove that the OH group of tigogenin is attached at the C_3 atom in the following manner: According to the investigation of others the question came up whether the OH group is attached to the C_3 or C_4 atom; however, the formation of gitogenic acid from tigogenin indicated that the position of the OH group may be in an entirely different position. Since tigogenon is isomeric, whether formed with alcoholic hydrochloric acid or potassium hydroxide, it eliminates the possibility of having the OH group attached to the C_4 position; the sterin derivatives found in nature are similar to tigogenon, so that, this fact renders an advantage in favor of the C_3 atom. In comparison to the sterin derivatives which have the OH group attached to the C_3 atom, tigogenin is precipitated from digitonin; any substance, then, which has as a base the ring of a sterin derivative, must have the OH group attached to the C_3 atom. Sterin derivatives containing the OH group at C_1, C_2 or C_4 were so far not produced; the position of the OH group of tigogenins is perhaps the same as that of cholesterin. The position of the rings A and B in tigogenin, gitogenin and possibly for digitogenin, is that of the trans-position. The acid $C_{27}H_{42}O_6$ obtained from tigogenin yields a monoethylether, which in turn yields one molecule of methane. The OH group is here attached to the C_3 atom. Because the COOH group is in the side chain of the compound, the function of the two O atoms cannot be explained and no explanation is given for the presence of CO group in the formula. Parallel to this, other investigators obtained from gitogenic acid or digitogenic acid, two acids $C_{27}H_{40}O_8$ and $C_{27}H_{38}O_9$ which contain two nondetectable O atoms. The simplest explanation for the COOH group in the side chain is the assumption that the O ring opened up to form either the COOH or CO group in which case no traces of oxygen remained as such. An assumption that the two oxygen rings remain unchanged during the formation of COOH group from CH_3 is not true in this case; also the fact that the acid $C_{27}H_{38}O_9$ which is derived from digitogenic acid with the aid of chromium oxide and not through the oxidation of the CH_3 group. Further the last-named acid reacted with hydriodic acid and reduced with zinc results in another acid which has only one O ring. It is not understood why in this compound only one O ring is changed while in the acid $C_{27}H_{38}O_9$ both of the oxygen rings are changed. Finally a new acid was obtained from desoxysarsasapogenin $C_{27}H_{40}O_5$ in which the CO group was attached to the C_6 instead of the C_{16}; in this compound only two CO groups were obtained instead of three as expected. The authors claim that the formulas for tigogenin, gitogenin and digitogenin are the most likely correct for these compounds.—R. TSCHESCHE and A. HAGEDORN. *Ber.*, 68 (1935), 2247; through *Chem. Zentralb.*, 107 (1936), 1228. (G. B.)

Glucosides—Hydrogenation of Some, by Activated Nickel. The behavior of various glucosides toward hydrogenation varies according to the catalyst employed. Using activated nickel as catalyst the following technic was used: 1 Gm. or 5 Gm. of glucoside in the solvent

indicated is hydrogenated in the presence of about an equal weight of catalyst. The flask is automatically agitated at a temperature of 9° to 12° and at a pressure only slightly different from atmospheric. In the case of the addition of sodium hydroxide 0.2 cc. of a 40% solution is added. The course of the operations does not present any particular difficulties. The hydrolysis is followed by means of alkaline copper solution. The results are given in the following table.

	Solvent	Hydrogenation Without NaOH	With NaOH	Hydrolysis
Arbutoside	96% alcohol	0	0	0
Salicoside	Water	0	0	0
Populoside	60% alcohol	0	0	0
Piceoside	Water	Rapid	...	0
Coniferoside	60% alcohol	Rapid	Very rapid	0
Vallinoside	Water	Rapid	Very rapid	+
Aesculoside	60% alcohol	Slowly	Rapid	0
Rhaponticoside	96% alcohol	Rapid	...	0
Phloridzoside	96% alcohol	0	0	0
Aucuboside	Water	Rapid	Very rapid	+
Amygdaloside	Water	Rapid	Very rapid	+

—MAURICE-MARIE JANOT and THEODOR TOMESCO. *Compt. rend.*, 204 (1937), 504. (G. W. H.)

Glycosmis Pentaphylla—Constituents of. *Glycosmis pentaphylla* or *Limonia pentaphylla* is indigenous to eastern Bengal where the natives use it as a medicament. The author isolated a glucoside which he named glycosmin. It is found throughout the plant, about 0.2% in buds and young leaves and only 0.1% in older leaves and stems. Because glycosmin splits up into veratrinic acid and salicylaldehyde when a solution of acid permanganate is used, then boiled with barium hydroxide when the salicylaldehyde splits into salicin, the author assumed that glycosmin is a derivative of verattroyl-salicin. This behavior is analogous to populin obtained from poplar buds, a benzoyl derivative of the salicin.—S. DUTT. *Chem. Zentralb.*, 107 (1936), 1424. (G. B.)

Goodia Lotifolia—Unstable Cyanogenetic Constituent in. Unlike most prussic acid plants hitherto examined, much of the hydrocyanic acid is lost when the leaves are dried and practically all the acid may be removed from the plant by steaming for ten minutes. It is believed that this is the first cyanogenetic plant to be detoxified by this procedure. This behavior is explained that instead of the usual stable cyanogenetic glucoside, a new type is present to be a cyanhydrin of an aldehydic glucoside, $(C_6H_{11}O_5)O.C_6H_4.CH(CN)OH$, which splits initially to form a glucoside of *p*-hydroxybenzaldehyde and hydrocyanic acid. This substance continually gives off the acid and due to this unstable behavior, it is impossible to prepare it in pure form. The purest specimen contains only 35% of the suspected cyanhydrin when freshly prepared.—H. FINNEMORE and DOROTHY K. LARGE. *Australas. J. Pharm.*, 52 (1937), 20. (E. V. S.)

Malt—Diastatic Power of. The use of soluble starches of different origins can produce considerable variations in the diastatic value of the same malt; hence comparative determinations should always be carried out with the same starch. Kahlbaum's soluble starch is more suitable than Mercks'. The p_H of soluble starch solutions can vary quite considerably according to the concentration. Clear soluble starch solutions give higher results in the determination of diastatic power than opalescent solutions. The diastatic power decreases appreciably with the concentration of the starch solution. At concentrations of 2–10%, the optimum p_H is 4.3; with more concentrated solutions the optimum p_H is higher (5.3 for a 20% solution).—M. ROSSATKEVITCH. *Ann. soc. brasseurs*, 46 (1937), 1–9. (A. P.-C.)

Oxidases—Histochemical Detection of, by the Indophenol-Blue Reaction. Case of Lipids. Tissue sections containing lipids often give an indophenol-blue reaction with Nadi reagent (α-naphthol plus dimethyl-*p*-phenylenediamine). The reaction is produced by preformed fat peroxides and is not due to a specific enzyme.—L. LISON. *Bull. soc. chim. biol.*, 18 (1936), 185–189; through *Chimie & Industrie*, 36 (1936), 909. (A. P.-C.)

Pectin—Newer Researches on. A continuation of the review published in the *Pharm. Weekblad* in 1935 (cf. *Pharm. Abstr.*, 1 (1935), 5). It covers the newer researches of Ehrlich. Several structural formulas are included.—E. I. VAN ITALLIE. *Pharm. Weekblad*, 73 (1936), 1705. (E. H. W.)

Pectins—Derivatives of. The apple and citrus fruit pectins were hydrolyzed in alkaline solution and split when methanol was added. A separated jelly-like principle was named gelpectol acid and regarded as the characteristic principle of pectins. If the above alkaline mixture is acidified, after the methyl ester is saponified, with hydrochloric acid, a flaky-like precipitate separates which filters readily and is washed with hydrochloric acid and alcohol. On drying, a loose white powder is obtained. Usually from 12–15% of pectol acid is obtained from citrus fruit pectin and not more than 33% from the apple pectins. The residue is ash free, almost snow white and yields about 80% of galacturonic acid which has the same acidity as pectol acid and about the same specific rotation. It is soluble in dilute alkalis, reduces Fehling's solution very little. Contrary to pectol acid a clear transparent jelly is obtained when the powder is acidified with either hydrochloric or acetic acids to which a sodium salt has previously been added and gives the appearance of a thick syrup when highly concentrated. A clear and comparatively solid jelly is obtained when mixed with a small quantity of sodium salt, syrup and a small quantity of acetic acid. The acid is composed of 4 molecules of *d*-galacturonic acid; on hydrolysis with acids this decomposes under pressure to form pectolactonic acid as a by-product. The crude formula for gelpectol acid is $C_{24}H_{32}O_{24}$ and its structural formula is given. It is like pectol acid, four basic, but is symmetrical. Perhaps this is the explanation why the jelly solidifies. With the great tension in the ring system it is impossible to regenerate it after the addition of water, because of the great sensitiveness of the "jelly." On prolonged boiling with water the free gelpectol acid is converted to pectol acid. The author explains that the appearance of unequal amounts of gelpectol acid in pectins of different plants is due to the different fermentation processes in the plant in which it appears. Sugar beets give pectol acid in place of gelpectol acid.—F. EHRLICH. *Chem. Zentralb.*, 107 (1936), 788. (G. B.)

Squill—Active Constituents of. Upon the occasion of the researches of F. H. J. Picard, the author discusses the active constituents of Squill. Modern researches date about 1920 when Stoll isolated two glucosides having cardiac action, crystalline scillarin A and amorphous scillarin B. The cardiac action of squill is due to these glucosides. Scillarin A has the empirical formula $C_{36}H_{52}O_{18}$. The bulb is poisonous to rats but scillarin is not poisonous, its lethal dose being 200 mg. per Kg. corresponding to 50 to 500 Gm. of the bulb while 1 Gm. per Kg. of the bulb is usually sufficient to kill rats. The coloring principle is a glucoside having the formula $C_{23}H_{26}O_{13}$. It is also apparently non-toxic to rats. The toxicity to rats cannot be attributed to the oxalate content since the toxic symptoms do not agree with those of oxalate poisoning. A new glucoside has been isolated having the probable formula $C_{15}H_{20}O_6$ which has a toxic dose per Kg. for rats of about 200 γ. This glucoside apparently accounts for the toxicity of squill to rats. The diuretic action of squill, so often observed clinically can hardly be attributed to scillarin which experimentally does not differ from the digitalis glucosides. Neither the rat poison (rattoxin) nor the coloring principle are diuretic. Experiments with the dog (intact) and the cat (decerebrated) show that the tincture possesses diuretic properties but due to its poisonous nature it can hardly be brought about by the small doses. A tincture made from bulbs from which the scillarin has been removed possesses a diuretic action which is not less than that of the normal tincture. This tincture can be given in larger doses which result in an increase in diuresis. After further fractionation it appears that the entire diuretic action is due to the sugar *sinistrine* (a mixture of di- and tetra-anhydrofructose). This sugar causes diuresis even in normal people. It can also be isolated from hyacinth bulbs and when so obtained possesses a similar action. Several clinical tests with patients having cardiac edema showed sinistrine to give no positive results. It is possible that in such cases sinistrine must be combined with the digitalis-like glucosides.—U. G. BIJLSMA. *Acta Brevia Neerl.* (1936), 94; through *Pharm. Weekblad*, 73 (1936), 1602. (E. H. W.)

Other Plant Principles

Ayapanin—Constitution of. A crystalline product has been isolated from fresh leaves of *Eupatorium ayapana*, in 0.1% yield (or 0.5% calculated on the dried material). From this product, which is a mixture, a colorless substance, crystallizing in plates and melting at 114–115°, has been obtained. It has a faint coumarin-like odor and its properties are in good agreement with those of herniarin (7-methoxycoumarin) isolated from *Herniaria hirsuta*. The authors have established the identity of their product with a synthetic specimen of 7-methoxycoumarin. Be-

sides ayapanin 2 other substances, melting points 220–221° and 109°, respectively, have been isolated from the same source. For the former substance the authors propose the name *ayapin*. The constitution of these compounds will be discussed in a later communication. An account of the hemostatic properties of ayapanin and ayapin will be published elsewhere. The details of the isolation of the 2 substances are given.—PRAFULLA KUMAR BOSE and ANIL CHANDRA ROY. *J. Indian Chem. Soc.*, 13 (1936), 586–587; through *Chem. Abstr.*, 31 (1937), 1787. (E. V. S.)

Beechwood—New Constituents of. In extracting beechwood with acidified organic solvents the authors observed the separation of a red color which adhered to the small particles of the wood. The cellulose obtained during this reaction is difficult to separate during the bleaching process. It was discovered that the new principle, obtained from beechwood powder when extracted with methanol, gives a reddish violet color when reacted with acids, which on long standing turns brownish. Besides beechwood, other drugs as eucalyptus, cherry and woods as oak, etc., give the same color reaction, but less pronounced. Hard beechwood does not give any color reaction. The brownish color changes to a cream-like color, which is separated into two substances. The more soluble substance gave a reddish violet color with methanol-hydrochloric acid; the less soluble did not react. The soluble compound when acetylated does not give the color reaction. The less soluble compound dissolves in hot alkalis forming a yellow solution which changes to a red-violet when boiled; the yellow color is recovered when this solution is acidified. From the wood of *Eucalyptus globulus* 3.5% of coloring substance was obtained; on analysis, it was found to contain 57% C, 4.3% H and 4.8% OCH_3. The authors believe that these coloring principles are somewhat related to lignin.—E. WEDEKING and OLAV MULLER. *Naturwissenschaften*, 23 (1935), 833; through *Chem. Zentralb.*, 107 (1936), 1437. (G. B.)

Derris Root—Constituents of. A review of the literature on the chief active constituents of derris and the structural chemistry of these substances. Thirty literature references are cited. —A. LANNUNG. *Arch. Pharm. og Chemi*, 44 (1937), 77. (C. S. L.)

Sterols—Addition Products of. The amount of fixed and free sterols in the oil of apricots and in wheat germ was determined by the digitonin method. The corresponding factors for these addition products were calculated. Then there were prepared addition products from sterol, from the oil of apricots, with cyclamine and with saponin, obtained from the roots of *Saponaria officinalis*, as well as the addition products from phytosterol of wheat germ with cyclamine. From the zoösterol there were prepared the addition products of cholesterol with digitonin, cyclamine and saponin from *Saponaria officinalis*. Crystallographic constants were also established for all these addition products.—J. HADÁČEK and Z. ROSENBERG. *Časopis Českoslov. Lékárnictva*, 16 (1936), 225–229; through *Chem. Abstr.*, 31 (1937), 1160. (E. V. S.)

Fixed Oils, Fats and Waxes

Castor Oil—Chemical Microscopy of. A novel micro-procedure for the specific identification of raw and chemicalized castor oil is dependent on the use of a saturated solution of potassium hydroxide in *n*-butyl alcohol. A small drop of the specimen under examination is mixed with an equal quantity of the reagent and viewed under the microscope at a magnification of 430×. Characteristic rosette-like forms are obtained with all samples tested, regardless of age or purity. The method is not applicable to the various grades of sulfonated castor oil nor to mixed castor fatty acids and the utility of the method for identifying blown castor oil is doubtful. Application to mixtures of castor oil with other fats has not yet been tried.—L. WILSON GREENE. *Am. J. Pharm.*, 109 (1937), 67. (R. R. F.)

Lipids—Chemistry of, of Yeast. III. Lecithin and Cephalin. The mixed phospholipins of yeast were separated into lecithin and cephalin. The products were purified until the lecithin was free from amino-nitrogen and all the nitrogen of cephalin was in the amino form. On hydrolysis both phospholipins gave about 64% of fatty acids. Both the liquid and the solid acids on catalytic reduction gave a mixture of palmitic and stearic acids. The water-soluble portion of the hydrolysis products of lecithin consisted of optically active glycerophosphoric acid and choline while that of cephalin contained optically inactive glycerophosphoric acid and aminoethyl alcohol. Hydrolecithin and hydrocephalin were prepared and analyzed.—L. F. SALISBURY and R. J. ANDERSON. *J. Biol. Chem.*, 112 (1936), 541; through *Physiol. Abstr.*, 21 (1937), 909. (E. V. S.)

Unclassified

2-Alkoxyquinoline Derivatives—Anesthetic Action of. The anesthetic action of quinine, optochin and eucupin depends primarily on the alkoxy group; the potency of the reaction depends, however, on the size of the molecule. The position of the alkoxy group is not decisive in percaine. In order to have a better understanding of these compounds the author obtained many 2-alkoxyquinoline derivatives from which many substituting products were obtained at the 4-position. Should the N-dialkylethylenediamine group of percaine be replaced by an acetyl- or propione-ethylenediamine group the compounds obtained would be inactive. Because certain chemical compounds react as anesthetics when they have a specific basicity, then N-2-ethoxycinchonylethylenediamine should be obtained with a stronger basic character. The attempt to split up the acyl group with hydrochloric acid failed to materialize. In reacting 2-ethoxycinchoninic acid chloride with ethylenediamine a new compound formed. The monoacyl compound could not be obtained. These ethylenediamine derivatives were, however, pharmacologically inactive. The simple alkyl compounds such as the amide of 2-alkoxycinchoninic acid produce weak anesthetic action. The anesthetic action of percaine does not depend on the ethylenediamine group; it depends primarily on the stronger basicity of the compound. Only the simplest of the basic 2-alkoxyquinoline compounds were examined in order to ascertain what significance the COOH group has in regard to the pharmacological action of the compound. 2-Alkoxy-4-aminoquinoline has no anesthetic action, probably because of its slight basicity. 2-Alkoxy-4-aminomethylquinoline was produced because the aliphatic amines are stronger in their basic character than the aromatic amines. The author found that the anesthetic action for these compounds depends not on the 2-alkoxycinchoninic acid group but on 2-alkoxyquinoline. The carboxyl group of the 2-alkoxycinchoninic acid derivative has no influence on the pharmacological action of the compound. The action (pharmacological) can be maintained in 2-alkoxy-4-aminomethylquinoline when aliphatic alkyl groups are introduced in the amino group. Should the aliphatic groups be replaced by aromatic groups the result is that the compounds formed are weak basically, consequently inactive. In order to ascertain how the basicity can be increased in these compounds, the authors introduced an additional amino group in the side chain of 2-alkoxy-4-alkylaminomethylquinoline. The compound formed exhibited no anesthetic action. The presence of NH_2 in diamine compounds reduces the solubility of lipoids in the system; therefore the nerve cells do not absorb these compounds as they are rich in lipoids. In order to prove that the position of the alkoxy group has nothing to do with the action of the compound, 2-alkoxyquinolyl-4-α-diethylaminoalkylketone was produced and then examined. The aminoalcohol compound showed no pharmacological action; the aminoketonic compound exhibited the same vasoconstrictor action as that of 6-alkoxyquinolyl-4-aminomethylketone; however, this compound had no anesthetic power.—HANS WOJAHN. *Chem. Zentralb.*, 107 (1936), 2087. (G. B.)

***p*-Aminophenol—Preparation of.** After long experimentation the authors found that the reduction of neutral nitrophenols is made possible in the presence of iron fillings and sodium chloride; a 97.8% yield can be obtained only after the mixture stood for at least six hours and details followed: 150 Gm. of nitrophenol was dissolved in 1,000 cc. of water, 34 Gm. of salt added and 10% more of iron than it would theoretically require for the reaction; the temperature necessary for the reaction is 60–90°; the mixture must be vigorously agitated. The manner in which the iron reacts is unimportant.—N. F. SSILIN and B. A. NIKOLJUK. *Russ. Anilinokrassotschnaja Promyschlennost*, 5 (1935), 201; through *Chem. Zentralb.*, 107 (1936), 1606. (G. B.)

Aromatic Esters—Some Bromo Derivatives of. The following four compounds are prepared and analyzed: 3,5-dibromo-acetylsalicylic acid; methyl 3,5-dibromo-*p*-oxybenzoate; methyl 3,5-dibromo-anthranilate; and methyl 3-bromo-anisate.—L. ROSENTHALER. *Pharm. Acta Helv.*, 12 (1937), 8. (M. F. W. D.)

Barbiturates—Xanthyl Derivatives of, Modification of the Technic for the Preparation of. Condensation of barbiturates with xanthydrol according to Fabre (*J. pharm. chim.*, 26 (1922), 241–249) gives yields considerably below theoretical; the following were obtained: with veronal, 19% of theoretical; soneryl, 39%; gardenal, 48%; rutonal 61%. This is partly due to the use of too little xanthydrol; but use of too large an excess leads to appreciable contamination of the condensation product, as shown by depression of the melting point. Considerably higher yields (but still short of theoretical) of practically pure products are obtained by using 0.4 Gm. (instead of 0.2) of xanthydrol per 0.1 Gm. of barbiturate, adding 2 cc. of acetic acid, heating to boiling,

allowing to stand for 24 hrs. with frequent shaking, adding 2 cc. of 96% alcohol, allowing to stand for 2 hrs. with frequent stirring, filtering and washing with boiling alcohol.—R. DELSARTE. *Ann. Méd. Légale Criminol. Police Sci.*, 16 (1936), 601–606. (A. P.-C.)

Barbituric Acids—N-Monoalkylated-5,5-Disubstituted. N-Monoalkylated-5,5-disubstituted barbituric acids are obtainable by the reaction in the customary manner of an alkylating agent upon the condensation product of dicyanodiamide and a disubstituted malonic or cyanoacetic acid or a derivative thereof, such as their esters, amides, amide-acid esters, chlorides or nitriles, and saponifying the alkylation product formed to obtain the N-monoalkylated-5,5-disubstituted barbituric acid.—LUDWIG TAUB and WALTER KROPP, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,061,114, Nov. 17, 1936. (A. P.-C.)

Benzyl Alcohol—Synthesis of Methoxy- and Methyl-Derivatives of. By chloromethylation by means of formaldehyde and hydrogen chloride gas and hydrolysis of the resulting chloromethyl compound, the following were prepared: *3-methyl-4-methoxybenzyl alcohol* from the methyl ether of *o*-cresol is a colorless viscous liquid, b. p. 148–149° at 18 mm.; *2-methyl-4-methoxybenzyl alcohol* from the methyl ether of *m*-cresol is a viscous liquid, b. p. 143–147° at 18 mm.; *2-methyl-4-methoxy-5-isopropylbenzyl alcohol* from thymol is a very viscous liquid, b. p. 165° at 18 mm. At the same time, some *2,2'-dimethyl-4,4'-dimethoxy-5,5'-diisopropyl-diphenylmethane*, b. p. 203° at 16 mm., m. p. 73°, is formed which on oxidation is quantitatively converted into the corresponding benzophenone. The structures of the benzyl alcohols were confirmed by oxidation to the corresponding benzoic acids.—RAYMOND QUELET and JEAN ALLARD. *Compt. rend.*, 204 (1937), 130. (G. W. H.)

Butylacetic Acid—Substituted Amides of Tertiary. Various details are given for the production of hypnotic, sedative and soporific compounds such as the methylamide (b. p. 93° C. under 5-mm. pressure), the ethylamide (b. p. 98° C. under 6-mm. pressure), the amylamide (b. p. 130° C. under 7-mm. pressure), the allylamide (b. p. 105° C. under 7-mm. pressure), the cyclohexylamide (m. p. 146° to 147° C.), the 2,2-dimethylpropylamide (m. p. 147° to 148° C.), the anilide (m. p. 131° C.), the dimethylamide (b. p. 63° to 65° C. under 6-mm. pressure), the diethylamide (b. p. 69° C. under 3-mm. pressure), the methylphenylamide (b. p. 110° C. under 5-mm. pressure), and of all the corresponding amides of α-bromo-tertiary butylacetic acid.—FRANK C. WHITMORE and AUGUST H. HOMEYER, assignors to MALLINCKRODT CHEMICAL WORKS. U. S. pat. 2,060,154, Nov. 10, 1936. (A. P.-C.)

Carbon—Process for the Purification of Finely Divided, Obtained by Means of Metallic Contact Substances. The carbon is treated above 400° C. with chlorine or with gases containing chlorine.—BAYERISCHE STICKSTOFFWERKE A. G. Belg. pat. 413,886, March 31, 1936. (A. P.-C.)

Carbon Suboxide and Its Reaction with Amines. The work of van Alphen has been continued by investigating the reaction of carbon suboxide with aliphatic, aromatic, hydroaromatic and heterocyclic amines and some amino esters. It was evident that normal aliphatic amines reacted better with carbon suboxide than the iso-amines and the secondary iso-amines reacted more easily with the suboxide than the corresponding normal amines. The para-substituted derivatives of aniline reacted more readily than the analogous ortho- and meta-compounds. *l*-Bornylamine gave spontaneously a reaction product while *l*-menthylamine reacted after standing a few weeks. Of the two naphthylamines, the β-compound reacted more easily than the α-amine. α-Aminopyridine reacted with the suboxide in the ratio 1 : 1, 5- and 8-aminoquinolines reacted like the compounds mentoned in the ratio 2 : 1. With ethyl aminoacetate a well-crystallized substance could be obtained. With the ethyl esters of *dl*-alanine, α-amino-isobutyric acid and sarcosine treaclye substances were obtained.—E. A. PAUW. *Rec. trav. chim.*, 55 (1936), 215. (A. C. DeD.)

Furan Compounds—Physiological Action of Some. In physiological action, C_4H_4O resembles benzene; C_4H_3OCHO and $C_4H_3OCH_2OH$ are toxic. The β-diethylaminoethyl esters of several furan acids are mild local anesthetics. Some furan compounds, a series of mixed ketones containing the furyl radical are weak hypnotics, and a group of furan derivatives of varied composition include vesicants, lacrimators and sternutators. About 25 dibenzofuran derivatives were tested. All are toxic but have little therapeutic value except 4-aminodibenzofuran and 4-acetaminodibenzofuran which show analgesic action. The most convenient method for the preparation of 3-furoic acid is: the preparation of dioxalsuccinic ester from sodioöxalacetic ester;

conversion to tetracarbethoxyfuran by treatment with sulfuric acid; hydrolysis with a mineral acid to form furantetracarboxylic acid; and decarboxylization to form 3,4-furandicarboxylic acid and finally 3-furoic acid. In making monosubstitution compounds the diphenyl bond favors the 1- and 3-positions and the diphenyl ether linkage favors the 2- and 4-positions. The attempted nitration of the supposedly active α-positions of 3,4-furandicarboxylic acid produced either no reaction or rupture of the ring. At 160°, in a closed tube, bromination was effected. A Gabriel phthalimide synthesis on 4-β-bromoethyl- and 2-β-bromoethyl-dibenzofuran yielded 4-β-aminoethyldibenzofuran, b. p. 165–166°/2 mm., and 2-β-aminoethyldibenzofuran, b. p. 167–170°/2 mm. The hydrochloride salts of these amines melt at 263° and 278°, respectively. Treatment of the 4-isomer with methylal and acid produced tetrahydropyridio-[5,4,c]-dibenzofuran, b. p. 184°/1–2 mm., hydrochloride salt, m. p. 259°. 2-Chloromethyldibenzofuran was prepared from a petroleum ether (b. p. 75–115°) solution of dibenzofuran with hydrochloric acid in the presence of zinc chloride and trioxymethylene. It melted at 78.5–79.5°. This halogen compound was converted to 2-cyanomethyldibenzofuran, m. p. 102.5–103.5°.—W. H. KIRKPATRICK. *Iowa State Coll. J. Sci.*, 11 (1936), 75–77; through *Chem. Abstr.*, 31 (1937), 1800. (E. V. S.)

Glycerin—Synthesis of, New Contribution to. Previous methods of synthesis are reviewed. Ethoxyacetic ester is quantitatively converted into the diethyl ether of glycerin by cold hydrogenation in alcoholic solution in the presence of activated nickel. The ether is quantitatively converted into glycerin by heating for 8 hours at 120–125° in an enamel autoclave or in sealed tubes with three to four times the weight of concentrated hydrochloric acid. As the ethoxyacetic ester can be readily and economically obtained by several methods, this synthesis is of technical interest.—GEORGES DARZENS. *Compt. rend.*, 204 (1937), 506. (G. W. H.)

Medicinal Chemicals—Reactions of Some. There are described various chemical tests and some microchemical reactions by which the following may be identified: trichloroisobutyl alcohol (acetone-chloroform), acetolsalicylic acid ester (Salazetol), diacetylaminoazotoluene (Pellidol), 4-oxy-3-acetylaminophenylarsonic acid (Spirozide), ergobasine tartrate (Basergin-Sandoz) and diphenylacetyl-diethylaminoethanol ester hydrochloride (Trasentin-Ciba).—L. ROSENTHALER. *Scientia Pharm.*, 8 (1937), 9. (M. F. W. D.)

Metachromatic Reaction—Histochemical Micromethod for the Detection of Complex Sulfuric Esters. The reaction is based on the fact that sulfuric esters of high molecular weight can, under certain conditions, change the color of solutions of certain basic dyes. It is used to detect sulfuric esters of complex polysaccharides in tissues. In some cases less than 1 γ can be detected. Toluidine blue and brilliant cresol blue are suitable dyes.—L. LISON. *Bull. soc. chim. biol.*, 18 (1936), 225–230; through *Chimie & Industrie*, 36 (1936), 908. (A. P.-C.)

Methenamine—Cuprohydrocyanate of. The formula of the complex is given as $CuCN.5(HCN.(CH_2)_6N_4)$.—PIERRE MESNARD. *Bull. soc. pharm. Bordeaux*, 74 (1936), 157–161. (S. W. G.)

Methylene Blue—Cuprohydrocyanate of. The formula of the complex is given as $2CuCN.13(HCN.C_{16}H_{18}N_3SCl).5HCN$.—PIERRE MESNARD. *Bull. soc. pharm. Bordeaux*, 74 (1936), 161–164. (S. W. G.)

Phenols—Germicidal Activity of, Effect of Substituents on. I. Alkyl Derivatives of 2,4-Dibromophenol. Fifty grams of phenol in 50 cc. of carbon disulfide is placed in a 3-neck flask fitted with reflux condenser and surrounded with ice. A solution of 167 Gm. of bromine in 54 cc. of carbon disulfide is added slowly from a separatory funnel with stirring so that the temperature does not rise above 5°. The hydrogen bromide and carbon disulfide are distilled off and the crude material is distilled under reduced pressure, the portion, b. p. 100–104°/2 mm. being collected and cooled, giving a 95% yield of 2,4-dibromophenol. *6-Methyl-2,4-dibromophenol* is prepared in a similar way by the bromination of *o*-cresol, m. p. 56–57°, yield 86%. By use of the general procedure of Klarmann (*Chem. Abstr.*, 28 (1934), 126) the following alkyl derivatives of 2,4-dibromophenol are prepared: *6-ethyl-*, b. p. 121–122°/3.5 mm., *6-propyl-*, b. p. 130°–131°/4.5 mm., *6-butyl-*, b. p. 139–141°/2 mm., *6-amyl-*, b. p. 159–161°/4 mm.—SZU-LIANG CHIEN, HUAN-PANG CHUNG and HSI-CHIH TAI. *J. Chinese Chem. Soc.*, 4 (1936), 361; through *Chem. Abstr.*, 31 (1937), 1155. (E. V. S.)

***enol*-Phenylacetaldehyde Monoacetate—Preparation and Applications of.** Phenylvinyl acetate is prepared from phenylacetaldehyde and acetic anhydride in presence of anhydrous

sodium acetate; its application to perfumery is described.—E. FORNÉT. *Seifensieder Ztg.*, 62 (1935), 285; through *J. Soc. Chem. Ind.*, 55 (1936), B., 570. (E. G. V.)

Polymeric Compounds—Chemistry of High, Recent Advances in. A review.—H. MARK. *Pharm. Monatsh.*, 17 (1936), 233–234. (H. M. B.)

Pyridine Derivatives. Compounds (suitable for use as contrast agents in X-ray photography of organs such as the urinary passages) of high bromine or iodine content and of greater solubility in water than previously known halogenated 2-pyridones are obtained when 4-pyridone is transformed by brominating or iodating into 3,5-dibromo- or 3,5-diiodo-4-pyridone and the latter caused to react with a halogenated aliphatic compound conferring solubility in water to form the corresponding *n*-alkyl derivatives, such as methyl, ethyl and propyl halides, allyl and crotyl bromide, halogenated acetic, propionic, butyric acids and their amides, halogen alkyl sulfonic acids, such as iodomethane-, iodoethane- and bromopropane-sulfonic acid and their amides; also alkylaminoalkyl halides, such as dimethylaminoethyl chloride, diethylaminoethyl chloride or bromide, α-diethylaminopentyl-δ-chloride or bromide, and the like. When using primary or secondary aminoalkyl halides these are employed advantageously in the form of their acyl derivatives, such as acetyl or benzoyl derivatives, *e. g.*, of amino- or ethylaminomethyl or ethyl halides and the like. The process is advantageously performed by dissolving one molecule of the 3,5-dibromo- or diiodo-4-pyridone in a dilute aqueous solution of an alkali metalhydroxide, adding at least one molecule of the halogenated aliphatic compound of an alkali metal or ammonium salt thereof, respectively, and heating the mixture on the water-bath or to boiling.—JOACHIM REITMANN and GERHARD HECHT, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,064,944, Dec. 22, 1936. (A. P.-C.)

Pyridine Derivatives. Pyridine is made to react for a prolonged time with thionylchloride; the excess distilled off; the residue is boiled with water for several hours at about 100° to 180° C. and filtered; the filtrate is acidified, and the 4-pyridone contained therein is iodized by the addition of at least two equivalents of iodine chloride or a mixture of alkali metal-iodide and iodate.—JOACHIM REITMANN, assignor to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,064,945, Dec. 22, 1936. (A. P.-C.)

Resinoids—Synthetic. A lecture before the Royal Society of Arts covering phenolic, urea, laminated, "alkyd," vinyl and styrol resinoids and organic glass, a methyl acrylate resinoid.—H. V. POTTER. *Chem. and Drug.*, 126 (1937), 176. (E. V. S.)

Retene—Manufacture of. Pine tar oil is heated with a metal halide catalyst (aluminum chloride, zinc chloride or iron chloride), the volatile distillate is mixed with caustic soda, and the retene-containing fraction is distilled from the oily layer.—FRED W. MUNCIE, assignor to WOOD CHEMICAL PRODUCTS CO. U. S. pat. 2,069,896, Feb. 9, 1937. (A. P.-C.)

Salicylic Esters of Acyl Glycols. Therapeutic esters of salicylic acid may be obtained by heating alkali metal salts of salicylic acid with β-chloroethyl esters of aliphatic acids. The transformation is particularly successful if an excess of the chloro esters is used; in this case the unreacted chloro-fatty-acid ester may be easily and completely recovered. The new salicylic acid esters are compounds possessing a high boiling point, a low melting point and a very slight odor. They are suited for percutaneous applications in the treatment of rheumatism because, owing to their ready solubility in oils, they are easily miscible with fatty ointment. When a suitable ointment of these esters admixed with histamine is rubbed into the skin, the salicylic esters of acyl glycols have the property of facilitating the absorption of the histamine through the skin. The salicylic ester of formyl glycol boils at 163° to 165° C. at 11 mm. and sets to colorless crystals, m. p. 26° C. The salicylic acid ester of acetyl glycol boils at 170° to 171° C. at 12 mm. and is a colorless or almost colorless oil. The salicylic acid ester of isovaleryl glycol is a colorless viscous oil that boils at 201° at 12 mm.—ERNST PREISWERK, assignor to HOFFMANN-LAROCHE, INC. U. S. pat. 2,069,175, Jan. 26, 1937. (A. P.-C.)

BIOCHEMISTRY

Adrenal Cortex—Chemical Studies on. III. Isolation of Two New Physiologically Inactive Compounds. The isolation and properties of two new physiologically inactive compounds from adrenal extracts are described. The first compound is an α, β, unsaturated diketone of the formula $C_{21}H_{28}O_5$ and is probably closely related to several of the inactive compounds isolated previously. The amorphous active fractions remaining after separation of this compound are mix-

tures of ketones, for the most part also α, β unsaturated. The second compound is a monoketone of the probable composition $C_{21}H_{34}O_3$.—O. WINTERSTEINER and J. J. PFIFFNER. *J. Biol. Chem.*, 116 (1936), 291–305; through *Scientif. Abstr.*, 7 (1936), 286. (E. V. S.)

Adrenal Cortical Hormone—Preparation of Extracts Containing. A method is described for preparing adrenal extracts containing the cortical hormone. This procedure yields extracts assaying 2,500 dog units per kilo of fresh gland extracted and 100 dog units per mg. of extracted solids. The extracts are free of ephedrine and suitable for clinical study.—C. F. CARTLAND and M. H. KUIZENGA. *J. Biol. Chem.*, 116 (1936), 57–64; through *Scientif. Abstr.*, 7 (1936), 396. (E. V. S.)

Alcohol in Urine—Determination of, for the Diagnosis of Drunkenness. When alcohol is determined in urine and in blood taken at the same time, the results quite frequently are discordant, which is attributed to: (*a*) the amount of urine present in the bladder at the time of ingestion of alcohol; (*b*) the frequency of micturition between ingestion of alcohol and procuring the sample; (*c*) the permeability of the vesical wall to alcohol. When alcohol is determined in the urine only, and not in the blood, a definite diagnosis of drunkenness can be drawn only with 0.5% or more, while 0.3% in the blood clearly indicates a state of inebriety.—P. DERVILLÉE. *Ann. méd. légale criminol. police sci.*, 16 (1936), 598–600. (A. P.-C.)

α-Amino Acids—Some Causes of Error in the Determination of, by Reaction with Ninhydrin. Ninhydrin combines with 1 molecule of urea; hence urea wastes this expensive reagent. It also decreases the intensity of the blue color produced by the amino acids. Ninhydrin combines with the guanidine group. The compound formed with creatine at 37° C. is insoluble in water; this suggests a method for the determination of creatine. The same compound is formed from creatinine if the mixture is boiled to hydrolyze the latter. Lysine gives a purple instead of a blue color. Arginine and histidine give erroneous results. The method is best limited to the determination of monoamino acids after destruction of urea by urease and removal of diamino acids by defecating with phosphotungstic acid.—M. POLONOVSKI. *Compt. rend. soc. biol.*, 121 (1936), 1103–1105; through *Chimie & Industrie*, 36 (1936), 909. (A. P.-C.)

Ascorbic Acid—Estimation of, by Titration. Ascorbic acid in vegetable and animal tissues can be determined by addition of a standard methylene blue solution to the solution under examination, irradiation by intense sunlight for 30–50 sec., and the excess methlyene blue titrated with standard titanium trichloride in a carbon dioxide atmosphere.—IMRE GÁL. *Nature*, 138 (1936), 799; through *Chem. Abstr.*, 31 (1937), 1061. (E. V. S.)

Ascorbic Acid—Estimation of, by Titration. Titration of ascorbic acid with 2,6-dichlorophenol indophenol gives more precise results by carrying out the titration at 0°, since oxidation is much slower at this temperature, and the time consumed in conducting the titration is no longer such a fundamental factor in the result.—HENRI CHEFTEL and MARIE-LOUISE PIGEAUD. *Nature*, 138 (1936), 799; through *Chem. Abstr.*, 31 (1937), 1061. (E. V. S.)

Ascorbic Acid and Glutathione—Colorimetric Determination of. Equimolar solutions of ascorbic acid, and of cystine and glutathione after reduction with sodium sulfite, give the same color with Folin's phosphotungstic acid reagent; hence cystine can be used as a cheap and readily obtainable standard. Blood or tissues are treated with 10% trichloroacetic acid solution in the usual way. In tube 1 place 2 cc. of standard cystine solution containing 0.4 mg. cystine in 2 cc. of 0.2*N* sulfuric acid and in tubes 2 and 3 place a quantity of trichloroacetic acid filtrate estimated to contain 0.7 to 2.5 mg. reducing substance. Make tube 3 alkaline with sodium carbonate and let stand 1 hr. to destroy the ascorbic acid. Then to each of the 3 tubes add 0.2 cc. of 20% sodium sulfite solution, wait 2 min. and add 0.2 cc. of 20% lithium sulfate, then 2 cc. of the phosphotungstic reagent and 2 cc. of 20% sodium carbonate solution. After 4 min. dilute each to 25 cc. with 2% sodium sulfite solution and compare in the colorimeter. Tube 1 is the standard, tube 2 gives total glutathione plus ascorbic acid and tube 3, the glutathione only. Adrenaline interferes by reducing the phosphotungstic reagent; hence the method is not suitable for the analysis of adrenal tissue.—A. LANGOU and A. D. MARENZI. *Anales. farm. bioquím.* (Buenos Aires), 5 (1935), 70; through *Chimie & Industrie*, 36 (1936), 709. (A. P.-C.)

***l*-Ascorbic Acid—Identification of.** It has been found that *d*-ascorbic acid, and *d*- and *l*-araboascorbic acid, all of which have much less physiological activity than *l*-ascorbic acid, are being sold under names indicating them to be vitamin C. All of these being space isomers of *l*-ascorbic acid give the same chemical analysis. The reactions due to the di-enol grouping, the

silver nitrate test, the violet color obtained in neutral solutions with iron salts and air, the reaction with sodium hydroxide solution, the titration with iodine or dichlorophenolindophenol-sodium are identical for all of the isomers. The melting points of the isomers are not sufficiently distinctive to allow them to be used for identification since the products are not, as a rule, completely purified. The determination of the specific rotation of the sodium salts, the usual form in commerce, is not sufficiently distinctive to allow its use. However, the specific rotation of free *l*-ascorbic acid in methyl alcohol is +49.5° to +51.5°, whereas isoascorbic acid (*d*-araboascorbic acid) gives a specific rotation of about −16° to −17° in 0.02*N* hydrochloric acid. This method is the only reliable one for the rapid identification of true *l*-ascorbic acid.—U. KUBLI. *Pharm. Acta Helv.*, 12 (1937), 9. (M. F. W. D.)

Bacillus Calmette-Guérin (B. C. G.)—Specific Polysaccharide from. Two polysaccharides giving precipitations with anti-B. C. G. horse sera have been prepared from defatted B. C. G. The first is a water-soluble, dextrorotatory, weak acid containing 77.2% of reducing sugars and 2.9% of amino sugars. Its main components are mannose and *d*-arabinose, together with a small amount of inositol. The second is insoluble in water and alkali, and soluble in acids. It is a strong adsorption compound between equal parts of a polysaccharide containing 94% of reducing sugars and of calcium phosphate. The chemical and immunological properties of a protein obtained from B. C. G. are described.—E. CHARGAFF and W. SCHAEFER. *J. Biol. Chem.*, 112 (1935), 393–405; through *Physiol. Abstr.*, 21 (1937), 1003. (E. V. S.)

Betaine Gold Chloride. Fischer and Willstätter's assumption that the gold salt of glycocoll betaine has the composition $C_5H_{12}O_2N.AuCl_4.1^1/_2H_2O$ and $C_5H_{12}O_2N.AuCl_4.2H_2O$ is criticized, and it is pointed out that the salts contain more than 1 molecule betaine per molecule $AuCl_4$.—MAX BECKER. *Biochem. Z.*, 288 (1936), 348–350; through *Chem. Abstr.*, 31 (1937), 1553. (E. V. S.)

Biochemical Analysis—Advances in. Highlights of recent papers dealing with recent advances in biochemical analysis are pointed out. The papers deal with excretion of vitamin B_1, excretion of ascorbic acid, ascorbic acid and blood tests and excretion test for fouadin.—ANON. *Pharm. J.*, 138 (1937), 30. (W. B. B.)

Blood Sugar—Microdetermination of, by Ceric Sulfate Titration. The procedure for analysis of glucose solutions and blood involves the use of ferricyanide as an oxidizing agent and the titration of the ferrocyanide produced with standard ceric sulfate solution. The method requires far less standardization than is customary and gives a constant factor relating glucose to ceric sulfate utilized. Procedure: To 2 cc. of deproteinized blood filtrate (1:10), add 2 cc. 0.8% potassium ferricyanide solution and 2 cc. 14% sodium carbonate solution, heat for 5 min. on a boiling water-bath, cool, add 2 cc. sulfuric acid (3–5*M*) and a drop of indicator (usually alphazurine G. G.). Titrate with standard ceric sulfate (0.0025*N*, method of Willard and Young, *J. Am. Chem. Soc.*, 51 (1929), 149) to end-point (yellow to brown for alphazurine or orange to green with phenanthroline ferrous complex), using a 10-cc. burette calibrated with 0.02-cc. divisions. (1 mg. of glucose used 2.735 cc. of 0.01*N* ceric sulfate, factor of Whitmoyer.) A blank determination is also made. It is shown that the method gives about the same values for blood sugar as other commonly used methods, but has the advantage of a greater rapidity and reproducibility as well as an easier technic.—GEORGE GIRAGOSSINTZ, CHARLES DAVIDSON and PAUL L. KIRK. *Mikrochem.*, 21 (1936), 21. (E. V. S.)

Cholesterol—Rapid Preparation of, from Brain. By shaking with liquid air and then with methyl acetate at room temperature, an 83% yield of the cholesterol in pig's brain can be obtained in pure form in 24 hours. No preliminary drying and no saponification are necessary (m. p. 147–147.5°).—I. REMESOW and N. LEWASCHOWA. *Hoppe-Seyl. Z.*, 241 (1936), 81; through *Physiol. Abstr.*, 21 (1937), 907. (E. V. S.)

Cod Liver Oil—Iodine Value of Medicinal. The iodine value for cod liver oil given in the Belg. Phar. is too low (140–156) and the value 155–175 is recommended. The methods of Hanus and Hübl were found to give different results, the former giving higher values. The following test for the presence of vitamin A is recommended: To 5 cc. of purified chloroform (washed with water and dried with anhydrous potassium carbonate) in a test-tube, add 2 drops of cod liver oil, then 2 cc. of a saturated solution of antimony trichloride in chloroform. An intense blue color is produced and persists for 5–10 minutes, then changes to violet and finally to brown. A longer period of contact in determining the iodine value is suggested. An expedient method for the prepara-

tion of the iodobromide solution should be given in the pharmacopœia.—N. BERGER. *J. pharm. Belg.*, 18 (1936), 993–996, 1011–1013. (S. W. G.)

Corpus Luteum—New Hormones from. Four hundred mg. of the crude hormone mixture obtained from corpus luteum were reacted with semicarbazide and saponified. The mixture was reacted with 300 mg. of phthalic acid anhydride, 5 cc. of dried pyridine added and then heated for half an hour at 80° in a nitrogen atmosphere. The mixture is diluted with water and shaken out with ether, $N/2$ sodium hydroxide added, followed by $N/2$ hydrochloric acid and then shaken out with water. Two hormones, isolated from the ethereal residue, are crystallized by sublimation. The first hormone melts at 129°, the second at 120°. From the aqueous solution an oxyketone is obtained, m. p. 196.5–197.5°, when the solution is saponified with alcoholic sodium hydroxide. This acylation process can also be accomplished by using 2,4-dinitrobenzoyl chloride in quinoline.—GESELLSCHAFT FÜR CHEM. IND. IN BASEL. *Chem. Zentralb.*, 107 (1936), 2145. (G. B.)

Enterogasterone—Proof of Existence and Methods of Assay. Enterogasterone is a chalone which is produced by the intestinal mucosa, when an adequate amount of fat or sugar and possibly other substances enters the intestine and which acts to reduce the motility and secretion of the stomach. The observations upon which the existence of enterogasterone is based are: (1) The introduction of fat or sugar into the intestine inhibits the motility and secretion of an auto-transplanted pouch of the stomach or of a stomach whose intrinsic nerves have been sectioned. This unequivocally establishes the existence of a humoral or blood-borne agency. (2) The injection of dextrose, fatty chyle or the products of the digestion of sugar and fat intravenously does not inhibit motility or secretion. This shows that the inhibition is not due to the absorption of the products of digestion of fat and sugar. (3) Appropriately made extracts of the mucosa of the upper intestine yield a substance which, when injected intravenously or subcutaneously, inhibit gastric secretion and motility, and which possess a number of the aspects of specificity. The steps in the proof remaining to be supplied are the chemical isolation of the substance and its identification in the blood or lymph. The substance has not been sufficiently concentrated to warrant its parenteral injection into a human subject. A unit of enterogasterone is that quantity which when injected intravenously in a 12- to 14-Kg. dog with a pouch of the entire stomach and receiving sufficient histamine subcutaneously at 10-minute intervals to maintain a uniform flow of 1 cc. of gastric juice (5 mg. HCl) per minute, causes a 50% reduction in the secretion of hydrochloric acid during two hours following the injection of enterogasterone. Five one-hundredths of a unit will inhibit the movements of a stomach distended by a balloon containing 100 cc. of air for about six minutes; one unit for about fifty minutes.—A. C. IVY. *Science*, 85 (1937), 23–24; through *Scientif. Abstr.*, 7 (1936), 413–414. (E. V. S.)

Fibrinogen—Determination of, in Human Blood. To 0.5 cc. of isotonic sodium oxalate solution (1.2% of anhydrous salt) add 10.5 cc. of blood; centrifuge and collect all the clear plasma with a pipette; to the plasma add 0.0616 cc. of a solution containing 81.6 Gm. of anhydrous calcium chloride per liter. After coagulation is complete collect the fibrin, wash with distilled water, dry at 105° C. for 24 hrs. and weigh.—W. L. DULIÈRE. *Bull. soc. chim. biol.*, 18 (1936), 231–233; through *Chimie & Industrie*, 36 (1936), 908. (A. P.-C.)

Glucose and Chlorides—Determination of, in Urine Containing Sodium Formaldehydesulfoxylate. Sodium formaldehydesulfoxylate is eliminated in the urine after administration. It reduces all the common glucose reagents; hence the glucose in urine containing sodium formaldehydesulfoxylate must be determined colorimetrically or the formaldehydesulfoxylate must be removed. The only suitable method of removal is defecation with mercuric sulfate by the method of West and Peterson. Since sodium formaldehydesulfoxylate reduces silver compounds, it must be destroyed by oxidation with potassium permanganate before chloride is determined.—E. HUG and R. H. DE MEIO. *Compt. rend. soc. biol.*, 121 (1936), 370–372; through *Chimie & Industrie*, 36 (1936), 709. (A. P.-C.)

Growth Substance B—Chemistry of. Growth substance B is produced when sucrose is inverted by means of organic or inorganic acids. The active substance has not been purified. Glycolic and pyruvic acids act as growth substances upon *Aspergillus niger* when added together but have little effect when added separately. Ascorbic acid has considerable effect when added along with glycolic and pyruvic acids, but not alone. Glyoxylic acid has strong growth-promoting action when added alone or in combination with other acids. The growth-promoting substances acting upon molds are not destroyed by oxidation with permanganate or peroxide, whereas those

acting upon yeasts are destroyed by such oxidation.—NIELS NIELSON and VAGN HARTELIUS. *Nature*, 138 (1936), 203; through *Chem. Abstr.*, 31 (1937), 1049. (E. V. S.)

Insulin Preparation. An insulin preparation which is less soluble in the blood plasma and tissue fluids than the usual insulin-hydrochloride is prepared by mixing a solution of an insulin salt and a solution of a protamine in such relative quantities that there is obtained at p_H 6–8 and normal temperature, a precipitate of protamine insulinate. Generally, the weight of the protamine is about $^1/_9$–$^1/_{10}$ that of the insulin salt.—NORDISK INSULINLABORATORIUM. Dan. pat. No. 52,310, Oct. 19, 1936; through *Chem. Abstr.*, 31 (1937), 1556. (E. V. S.)

Insulin—Protection of, from Trypsin. Insulin can be protected *in vitro* from the destructive action of trypsin by malachite green and certain other basic dyes. Acid dyes do not have this action, but do interfere with the protective influence of the basic dyes when added to them.—F. LASCH and E. SCHONBRUNNER. *Arch. exptl. Path. Pharmakol.*, 182 (1936), 452; through *Physiol. Abstr.*, 21 (1937), 917. (E. V. S.)

Lecithin and Neutral Fat—Presence of, in Gall Bladder Bile. Investigations in various animal species showed that fat and lecithin are either absent from gall bladder bile or present in only minute quantities.—K. K. JONES and R. O. SHERBERG. *Proc. Soc. Exptl. Biol. Med.*, 35 (1937), 535. (A. E. M.)

Lipids in Tissues—Determination of, Comparison of the Principal Methods of. A study of the relative advantages and drawbacks of the Soxhlet extraction and the Kumagawa-Suto methods, from which it is concluded that the latter is superior to the former and, in spite of a few drawbacks, is quite suitable when a series of determinations are to be carried out.—A. K. PICKAT and O. I. KOURTZINA. *Voprossy Pitania*, 4 (1935), No. 6, 115–121; through *Chimie & Industrie*, 36 (1936), 708. (A. P.-C.)

Male Sex Hormones—Activation of. I. II. It has been observed that testosterone (I) in certain oils and glycerin shows only slight activity. The addition of fatty acids to these solutions restores the activity. The effect of 40 carboxylic acids were studied. In the saturated normal fatty acids series, acids with about 10 carbon atoms showed the least effect and those with about 16 the greatest. Hydroxylated saturated or unsaturated acids were more effective than those without hydroxyl groups. Palmitic acid did not activate *cis*- or *trans*-androsterone or androstanedione. The most pronounced effect was observed in the hormones having hydroxyl group in the 17-*trans*-position in combination with a hydroxyl group or with an α, β-unsaturated keto-group in the 3-position. In the rat test monhydric alcohols also increased the effect of I. Stearyl alcohol was the most effective. Certain wetting agents also showed an activating effect. Acid fractions from testes contained in addition to palmitic acid other more effective activators. Probably the so-called natural activator represents a mixture of acids which differ only quantitatively in regard to their effect. Esters of I with 11 aliphatic acids were tested. The formate, acetate and propionate were the most effective on the capon's comb. Esters of higher acids showed more protracted effects but lost activity rapidly as the chain length was increased. In the rat test the esters of the lower acids were many times as effective as I alone. The duration of the effects was also noted. The activity and duration by this test reached a maximum in the butyrate and isobutyrate and valerate. When the capon and rat tests were considered together the propionate of I showed the most favorable action. The esters of I are relatively more effective on rats than on capons and differ in this way from I and androsterone (II). The effects of the esters of I and II were not increased by the addition of acids when dissolved in fatty oils. The low activity of the acetate of I in 50% glycerol was brought to normal by the addition of ricinoleic acid. The proposal to use rat units as well as capon units in the assay of male hormone preparations is strongly urged.—KARL MIESCHER, ALBERT WETTSTEIN and ERNST TSCHOPP. *Biochem. J.*, 30 (1936), 1970–1990; through *Chem. Abstr.*, 31 (1937), 1867. (E. V. S.)

Metallo-ascorbates—Stereochemical Configuration and Antitumoral Activity of Complex. The antiscorbutic power of ascorbic acid is dependent on its stereochemical configuration since isovitamin C which differs from it only in the position of the hydroxyl on the fifth carbon has only one-twentieth the activity. Ferric complexes prepared from the first oxidation products of both the *d*- and *l*-ascorbic acid showed about the same antineoplasmic action. Thus the influence of the structure of the fifth carbon atom is feeble. The influence on the antineoplasmic action of the fourth carbon atom is being studied.—FERNAND ARLOING, ALBERT MOREL, ANDRE JOSSERAND and LOUIS PERROT. *Compt. rend.*, 203 (1936), 1404. (G. W. H.)

Occupational Intoxication by Benzene—Determination of Sulfates in Urine as a Measure of. Seventy-nine dogs were subjected to a variety of conditions of exposure to benzene vapor in air. Analysis of urine specimens showed that a rapid and marked decrease occurred in the percentage of inorganic sulfates of the total sulfates in the urine. It is believed to be due to the oxidation of benzene to phenol or phenolic derivatives which are conjugated in the liver with sulfate ions to form ethereal sulfates. The change in inorganic sulfates is proportional to the severity of benzene exposure. This procedure may be an invaluable aid in the control and prevention of chronic benzene poisoning.—W. P. YANT, H. H. SCHRENK, P. R. SAYERS, A. A. HORVATH and W. H. REINHART. *J. Ind. Hyg. Toxicol.*, 18 (1936), 69–88; through *Chimie & Industrie*, 36 (1936), 728. (A. P.-C.)

Phenol—Spectrographic Determination of, in Tissues. The tissue is ground with an equal volume of 15% trichloroacetic acid solution and diluted to 10 volumes with water and filtered; the filtrate is extracted with ether, the ether extract is made to 50 cc. and spectrographed with a quartz spectrograph according to Henri's method. The coefficient of molecular extinction for 2807 Å. is 2,400, as for a solution of pure phenol.—G. BARAC and A. L. LAMBRECHTS. *Bull. soc. chim. biol.*, 18 (1936), 239–241; through *Chimie & Industrie*, 36 (1936), 909. (A. P.-C.)

Sterols—Absorption Spectra of, from Various Natural Sources, Particular Reference to Ergosterol and Other Vitamin D Precursors. Certain marine animal sterols, particularly those from lugworms (*Arenicola marina*), sea anemones and oysters, show absorption bands which are identical with those of ergosterols; they appear to contain 5–12% of the absorbing substance. The lugworm sterols exhibit, in addition, maxima at 346, 328 and 316 mμ, closely comparable with those of dehydroergosterol.—A. E. GILLAM and I. M. HEILBRON. *Biochem. J.*, 30 (1936), 1253; through *Physiol. Abstr.*, 21 (1937), 907. (E. V. S.)

Stomach Contents—Chemical and Microscopic Examination of. In order to obtain a sample (B) for testing, the test meal (A) of Ewald and Boas (about 25 Gm.) and two cups of Russian tea (300–500 cc.) may be used. The tea may be replaced by water and sweetened but should not be dispensed with rum or flavored with lemon juice. (A) is administered on an empty stomach and is not removed before 1 hour. The quantity of material obtained is determined in a graduated sedimentation glass so that the "*Schichtung Quotient*" may be determined: Allow to stand for 1 hour and read the volume of sediment which in normal cases is about $^1/_3$ of (A). Lower amounts occur with digestive juice flow and higher amounts with low acidity. Abnormal odor is due to volatile acids (acetic and butyric) due to abnormal fermentations. A green color indicates gall, red-brown, blood. General characteristics are noted. Qualitative tests include (1) reaction to litmus, (2) excess acid indicated with Congo paper, (3) *lactic acid* as indicated by the production of a canary-yellow color with dilute solution of iron sesquichloride, (4) *pepsin:* "Introduce into 2 test-tubes about 5 cc. of the sample (B), add a small piece of egg albumin (C). To one tube add 2–3 drops of 3% hydrochloric acid, allow to stand for 8 hours in an incubator and observe in which tube (C) has been dissolved. If (C) remains undissolved in both tubes *pepsinogen* is absent; if (C) in the tube treated with acid dissolves, pepsinogen is present but free hydrochloric acid is absent. A normal (B) dissolves (C) completely in both tubes in 3–4 hours, (5) *blood* is detected best with benzidine solution (0.1 Gm. in 10 cc. 50% acetic acid) or the guaiac test. Add to about 2 cc. of unfiltered (B) the reagent with thorough shaking 2 cc. 3% hydrogen peroxide. A dark green to blue color is positive." The sensitiveness of the test depends on the concentration of the reagent. The guaiac test is conducted as follows: "Triturate (B) with ether, centrifuge and add to the decanted ether portion 2–3 drops of *freshly* prepared tr. guaiac and about 1 cc. hydrogen peroxide (red-violet to blue color)," (6) *bile pigments:* "Shake 10 cc. of the filtered (B) with an excess of ammonium sulfate, add to the saturated liquid 1–3 cc. acetone and after separation of the two liquids allow to flow down the side of the tube a drop of fuming nitric acid (acetone layer green)." Quantitative determinations are given for (1) *total acidity* which is determined as the amount of 0.1*N* alkali necessary to neutralize 100 cc. of (B) using phenolphthalein as an indicator, (2) *free hydrochloric acid* by the use of 0.5% alcoholic solution of dimethylamidoazobenzene. For samples in which only a small amount of liquid was obtained (1) and (2) may be determined in the same test portion by the method of Topfer, (3) *combined hydrochloric acid* may be determined by using a quantity of filtered (B) with sodium alizarinsulfonate as an indicator. This indicator is sensitive to all acid substances in (B) and the combined acid may be obtained by

subtracting the total acid value from this value, (4) *lactic acid*, (B) must be freed of all volatile acids by prolonged heating, extract with ether, evaporate off the solvent, dissolve the residue in a small amount of water and titrate with 0.1*N* alkali using phenolphthalein as an indicator (1 cc. 0.1*N* alkali = 0.009 Gm. lactic acid), (5) *hydrochloric acid deficit* is defined as the amount of 0.1*N* hydrochloric acid that must be added to the acid-free sample in order to obtain a reaction for the presence of hydrochloric acid. Titrate 10 cc. of the filtered sample with 0.1*N* acid until the liquid is salmon colored to dimethylamidoazobenzene indicator. Microscopic examination of the sediment is discussed.—E. JEKEL. *Pharm. Monatsh.*, 17 (1936), 249–250. (H. M. B.)

Sugar-Containing Liquids—Alcoholic Fermentation of. To obtain a high yield of alcohol, the composition of the solution to be fermented is controlled so that the "specific cellular saturation" of the yeast cannot exceed 10 kilos of yeast having 75% of water to 1,000 L. of sugar solution to be fermented, and fermentation with yeast is initiated and continued until the "specific cellular saturation" mentioned is attained, and it is maintained at this value in subsequent fermentations by removing the whole of the yeast then present in the solution and using this yeast for the fermentation, under like conditions, of a fresh volume of solution similar to the first solution.—FIRMIN BOINOT. U. S. pat. 2,063,223, Dec. 8, 1936. (A. P.-C.)

Theelin and Theelol—Crystalline By-Product Obtained in the Large Scale Extraction of. An alkali-soluble crystalline by-product has been obtained in large scale extraction of human pregnancy urine. The probable formula is $C_{21}H_{22}O_3N_4$. It resists hydrolysis and gives no reaction for proteins, amino acids or purines. Zerewitinoff determinations show the presence of three active hydrogen atoms, one of which is easily ethylated to give a monoethyl, alkali-insoluble derivative. Chromic acid oxidation yields an acid, $C_{18}H_{18}O_7N_2$. Preliminary biological assay shows no hormone activity, although there is a toxicity to mice in doses of 0.00055 Gm./Gm.—A. W. DOX, W. G. BYWATER and F. H. TENDRICK. *J. Biol. Chem.*, 112 (1936), 425; through *Physiol. Abstr.*, 21 (1937), 912. (E. V. S.)

Tubercle Bacilli—Chemistry of the Lipids of. XLII. Studies on Phthioic Acid. The methyl ester of phthioic acid was purified by fractional distillation until the specific optical rotation reached the constant value of +12.2°. Phthioic acid prepared by the saponification of pure ester melted at 20–21°, $[\alpha]_D$ = +12.56, and corresponded to the formula $C_{26}H_{52}O_2$. The acid possesses a branched chain, probably methyl groups in the α position and in the neighborhood of the 11th carbon atom. This purified acid retains its biological activity.—M. A. SPIELMAN and R. J. ANDERSON. *J. Biol. Chem.*, 112 (1935), 759–767; through *Physiol. Abstr.*, 21 (1937), 1003. (E. V. S.)

Vitamin A—Distribution of, between Light Petroleum and Aqueous Methyl Alcohol. With 90% alcohol, the vitamin is almost equally distributed between the two phases; with 70% alcohol the partition ratio is about 8:1 in favor of the light petroleum. At least 7 extractions of a light petroleum solution of vitamin A with an equal volume of 90% of methyl alcohol each time are necessary to extract all the vitamin from the petroleum; with this concentration of alcohol the extraction can be made as effectively from alcohol to petroleum as in the opposite direction. The partition coefficient, which is unaffected by temperature between 10° and 30° C., is altered by the presence of cholesterol.—A. E. GILLAM and B. J. SENIOR. *Biochem. J.*, 30 (1936), 1249-1252; through *Physiol. Abstr.*, 21 (1937), 956. (E. V. S.)

Vitamin A—Quantitative Determination of. Samples of train oil from fish and mammals show a biologic action on rats which is explained by its content of vitamin A, and possibly one more substance, the existnce of which, however, is not yet proved. In determination of vitamin A the best accordance with the biological results is obtained by the method of absorption of ultraviolet light on the unsaponifiable residue, but there are differences that cannot be explained merely as a result of the faults of the method.—T. ROSENDAL. *Nord. Med. Tidskr.*, 11 (1936), 589–601; through *Physiol. Abstr.*, 21 (1937), 957. (E. V. S.)

Vitamin B_1—Determination of, Chemical Method for. In a small test-tube are mixed 6 cc. of Kinnersley and Peters reagent (100 cc. *N* NaOH, 5.76 Gm. $NaHCO_3$, 100 cc. water), 2 cc. of diazotized sulfanilic acid (0.5%), 3 drops 40% formaldehyde and 1 cc. of the extract to be tested. The contents are quickly shaken and allowed to stand for 10 min. in a water-bath at 90–95°. The reading is then taken in a colorimeter. Details are given for preparing the solution to be tested.—V. A. DEVIATNIN. *Compt. rend. acad. sci. U. R. S. S. (N. S.)*, 4 (1936), 67; through *Chem. Abstr.*, 31 (1937), 1063. (E. V. S.)

Vitamin D—Deterioration of, in Aqueous Solution. Oil-water emulsions containing viosterol lose potency even in closed containers, if oxygen was not excluded when the bottles were sealed. Filling in nitrogen atmosphere caused better preservation. Canned milk containing vitamin D does not deteriorate, because it is sealed, while hot, which excludes air almost completely.—DAVID H. SHELLING. *Proc. Soc. Exptl. Biol. Med.*, 35 (1937), 660. (A. E. M.)

Vitamin D—Quantitative Estimation of. Discussion of the use of antimony trichloride in estimating vitamins D_2 and D_3. Tachysterol is the main interfering substance. A table is given showing the quantities of other sterols at which interference is first noted.—H. BROCKMANN and Y. H. CHEN. *Hoppe-Seyl. Z.*, 241 (1936), 129–133; through *Physiol. Abstr.*, 21 (1937), 959. (E. V. S.)

Vitamin K. The authors describe a factor which they call vitamin K. It is found in some organs and in many vegetables. Its action is to maintain the coagulation properties of the blood in hens and perhaps in other birds.—H. DAM and F. SCHÖNHEYDER. *Nord. Med. Tidskr.*, 12 (1936), 1907–105; through *Physiol. Abstr.*, 21 (1937), 960. (E. V. S.)

Vitamins—Identification of, by Molecular Distillation. Vitamins A, D_1 and D_2 were molecularly distilled and the quantities of distillate plotted against temperature. Characteristic curves were obtained, with maxima characteristic of each substance and determinable within ±2°. With the vacuum used, the temperatures found were vitamin A (alcohol) 119, calciferol 144, vitamin D_1 146, D_2 194 and vitamin A (fatty acid esters) 198.—K. HICKMAN. *Nature*, 138 (1936), 881; through *Chem. Abstr.*, 31 (1937), 1063. (E. V. S.)

White Wine—Detection of, in Red Wine. The natural pigment of the wine is selectively adsorbed, eluted and the intensity of the color determined spectrophotometrically, colorimetrically or chromatographically. By comparison with unadulterated wine of the same origin the degree of adulteration can be approximately determined.—H. MOHLER and W. HAMMERLE. *Z. Unters. Lebensm.*, No. 71 (1936), 186; through *J. Soc. Chem. Ind.*, 55 (1935), B., 614. (E. G. V.)

Wines, Brandies and Cordials from Citrus Fruits. Orange and grapefruit wines of pleasant aroma and taste are prepared by adding corn or cane sugar to the juice, inoculating with pure cultures of wine yeast, and fermenting under carefully controlled conditions. Fortified orange and grapefruit wines are made by adding orange or grapefruit spirits to the respective wines to increase the alcoholic content to 18 or 22% by volume. Baking the wine for about 60 days at 52° to 55° C. (125° to 130° F.) gives a product with a sherry-like flavor and color. Orange and grapefruit spirits and brandy are obtained by distilling fermented orange and grapefruit juices. The brandy is subsequently aged in plain oak barrels. Citrus cordials are made by the addition of citrus oils and sugar syrup to citrus spirits.—H. W. VON LOESECKE, H. H. MOTTERN and G. N. PULLEY. *Ind. Eng. Chem.*, 28 (1936), 1224. (E. G. V.)

Yeast—Effect of Composition of Medium upon Growth of, in Presence of Bios Preparations. I. Effect of Magnesium Salts. A study of the effect of magnesium salts in bios preparations on the growth of yeast was made. For the strain of yeast employed, the presence of magnesium sulfate markedly increases the growth of the yeast in the presence of Bios II preparation. Magnesium chloride or nitrate does not show the above phenomenon while potassium or ammonium sulfate gives some increase in activity. Combinations of magnesium chloride or nitrate with potassium or ammonium sulfate give about the same increase in growth in the presence of the bios preparation as does magnesium sulfate.—ELLIS I. FULMER, L. A. UNDERKOFLER and JAMES B. LESH. *J. Am. Chem. Soc.*, 58 (1936), 1356. (E. B. S.)

Zinc—Determination of, in Biological Material. The method described for the microestimation of zinc in biological material is a modification of the one proposed by Lang in which zinc in aqueous solution is estimated by titrating the iodine liberated by treating a slightly acidified zinc solution with an excess of potassium ferricyanide and potassium iodide. A trichloroacetic acid extract of the tissue is used. The highest and lowest amounts of zinc found in fresh pancreas of certain animals were as follows: beef 32.4, 43.2; calf 33.3, 43.2; sheep 19.04, 25; hog 28.2, 44.4 mg. per Kg. Commercial insulin contains small amounts of zinc (0.043 to 0.094 mg. per 1,000 units) but the values are not constant and vary considerably from batch to batch.—MELVILLE SAHYUM and ROLLAND F. FELDKAMP. *J. Biol Chem.*, 116 (1936), 555, through *Chem. Abstr.*, 31 (1937), 1059. (E. V. S.)

ANALYTICAL

Acetate—Systematic Detection of. The solution used throughout the work was 2*M* cupric chloride in 2*M* sodium chloride. This reagent was found to give excellent results after standing for six months, thus showing its stability. The method used is as follows: To 30 cc. 0.5*M* silver nitrate add 3 cc. of the prepared solution drop by drop with vigorous stirring; allow the precipitate to settle and filter, wash the beaker and precipitate once with water and combine the wash-water with the filtrate. Add, slowly and with constant stirring, 5 cc. *M* calcium chloride, filter, wash the precipitate once with water, adding the washings to the filtrate. Render the filtrate alkaline with a drop of 6*M* alkali if necessary, evaporate to 5 cc. and filter into a test-tube. To the filtrate add 1 drop of phenolphthalein solution and carefully add dropwise and with constant stirring, 0.2*M* hydrochloric acid until the red color is just discharged. Add 1 cc. of the copper reagent, shake, heat to boiling and cool. A precipitate shows the presence of acetate. On settling, the precipitate has a grassy-green color.—L. J. CURTMAN and A. A. POLACHEK, *Rec. trav. chim.*, 55 (1936), 153. (A. C. DeD.)

Acetyl Group—Determination of. The authors utilize the reaction of Krüger and Tschirch and Damour (*Pharm. Weekblad*, 68 (1931), 33) for the detection of the acetyl group with the lanthanium reagent. The determination was used with heroin, aconitine, aspirin, tannigen, antifebrin, exalgine and phenacetin. 0.01 to 0.02 Gm. of the material is placed in a distillation flask and mixed with 2 to 3 cc. of 50% sulfuric acid after which half of the liquid is distilled off; 4 to 5 drops of a 5% solution of lanthanium acetate are added, after which $^1/_{50}$ *N* iodine until a light red color is added. This is then followed by *N* ammonia until the appearance of a blue to violet color. With aspirin and tannigen, a previous saponification by boiling with 2 to 3 cc. of a 30% solution of iron chloride must take place.—A. D. DEL BOCA and A. REMEZZANO. *Ann. Farmac. y Bioquim.* (1936), 111; through *Pharm. Weekblad*, 73 (1936), 1226. (E. H. W.)

Acrolein—Microdetermination of. Acrolein and iodine react to give iodoform and the excess of iodine is titrated. Oxidation with potassium permanganate can also be used for this determination.—I. M. KORENMANN. *J. Prikl. Khim.*, 8 (1935), 1476–1477; through *Chimie & Industrie*, 36 (1936), 907. (A. P.-C.)

Akkertjes—Investigation of, and the Determination of Methylacetanilid. The proprietary known as Akkertjes, Akker-Akker or Akker-cachets, was found to contain (analysis of 1933) 75% of acetylsalicylic acid, 17.5% phenacetin and 7.5% caffeine. Samples recently obtained, however, showed indications of the presence of another substance and investigation finally indicated this to be methylacetanilid (methylantifebrin, exalgine). Methods are described for the qualitative and quantitative examination of this preparation. The quantitative methods described include the determinations of acetylsalicylic acid, methylacetanilid, caffeine and phenacetin. The description of the method for the determination of methylacetanilid includes a figure. Based upon the results found the composition of this preparation appears to be as follows: Acetylsalicylic acid 400 mg., phenacetin 100 mg., caffeine 30 mg. and methylacetanilid 45 mg.—H. J. VAN GIFFEN. *Pharm. Weekblad*, 73 (1936), 1685. (E. H. W.)

Allyl Mustard Oil—Volumetric Determination of, in Spirit of Sinapis. The following procedure using the apparatus of Kaiser is offered: For salting out use ammonium sulfate solution (215 Gm. in 500 cc.), allow to separate, lower the leveling vessel and then allow the lower aqueous liquid to flow almost completely from the bulb of the reservoir; then close the cock and introduce with the help of a glass tube drawn out to a point for 5–10 mm. a slow stream of ammonia gas into the deepest part of the bulb. In order that the volatile oil does not rise in the evolution flask after releasing the pressure, the introduction tube is provided with a bulb about 10 cm. out from the tip. The mustard oil disappears on gentle heating and the thiosinamine separates as small crystals. After the reaction is completed, remove the gas tube, rinse with a little water, allow the ammonium sulfate solution to enter the bulb again and shake gently whereby the thiosinamine dissolves completely. Introduce the liquid into the graduated tube and read after a time or until convinced that the original mustard oil layer has completely disappeared. Satisfactory results were obtained with the spirit as well as with samples containing 1% phthalic acid ester and 1% oil of turpentine, respectively.—C. A. ROJAHN and A. STEICHELE. *Apoth. Ztg.*, 51 (1936), 1751–1752. (H. M. B.)

Amytal, Barbital, Phenobarbital and Ethylhydrocupreine—Micro Identification of. The following microchemical methods were adopted as tentative: Amytal dissolved in 3% ammo-

nium hydroxide (1:50) treated with acetic acid (6 cc. in 100 cc. water) gives long branching needles with some hexagonal plates in groups whereas rectangular plates are obtained if the concentration is 1:25. About 1 mg. of barbital (powder) treated with ammoniacal silver nitrate (5 cc. of 2% silver nitrate + 5 cc. 10% ammonium hydroxide) produces twinned crystals and larger tufts. Barbital in 3% ammonium hydroxide (1:50) treated with acetic acid (6 cc. in 100 cc. of water) gives dark burrs. Phenobarbital (1 mg. powder) treated with ammoniacal nickel acetate (1 volume of 5% nickel acetate + 1 volume of 10% ammonium hydroxide, using clear supernatant liquid) gives single rectangular crystals. Ethylhydrocupreine in 0.1*N* hydrochloric acid (1:100) treated with potassium thiocyanate (5 Gm. in 100 cc. of water) gives long straight needles.—*J. Assoc. Official Agr. Chem.*, 20 (1937), 80. (G. S. W.)

Apomorphine, Hydrastine and Theophylline—Microchemical Identification of. The following microchemical tests were adopted as tentative: Apomorphine (1:50), treated with potassium iodide (5 Gm. in 100 cc. water) gives small crystals with sharp clear-cut angles resembling a diamond. Hydrastine (1:100) gives spheres of radiating crystals when treated with one drop of hydrochloric acid (5%) and potassium ferrocyanide (5 Gm. in 100 cc. water, freshly prepared). The slide must be shaken and excess of reagent avoided. Theophylline (1:200) treated with ammoniacal silver nitrate (2 Gm. of silver nitrate dissolved in 100 cc. of 5% ammonium hydroxide) gives a gelatinous mass changing to dense spheres of dark radiating needles. Theophylline (1:150) treated with mercuric chloride (5 Gm. in 100 cc. water) gives spheres and double tufts of dense radiating needles.—*J. Assoc. Official Agr. Chem.*, 20 (1937), 79. (G. S. W.)

Arsenic—Detection of, in the Presence of Antimony. If tin is substituted for zinc in the Gutzeit test, there is no formation of hydrogen antimonide. To 0.5 cc. of the solution to be tested add an equal volume of 6*N* hydrochloric acid and a few pieces of tin foil. Heat with a small flame, avoiding strong boiling, and pass the evolved gases through a tube containing mercuric chloride paper.—N. A. TANANIEV and V. D. PONOMARIV. *J. Prikl. Khim.*, 8 (1935), 1078–1081; through *Chimie & Industrie*, 36 (1936), 702. (A. P.-C.)

Bismuth—Detection of. Bismuth can be detected in 1 to 15 min. in solution or in 5 to 15 min. in minerals as the yellow iodide complex, as bismuth oxychloride or by reduction of bismuth by alkaline stannous chloride. The respective sensitivities are 0.01, 0.04 and 0.002 mg. of bismuth.—A. N. TANANAIEV and A. V. TANANAIEVA. *J. Prikl. Khim.*, 8 (1935), 1457; through *Chimie & Industrie*, 36 (1936), 906–907. (A. P.-C.)

Boric Acid—Direct Microtitration of, in Mineral Waters. The following conclusions are given: The minimum amount of boric acid (0.1–1 mg.) can be correctly titrated using the closed apparatus of Lieb and Krainick (*Mikrochem.*, 9 (1931), 373), the mean error was 0.7% and the limit of errors 2%. Sodium chloride or bicarbonate have no influence on the titration. Iron and aluminum in concentrations greater than 5 mg. per L. give a positive error; in this case the boric acid ought to be titered after separation by distillation as a boromethylic ester. For the determination, 0.12 mg. boric acid (= 20 gamma boron) is necessary which is equivalent to approximately 25 mg. boric acid per liter of mineral water.—C. SUMULEANU and M. BOTEZATU. *Mikrochem.*, 21 (1936), 75–81. (E. V. S.)

Bromides—Determination of, in Presence of Chlorides by Potentiometric Titration. Bromides can be determined potentiometrically by oxidation to bromine with hypochlorous acid prepared by saturating water with chlorine gas and neutralizing with potassium hydroxide, the solution being acidified just before use. Since the concentration of potassium chloride must be constant to give reproducible results, a saturated solution is maintained by the presence of solid potassium chloride during the titration.—S. K. TCHIRKOV. *J. Prikl. Khim.*, 8 (1935), 1498–1507; through *Chimie & Industrie*, 36 (1936), 907. (A. P.-C.)

Butyl and Allyl Alcohols—Determination of, in Low Concentrations. Place 10 cc. of an aqueous solution of the alcohol into a 200- to 250-cc. glass-stoppered flask; add 7 cc. of 0.05*N* permanganate and 10 cc. of 5*N* sulfuric acid; allow the solution to stand for 35 min. in the dark and then add 10 cc. of 0.05*N* sodium oxalate, heat the solution on the water-bath to 80° to 90° C. and titrate with 0.02*N* potassium permanganate. The method is not applicable in the presence of ethyl alcohol.—M. V. ALEXÉIEVA. *J. Obchtch. Khim.*, 5 (1935), 1324–1330; through *Chimie & Industrie*, 36 (1936), 906. (A. P.-C.)

Calcium Gluconate—Assay of. A description of the chief volumetric (direct titration with potassium permanganate; igniting, dissolving in standard hydrochloric acid and titrating

the excess iodometrically) and gravimetric (ignition to calcium oxide; carbonizing and converting to calcium sulfate) methods.—V. LUCAS. *Pub. Pharm. (São Paulo)*, 1 (1936), No. 3, 5–8; through *Chimie & Industrie*, 36 (1936), 966. (A. P.-C.)

Calcium Gluconate—Purity of, Test for. The properties of calcium gluconate (A) are given. Identity tests include the detection of calcium, the gluconic acid by the method of Fischer and Passmore (*Ber.*, 22 (1889), 2728) and $[\alpha]_D^{20} = +6.5°$ (10% soln.). Tests for 13 impurities which might occur in (A) are described. Quantitative tests include (1) *determination of moisture* which should not exceed 0.1% and (2) *calcium:* Incinerate carefully in a tall crucible 0.1 Gm. of (A) or the contents of one ampul containing a solution of (A), moisten the residue with dilute sulfuric acid, heat for a time over a water-bath, then over a free flame until fuming ceases and finally ignite for a short time the calcium sulfate formed. Cool and weigh.—SIEGWART HERMANN and PAUL NEUSCHUL. *Chem. Ztg.*, 60 (1937), 1036–1037. (H. M. B.)

Calcium Lactophosphate. The authors analyzed eight commercial samples of calcium lactophosphate and found them to consist of from 80 to 90% of calcium lactate. The balance consisted of an excess of lactic acid and a small quantity of phosphate (1.6–2.0% P_2O_5). The solution usually used for the preparation of syrup of calcium lactophosphate (calcium carbonate, lactic acid and phosphoric acid) is much richer in phosphate content than a solution of the salt of the same concentration. The authors describe several methods for the preparation of an easily soluble material having about the same composition as the commercial products.—K. DIJKSTRA and D. VAN OS. *Pharm. Weekblad*, 73 (1936), 1570. (E. H. W.)

Capsulæ Antineuralgicæ—Examination of. According to the Codex Medicamentorum Nederlandicus, these capsules contain phenacetin 300 mg., caffeine 100 mg., dimethylaminopyrine 150 mg., quinine sulfate 135 mg. and magnesium oxide 40 mg. per tablet. The author describes a method of separation based upon the solubility of the various items in chloroform. Chloroform dissolves phenacetin, caffeine, dimethylaminopyrine and a small portion of the quinine. The greater portion of the quinine and the magnesium oxide remain undissolved. By treating the residue from the first chloroformic extract with *N* sulfuric acid, the quinine and the dimethylaminopyrine unite with the acid to form a compound insoluble in chloroform. By shaking with chloroform the phenacetin and the caffeine may be separated. Quinine sulfate is determined in the aqueous layer in the separator and in the residue remaining in the flask after the first extraction with chloroform. Dimethylaminopyrine is determined in the separator residue. Magnesium oxide is determined in the original residue. Detailed procedures are described for each determination and a table of results is given. The analysis of a similar preparation (a proprietary by Dr. Faivre) is also given.—H. J. VAN GIFFEN. *Pharm. Weekblad*, 73 (1936), 1549. (E. H. W.)

Copper—Detection and Determination of, in Organic Material by Benzoin Oxime. Ash the tissue, dissolve the ash in dilute nitric acid and precipitate iron with excess of ammonia; concentrate the filtrate to a small volume, and add a 50% solution of benzoin oxime (cupron) to precipitate the copper; wash the precipitate with water and then with 50% alcohol. The green precipitate, dried at 110° C., contains 22.02% copper. The precipitate is soluble in chloroform; hence as little as 1 part of copper in 330,000 parts of solution can be detected by the green color imparted to the chloroform layer after adding the reagent and shaking with a little chloroform. The method is not suitable for quantitative colorimetric determination.—Z. GRUZEWSKA and G. ROUSSEL. *Compt. rend. soc. biol.*, 121 (1936), 289–291; through *Chimie & Industrie*, 36 (1936), 708. (A. P.-C.)

Chloroform—Test for the Purity of. The author briefly describes a test for phosgene in chloroform. To 1 cc. of a 1% acetone solution of both *p*-dimethylaminobenzaldehyde and diphenylamine is added the chloroform. Within 15 min. a deep yellow color develops if the chloroform contains phosgene 1 part in 10,000 and a light yellow color after 30 min. with 1 part phosgene in 20,000.—L. ROSENTHALER. *Pharm. Acta Helv.*, 12 (1937), 6. (M. F. W. D.)

Cinchophen—Determination of, in the Presence of Sodium Bicarbonate. A tentative method was adopted. A sample equivalent to 0.3–0.4 Gm. of cinchophen is dissolved in a separator with 10 cc. of 4% sodium hydroxide and neutralized with 10% hydrochloric acid with 2 cc. in excess. After 5 extractions with 25-cc. portions of the solvent (50 cc. alcohol + 50 cc. ether + 100 cc. chloroform) the extracts are washed in a separator with 25 cc. of water, and filtered into a beaker. The wash water is extracted with the solvent and the filtered extract combined with the

previous ones. Test is made for complete extraction. The solvent is evaporated to dryness (steam-bath). The residue is dissolved in 60 cc. of neutral alcohol (95% alcohol neutralized to phenolphthalein with 0.1*N* sodium hydroxide) and titrated with 0.1*N* sodium hydroxide. 1 cc. of 0.1*N* sodium hydroxide = 0.02491 Gm. of cinchophen.—*J. Assoc. Official Agr. Chem.*, 20 (1937), 83. (G. S. W.)

Dinitrophenol—Determination of. A tentative method was adopted. A sample equivalent to 0.18–0.20 Gm. of 2,4-dinitrophenol is dissolved in 25 cc. of water using sufficient 2% sodium hydroxide to insure solution. The solution is transferred to a 500-cc. glass-stoppered flask, diluted with water to 100 cc. and 25 cc. of 0.1*N* bromide-bromate solution (see *Methods of Analysis, A. O. A. C.* (1935), 551, 26 (c)) and 10 cc. of hydrochloric acid (35–37%) are added. After stoppering the flask and shaking, 5 cc. of potassium iodide (20 Gm. in 100 cc. of water) are added, the flask stoppered, shaken 1 minute and titrated with 0.1*N* sodium thiosulfate using starch indicator near the end-point. 1 cc. of 0.1*N* bromide-bromate solution = 0.0092 Gm. of 2,4-dinitrophenol, 0.0103 Gm. of sodium dinitrophenol, 0.0112 Gm. of sodium dinitrophenol plus water.—*J. Assoc. Official Agr. Chem.*, 20 (1937), 82. (G. S. W.)

Ephedra Alkaloids—Detection of Small Quantities of. A method is given for the detection of very small quantities of ephedra alkaloids in the drug and is dependent on the use of a simple type of extraction apparatus with subsequent test for the extracted alkaloid in a strongly alkaline solution with copper sulfate. A drug sample containing 0.37% of alkaloids easily gave a positive test using only 0.2 gram of the air-dried drug.—J. W. KELLY. *Am. J. Pharm.*, 109 (1937), 36. (R. R. F.)

Ephedrine and Ephetonine—Microchemical Identification of. The hydrochloric acid salt of natural ephedrine and the hydrochloride of the racemic synthetic product are at present found in so many specialities under a variety of names that a rapid test for their identity is desirable. As a test to distinguish between the two, the potassium oxalate reaction gives good results. With both the levorotatory as well as the racemic ephedrine this reagent gives beautiful crystalline precipitates which show a difference in habit. The ephedrine hydrochloride crystallizes in bundles of needles and prisms tending toward fan-shaped groups. Ephetonine crystallizes in beautiful thin diamond-shaped crystals with other crystals forming from them. To carry out the reaction a small quantity of ephedrine hydrochloride or ephetonine is dissolved in a drop of water and a bit of solid potassium oxalate is added at the edge of the drop. The precipitate is formed at once. Another reaction that may be employed involves the use of sodium vanadinate. The vanadinate is dissolved in a drop of water as is also the ephedrine (or ephetonine) and the two drops mixed. The mixture is then seeded with a crystal of ephedrine (or ephetonine). With ephedrine there is a fine precipitate of rosettes resembling the calcium oxalate rosettes in rhubarb and with ephetonine the crystals are spool-shaped often growing together or in conglomerations.—G. A. W. J. O. E. PARIS. *Pharm. Weekblad*, 73 (1936), 1526. (E. H. W.)

Ephedrine—Functional Reactions for, and Its Determination. A new reaction involving the —CHOHCH= group of ephedrine is the quantitative formation of iodoform with sodium hydroxide and iodine-potassium iodide solution. One molecule of ephedrine is equivalent to 8 atoms of iodine. To determine ephedrine, its hydrochloride or ephetonine by this method, add to 10 cc. of 0.1% ephedrine solution 3 cc. of 30% sodium hydroxide and 30 cc. of 0.1*N* iodine solution, warm for 30 min. to 50° C., cool, add 60 drops of concentrated hydrochloric acid and titrate with 0.1*N* sodium thiosulfate (1 cc. 0.1*N* iodine = 0.0020625 Gm. of ephedrine). Among other qualitative functional reactions of ephedrine are formations of benzyl alcohol by oxidation with potassium permanganate in sodium hydroxide solution; of benzaldehyde by distilling ephedrine with potassium permanganate; of the nitroso compound of ephedrine with sodium nitrite and a drop of hydrochloric acid; after extraction with ether Liebermann's test is applied.—J. A. SANCHEZ. *J. pharm. chim.*, 22 (1935), 489–496; through *Chimie & Industrie*, 36 (1936), 778. (A. P. -C.)

Ethyl Alcohol—Determination of, by Capillary Rise Method. The usual methods for the quantitative estimation of ethyl alcohol in aqueous solutions involve the determination of the specific gravity or refractive index of the solution. It occurred to the author that the analytical procedure and apparatus could be simplified if the combined variation of surface tension and density, as observed by a capillary rise measurement, was used as the basis for analysis. Accordingly, the surface tensions of a number of hydroalcoholic solutions were determined along with the tem-

perature coefficients of the same solutions so that measurements at any concentration of alcohol and at any temperature could be made. Procedure is given in detail for the selection and standardization of a capillary tube and the method of use. In repeated experiments with ethyl alcohol solutions of concentrations between 0 and 15%, the concentration of alcohol has been determined with an average error of 0.05%.—FLOYD TODD. *Am. J. Pharm.*, 108 (1936), 488. (R. R. F.)

Glycerol-Methanol-Water—Freezing Points of the Ternary System. Freezing point-composition data is given for the system.—H. B. FELDMAN and W. G. DAHLSTROM, JR. *Ind. Eng. Chem.*, 28 (1936), 1316. (E. G. V.)

Hexylresorcinol—Determination of. The following method for determination of hexylresorcinol was adopted as tentative: Standard solutions are prepared as follows: 30 cc. of a bromide-bromate solution (2.783 Gm. of recrystallized potassium bromate and 12.5 Gm. of potassium bromide dissolved in water and made up to a liter) are put in a 150-cc. volumetric flask, 10 cc. of purified methanol (sufficient bromine vapor is added to methanol to give a bright yellow color, heated to boiling 5 minutes, cooled and decolorized by addition of sodium bisulfite drop by drop) added and 5 cc. of hydrochloric acid. The flask and contents are cooled to room temperature immediately with running water and shaken for 5 minutes. Five cc. of potassium iodide (20 Gm. of potassium iodide in water made up to 100 cc.) are added and the liberated iodine, after shaking, is titrated with sodium thiosulfate (25 Gm. of sodium thiosulfate pentahydrate and 0.2 Gm. of sodium carbonate monohydrate made up to 1 liter with water). The solutions are 0.1*N*. 0.07–0.09 Gm. of sample in a 150-cc. glass-stoppered volumetric flask is dissolved in 10 cc. of methanol and 30 cc. of the bromide-bromate solution added. The stopper is moistened, 5 cc. of hydrochloric acid added, the flask stoppered, cooled and shaken as before for 5 minutes. Five cc. of potassium iodide solution are added, the flask shaken, the stopper washed with water, 1 cc. of chloroform added and the contents titrated with the standard thiosulfate solution. Near the end-point the flask is shaken vigorously to remove halogen from the chloroform. Starch is used as an indicator. 1 cc. of 0.1*N* bromide-bromate solution = 0.00488 Gm. of hexylresorcinol.—*J. Assoc. Official Agr. Chem.*, 20 (1937), 81. (G. S. W.)

Hypophosphites—Oxidimetric Determination of. In the direct titration of hypophosphites with potassium permanganate, the end-point is obscured by separation of oxides of manganese. This can be avoided by adding a slight excess of permanganate, then excess of oxalic acid to redissolve the separated manganese oxides, and titrating back with permanganate.—L. MARTINI. *Ann. chim. applicata*, 25 (1935), 525–528; through *Chimie & Industrie*, 36 (1936), 703. (A. P.-C.)

Iodide Determination—Richard Method of, in Tincture of Iodine and in Sodium and Potassium Iodide. Deviations observed in the iodide determination by the method of Richard in tincture of iodine prompted the critical examination of the chemistry of this titration and the factors affecting it as well as the influence of the presence of sodium tetrathionate, all of which are discussed at length. The following conclusions are drawn partly from direct observations and partly from indirect observation: (1) 30 cc. of 5% solution of sodium phosphate ($Na_2HPO_4.2H_2O$) must be added in the iodide determination on alkali iodides and tincture of iodine; (2) 10 minutes must elapse in place of 3 to 5 minutes in the iodide determination on tincture of iodine and after obtusion 0.5 Gm. of potassium must be added.—P. KARSTEN. *Pharm. Weekblad*, 73 (1936),1658. (E. H. W.)

Iron—Detection of Traces of, in Mercury Salts. Add 0.7 to 1.6 Gm. of ammonium thiocyanate to a solution of mercury salt (0.1 to 0.3 Gm. mercury), followed by 0.3 Gm. of zinc sulfate. A pink precipitate is formed in the presence of iron. The test will detect 0.0002% of iron in mercury salts.—L. KULBERG. *J. Prikl. Khim.*, 8 (1935), 1090–1091; through *Chimie & Industrie*, 36 (1936), 702. (A. P.-C.)

Iron—Determination of Bi- and Tri-valent, of Extractum Malatis Ferri. Dissolve 2 Gm. of the preparation in a mixture of 20 cc. water and 10 cc. 10% hydrochloric acid and add 0.5 Gm. of potassium thiocyanate + 20 cc. ether. Titrate ferric ions with 0.1*N* titanium chloride until the pink color of the ether phase just disappears. Add bromine in excess, remove the surplus by adding 5% phenol solution and determine the total iron content after 10 min. by further addition of 0.5 Gm. potassium thiocyanate and titration with titanium chloride.—LÁSZLÓ SZEBELLÉDY.

Magyar Gyógyszerésztud. Társaság Értesitője, 12 (1936), 417–419; through *Chem. Abstr.*, 31 (1937), 1159. (E. V. S.)

Iron—New Colorimetric Determination of, with the Aid of Pyrogallol. Slightly acidify a solution of iron with pure sulfuric acid and dilute to a point where a sample of the solution will give with the reagent (5 Gm. pyrogallol in 100 cc. of saturated sodium sulfite solution) approximately the same intensity of coloration as the standard solution. Withdraw 5 cc. of the solution, add 85 cc. of water and then the reagent dropwise to a constant color and compare with the standard solution. A standard solution containing 0.0025 Gm. of iron per cc. is prepared from 0.1244 Gm. of ferrous sulfate crystals as above and diluted to 1 L. Metals capable of giving colored solutions, such as copper, nickel, cobalt and chromium, must be removed. The sensitiveness of the method is 1 γ of iron.—A. P. PALKINE. *Zav. Lab.*, 4 (1935), 1106; through *Chimie & Industrie*, 36 (1936), 904. (A. P.-C.)

Iron Oxide—Determination of, Comparative Study of. A comparative study of (*a*) reduction with liquid amalgams; (*b*) reduction with titanium trichloride; (*c*) iodometric determination; and (*d*) colorimetric determination. While all four methods can give perfectly satisfactory results, the zinc amalgam reduction method is preferred to the others.—A. F. FIOLETOVA and S. KHAIKINA. *J. Prikl. Khim.*, 8 (1935), 1467–1469; through *Chimie & Industrie*, 36 (1936), 907. (A. P.-C.)

Lead Iodide—Analysis of Official. Two methods are described, which are essentially as follows: (1) Dissolve the lead iodide in dilute caustic soda solution free from chlorine, bromine and iodine; precipitate the lead by a strip of zinc, decant the iodine solution, wash the lead, dissolve it in nitric acid and determine the lead gravimetrically as sulfate. To the iodine solution add 10% silver nitrate solution and concentrated nitric acid, and determine the precipitated silver iodide by weight or determine iodine with decinormal silver nitrate by the Charpentier-Volhard method. (2) Eliminate iodine by the combined action of nitric acid and heat in the presence of sulfuric acid; this converts lead into the sulfate. To determine iodine, dissolve another sample in caustic soda, then add 10% silver nitrate solution, acidify with nitric acid and determine iodine gravimetrically as silver iodide.—M. FRANÇOIS and LAURE SÉGUIN. *J. pharm. chim.*, 23 (1936), 489–494; through *Chimie & Industrie*, 36 (1936), 776–777. (A. P.-C.)

Lead—Iodometric Microanalysis of. To 10 cc. of a lead nitrate solution add 5 cc. of freshly prepared 10% sodium bisulfite and centrifuge for 10 min. Wash the lead sulfite precipitate by decanting and centrifuging with water until all the sodium bisulfite is removed. Dissolve the lead sulfite in 0.5 to 2 cc. of twice normal caustic soda, add 0.001*N* or 0.01*N* iodine solution (depending on the amount of lead sulfite), acidify with 20% sulfuric acid and titrate the excess of iodine with sodium thiosulfate. Calculate the lead from the actual amount of iodine consumed in the oxidation of sulfite to sulfate.—M. G. GAPTCHENKO. *Zav. Lab.*, 4 (1935), 1014–1016; through *Chimie & Industrie*, 36 (1936), 904. (A. P.-C.)

Manganese—Improvement of the Alkaline Hypochlorite Reaction for Conversion of, to Permanganate. Application to the Analysis of Natural Waters. Place a 10-cc. sample in a Pyrex test-tube, add 3 drops of 1% crystalline copper sulfate solution and 1 to 5 drops, as required of commercial Javel water (about 10 chlorometric degrees). Shake, heat to boiling and continue for a minute with constant shaking. Cool in cold water, then add 1 or 2 drops of sulfuric acid (1 in 10) and shake. The liquid becomes clear and shows the rose tint and characteristic spectrum. With sea water or potable waters use 1 drop of Javel water. If organic matter is present to an appreciable amount 2, 3 or 4 drops of Javel water should be used. *Identification of Manganese in Any Manganiferous Product.*—Place 2 mg. or less of sample in a porcelain dish having a handle and add 5 or 6 drops of pure hydrochloric acid. Evaporate until free hydrochloric acid has been removed (almost to dryness). Dilute with 20 cc. of water, test one-half of the solution as above using 5 drops of Javel water. To the resulting solution (showing the spectrum for permanganate ion) add several drops of alcohol and transfer one-half the contents into another tube. To one portion add 2 drops of sodium hydroxide solution and shake. The color changes slowly through violet, bluish then green. To the other portion add 5 or 6 drops of sulfuric acid (1 in 10) and heat to boiling. The rose color is changed to brownish yellow and finally the liquid is decolorized.—GEORGES DENIGÈS. *Bull. soc. pharm. Bordeaux*, 74 (1936), 185–192. (S. W. G.)