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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

CONTENTS

BACTERIOLOGY (*Continued*)

Sterile Filtration—Apparatus for. A device for sterile filtration and sterile filling of bottles is described. This consists of a Jena glass filter with long outlet tube, fitted by a rubber stopper to a vertical metal tube with side neck leading to a 3-way valve. One outlet of the valve consists of a vertical metal tube which is an air-filter (packed), and which is fitted with a support clamp in order to fasten the entire device to a ring stand; and also with a movable clamp platform to support the bottle to be filled under the tip of the Jena filter. The outside of the vertical tube supporting the Jena filter bears a large-holed rubber stopper arranged so that when suction is applied the bottle is sealed to the rubber stopper at the shoulder and the neck of the bottle enters the opening far enough to admit the glass outlet tube of the Jena filter. The other airway of the metal valve leads *via* a metal side tube to a suction flask connected to the suction pump (this flask serves as a vacuum reservoir). In operation, after all parts have been sterilized and the filter filled, the bottle is held up below the level where it is to fit and the valve opened to suck and seal it into place. Then the platform is moved up under the bottle and suction filtration continued until the bottle is filled. The valve is now turned to admit filtered air and release the bottle. Another bottle is placed in position and the operation repeated. An illustration and a cross section diagram show the device.—S. KJELLMARK. *Farm. Revy*, 38 (1939) 685. (C. S. L.)

Streptococcus Antigen. An antigen that is specific in the treatment of so-called trichomonas vaginalis vaginitis comprises a vaccine consisting substantially of heat-killed *Streptococcus subacidus*. —GEO. F. HIBBERT, assignor to ELI LILLY AND CO. U. S. pat. 2,156,240, April 25, 1939. (A. P.-C.)

Sulfanilamide and Sulfapyridine in the Treatment of Experimental B. Friedlænder Infections in Mice. Sulfanilamide given by subcutaneous or intra-abdominal injection prolonged life in the infected mice moderately and effected cure in a few. Sulfapyridine was somewhat more effective.—John A. KOLMER and ANNA M. RULE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 305. (A. E. M.)

Sulfanilamide and Sulfapyridine in the Treatment of Experimental Escherichia Coli Infection in Mice. Both drugs prolonged the lives of the infected animals to some extent but no animal survived.—JOHN A. KOLMER and ANNA M. RULE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 307. (A. E. M.)

Sulfanilamide Derivatives of Heterocyclic Amines —Chemotherapeutic Evaluation of. Experiments on mice infected with streptococci and type II pneumococci showed that 2,6-diamino-3-*p*-sulfonamidophenylazopyridine and 2-N^4-acetylsulfanilamido-6-aminopyridine are of weak action; 2-sulfanilamido-6-aminopyridine, 2-sulfanilamidothiazole and 2-sulfanilamido-4-methylthiazole were about of equal chemotherapeutic potency as sulfanilamide but slightly inferior to sulfapyridine.—FRANK B. COOPER, PAUL GROSS and MARION LEWIS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 421. (A. E. M.)

Sulfapyridine. Sulfapyridine (Dagenan, M. & B. 693) was found to be superior to sulfanilamide and to hydroxy-ethyl-apocupreine dihydrochloride in experimental Type I pneumococcal infections in mice. It was at least as active as sulfanilamide in experimental hemolytic streptococcal infections in mice. Fifty cases of pneumonia were treated by the author and his colleagues with sulfapyridine with a mortality rate of 6%, as compared with mortality rates of 23% in a control series of thirty cases and 12% in a series of fifty cases treated with specific antipneumococcal serum. Serious toxic manifestations (granulocytopenia) were encountered in one case. Meakins and Hanson report a mortality of 3% in thirty cases of pneumonia which they treated with sulfapyridine.—D. GRAHAM, W. P. WARNER, J. A. DAUPHINEE and R. C. DICKSON. *Can. Med. Assoc. J.*, 40 (1939), 325; through *Brit. Med. J.*, 4096 (1939), 98A. (W. H. H.)

Sulfapyridine—Effect of, in Pneumococcus Type I Infections in Rabbits. A blood level of 7 to 10 mg. total sulfapyridine is effective in controling bacteriemia with type I pneumococcus in 66.6% of treated rabbits. In animals treated with sulfapyridine the local skin lesions are usually less extensive and the temperatures are 1 to 2 degrees lower than in the controls.—W. PAUL HAVENS, L. P. HANSEN and CECILIA G. KRAMER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 408. (A. E. M.)

Sulfapyridine—Effect of, on Brucella Abortus in Vivo and in Vitro. Oral application in large doses had little, if any, effect on the course of *Brucella* infection.—E. E. HAMANN and I. F. HUDDLESON. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 555. (A. E. M.)

Sulfapyridine, Sulfanilamide and Prontosil Rubrum—Bacteriostatic Effect of, in Vitro in Mycobacteria. Sulfapyridine and prontosil rubrum possess more potent antimycobacterial properties *in vitro* than sulfanilamide.—KONRAD E. BIRKHAUG. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 275. (A. E. M.)

Sulfathiazole and Sulfapyridine—Therapeutic Effect of. When the two substances are administered at a dosage of 1% of the diet, the therapeutic effect is approximately the same in streptococcus infection of mice. They are equally effective in lymphogranuloma venereum but without effect on the virus swine-influenza or herpes simplex. In view of the difference in toxicity, sulfathiazole seems to be the more desirable therapeutic agent.—C. M. MCKEE, GEOFFREY RAKE, R. O. GREEP and H. B. VAN DYKE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 417. (A. E. M.)

Sulfonamide in Experimental Tuberculosis. The parenteral daily injection of sulfonamide, in the form of "Prontosil Soluble Bayer," seems to exert a significant inhibitory action upon the development of an infection of guinea pigs with bovine tubercle bacilli. The inhibitory action appears to be referable to the *in vivo* bacteriostatic effect of sulfonamide on the growth of the tubercle bacillus. Inasmuch as sulfonamide only exerts an incomplete bacteriostatic effect on the tubercle bacillus, further investigations should be carried out with new compounds of sulfonamide. Such investigations are now in progress with M. & B. 693.—K. BIRKHAUG. *Brit. Med. J.*, 4096 (1939), 54. (W. H. H.)

Sulfonamides in Experimental Anthrax. M. & B. 693 and to a less extent sulfanilamide and sulfon delay death in mice infected with fully virulent capsulated non-sporing anthrax bacilli. No ultimate decrease in mortality is found by using these drugs. Two commercially available sera commonly used have no protective action for mice. The findings of Ivanovics and Bruckner, that an anti-anthrax serum prepared in the rabbit exerts a high degree of protection in mice, have been confirmed. There is no apparent increase in the protective action of serum in mice by using it in combination with M. & B. 693.—H. B. MAY and S. C. BUCK. *Lancet*, 237 (1939), 685. (W. H. H.)

Tertiary Amyl-ortho-Cresol. This compound, which has high germicidal value with low toxicity in the presence of blood serum, is produced by the use of tertiary amyl alcohol, *o*-cresol and zinc

chloride, etc.—GEO. W. RAIZISS and LEROY W. CLEMENCE, assignors to ABBOTT LABORATORIES. U. S. pat. 2,157,014, May 2, 1939. (A. P.-C.)

Toxins and Antitoxins. Various details are given of the preparation, from *B. typhosus, B. coli*, pneumococcus, etc., of reactive toxins, capable of producing Schwartzman phenomenon and of determined potency with respect to their ability to neutralize the antitoxin homologous to the reactive toxin, suitable for use in prophylactic treatment.—GREGORY SCHWARTZMAN, assignor to MT. SINAI HOSPITAL RESEARCH FOUNDATION. U. S. pat. 2,149,233, Feb. 28, 1939. (A. P.-C.)

Typhoid Toxin—Toxicity of Acid-Soluble, for Laboratory Animals. The fraction containing the somatic antigen-complex of the typhoid bacillus is highly toxic. The effect is primarily on the blood vessels, damage to which results in degenerative changes in the tissues supplied. A monocytic response is not a component of the tissue response to the toxin.—E. W. DENNIS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 553. (A. E. M.)

Whooping Cough—Immunization and Prophylaxis of. Coccobacillus of Bordet and Gengou (*Hemophylus pertussis*) is recognized as the sole causative agent in whooping cough. It appears in no other respiratory disease. Experimental cases have been studied in monkeys and chick embryos. Other respiratory diseases may cause a pertussis-like cough but the bacilli of pertussis are absent. The newly recommended concentration of *H. pertussis* vaccine (1 cc. = 20,000 organisms) requires a smaller volume of vaccine for active immunization. It is possible that a positive cutaneous test after the disease and after immunization may be an allergy as well as a proof of immunity. The strongest evidence of vaccine-conferred immunity is a four-plus complement fixation test. Passive immunity is secured when intimately exposed infants are promptly injected with convalescent or hyperimmune serum before the paroxysmal stage.—L. W. SAUER. *J. Am. Med. Assoc.*, 112 (1939), 305. (G. S. G.)

BOTANY

Cane Sugar Formation—Stimulant for, in Plants. III. When lumiflavin or eosin was added to Knop's solution for the culture of maize, the contents of reducing and nonreducing sugars in the young plant increased by 2 times after 2 weeks, but the growth of roots was retarded. The phenomenon was equally observed with every substance having fluorescence. The action of catalase in the plant growing under such a condition was inferior to that in the normal plant. The difference in the action of peroxidase could not be observed.—TETUTARO TADOKORO. *J. Agr. Chem. Soc. Japan*, 15 (1939), 659–660; through *Chem. Abstr.*, 34 (1940), 137. (F. J. S.)

Chlorophyll—Color Phenomena with. A discussion with 23 references.—H. LAUTH. *Deut. Apoth. Ztg.*, 54 (1939), 1100–1101. (H. M. B.)

Hevea Pollen—Preliminary Data on the Storage of. Pollen from *Hevea* rubber trees can be successfully stored without serious loss of germinating power at least 19 days at 6° and in air conditioned over 27–35% sulfuric acid. This power is measured 1 hour after the pollen is spread on a substratum having 10.53–12.11% glucose and 1.5% agar-agar (p_H 4.5).—M. J. DIJKMAN. *Arch. Rubbercultuur*, 22 (1938), 239–259; through *Chem. Abstr.*, 34 (1940), 135. (F. J. S.)

Leaf Pigments—Chromatographic Determination of. Directions and precautions are given.—A. SEYBOLD and K. EGLE. *Planta*, 29 (1939), 114–118; through *Chem. Abstr.*, 33 (1939), 3720. (F. J. S.)

Lead—Action of the Presence of, on Growth. Lentil seeds set to germinate in a fully enclosed paraffin-sealed glass box showed roots 10 to 12 hours before controls when a layer of fresh lead filings 18 mm. thick in a cardboard box was placed on the glass cover. The sprouts likewise developed 10–15 hours before controls and both roots and sprouts grew longer than those of the controls. A 1-mm. layer of lead filings had little effect.—VINCENZO RIVERA. *Ricerca sci.*, 10 (1939), 461–463; through *Chem. Abstr.*, 34 (1940), 135. (F. J. S.)

Soy Bean Protein—Fractionation of. The protein prepared by extracting the soy bean cake with dilute alkali was dissolved in 40% urea and precipitated by the addition of alcohol. The precipitate was separated into 3 fractions. The precipitate by dilute alcohol and the precipitate by concentrated alcohol at a definite p_H were proved to be single proteins. The absorption spectrum of protein solution seemed to have some relations to the contents of cyclic amino acids such as tyrosine and tryptophan.—KINSUKE KONDO, SEIITI HAYASI and SINITI MORISIGE. *J. Agr. Chem. Soc. Japan*, 15 (1939), 727–736; through *Chem. Abstr.*, 34 (1940), 137. (F. J. S.)

Sulfur Metabolism of Plants. The relations between the different sulfur compounds of the leaves of plants receiving different supplies of K_2SO_4, NH_4Cl and cystine were studied. An increased supply of sulfate did not increase the cystine or protein sulfur content. An increase in NH_3 increased the content of cystine and protein sulfur as well as the amino and protein nitrogen but decreased the sulfate sulfur content. The addition of cystine to the sand culture increased the sulfate sulfur but did not change the cystine or protein sulfur contents. Ammonia acts as a limiting factor in the formation of protein sulfur from sulfate. A scheme is proposed for the probable sequence of reactions in sulfur metabolism.—J. G. WOOD and B. S. BARRIEN. *New Phytologist*, 38 (1939), 125–149; through *Chem. Abstr.*, 34 (1940), 138. (F. J. S.)

Therapeutic Preparation—Producing, from Plants Containing Chlorophyll. The plants are exposed to ultraviolet light radiations for 3–4 hours at not more than 0° and then dried at 0–40° in the dark.—J. HELLER. Brit. pat. 508,149; through *J. Soc. Chem. Ind.*, 58 (1939), 997. (E. G. V.)

CHEMISTRY

GENERAL AND PHYSICAL

Colloid from the Thyroid Gland—Release of, by Centrifugal Force. From direct observation of thyroid tissue in the ultracentrifuge and in the centrifuge microscope and from histological preparations of the tissue fixed immediately after removal, it has been concluded that colloid (thyroglobulin) can pass between the cells of the follicle under the action of the thyrotropic hormone or under some mechanical force, such as centrifugal force.—J. F. MCCLENDON. *Endocrinology*, 24 (1939), 82–86; through *Chem. Abstr.*, 33 (1939), 2199. (E. G. V.)

Colloids and Colloidal Properties. A discussion of the interpretation of Graham's definitions and experiments; Theodore Tissier's filtration of ionized sodium chloride by glass; the work of J. DuClaux on the variable composition of the hydrosol iron chloride-oxide; Svedberg's work on proteins; J. Perrin's principles; L. du Nouy's conclusions that serum coagulation is simple hydration of the molecule; and H. Devaux's photography of the effect of the odor of jasmine and rose on silver.—J. VALLEE. *Rev. gén. mat. color.*, 43 (1939), 41–45; through *Chem. Abstr.*, 33 (1939), 3656. (E. G. V.)

Colorimetry—New Light Sources for. For the colorimetric determination of sodium chlorophylline in aqueous solution use was made of a neon source. The lamp was a spiral of 6-mm. tubing 45 mm. long and 35 mm. in external diameter. With this was used a Corning signal red filter (No. 243) and the standard was a copper sulfate solution. The precision attainable (in the determination of concentrations) in this way was approximately 5 parts per thousand for nine readings made in 2 minutes. For the colorimetric determination of α-naphthylamine a green fluorescent lamp was used in conjunction with a Corning Sextant green (No. 401) filter with a pentammino cobaltic chloride solution as the standard. This lamp was in the shape of a "U" and was 11 cm. long and 30 mm. in external diameter. The precision attainable in this case was the same as that given above. Both these lamps, when in use, were inserted in the place ordinarily occupied by the 25-watt tungsten lamp in the Klett-Beaver colorimeter. Similar lamps, as well as a blue fluorescent lamp, can be obtained in a variety of designs from Claude Neon Lights, Inc., Long Island City, N. Y. —F. L. MATTHEWS, R. H. CRIST and A. KNOLL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 503. (E. G. V.)

Electrometric Indicators with the Dead-Stop End-Point System. This paper describes a simple and accurate method for the electrometric titration of acids, bases, halides, cyanides and silver ions. Results are as highly reproducible as those obtained by the present accepted methods of electrometric analysis. The method has the advantage of using two simple platinum wire electrodes, and it eliminates the use of a reference electrode. The electrodes are seldom, if ever, poisoned, which removes the difficulty in the use of certain other electrode systems. Adequate warning of the approach of the end-point is given by momentary deflections of the galvanometer pointer. Since the end-point is reversible, back titration is possible. Titrations of copper, mercury and other metallic ions should be possible by the same principle employed in the titrations of silver ions. This opens a new field for the volumetric determination of the metallic ions with a low deposition potential. The titration of zinc with ferrocyanide should be investigated, because the ferrocyanide would serve as an anodic depolarizer.—D. R. CLIPPINGER and C. W. FOULK. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 216–218. (E. G. V.)

Filtration—Fundamental Principles of. The mathematical theories of filtration and flow of liquids through porous materials are surveyed and correlated so far as possible. The application of such theoretical considerations to the practical filtration of complex and compressible sludges, the conditioning of the prefilt, the use of the filter aids, etc., is examined.—P. C. CARMAN. *Trans. Inst. Chem. Engrs.*, 16 (1938), 168–188; through *J. Soc. Chem. Ind.*, 58 (1939), 897. (E. G. V.)

Gallic Acid, *o*-, *m*- and *p*-Hydroxybenzoic Acids, Catechol, Resorcinol, Hydroquinone, Pyrogallol and Phloroglucinol—Dissociation Constants of. The primary and secondary dissociation constants of the acids and di- and tri-hydroxybenzenes were determined by potentiometric titrations, with corrections being applied for interionic attractions with the help of the Debye-Hückel theory. The values of the constants thus calculated are given in terms of the following table:

Acid	K_1	K_2
o-Hydroxybenzoic acid	1.76×10^{-3}	4.20×10^{-13}
m-Hydroxybenzoic acid	1.25×10^{-4}	1.65×10^{-10}
p-Hydroxybenzoic acid	5.15×10^{-5}	7.46×10^{-10}
Gallic acid	4.63×10^{-5}	1.41×10^{-9}
Catechol	7.50×10^{-10}	8.37×10^{-13}
Resorcinol	7.11×10^{-10}	4.78×10^{-12}
Hydroquinone	1.22×10^{-10}	9.18×10^{-13}
Pyrogallol	9.68×10^{-10}	2.30×10^{-12}
Phloroglucinol	3.56×10^{-9}	1.32×10^{-9}

These measurements were made at 30°.—C. T. ABICHANDANI and S. K. K. JATKAR. *J. Indian Inst. Sci.*, 21A (1938), 417–441; through *Chem. Abstr.*, 33 (1939), 3662. (E. G. V.)

Glass Electrode—Low Resistance. The electrode consists of a bundle of glass tubes, each of about 1 mm. diameter and of wall thickness 0.05 to 0.1 mm. drawn from Corning 015 glass and sealed at one end. The tubes are sealed together near their open ends by means of a cement of high electrical insulation and then sealed into a glass adaptor tube. The tubes are filled with a suitable reference fluid by covering their upper ends with the fluid, evacuating, and then releasing the vacuum. Choice of fluid may be made to suit circumstances, but it has been found convenient to employ 1.0*N* potassium chloride and to connect the electrode to a 1.0*N* KCl calomel electrode with a rubber tube of narrow bore filled with the same fluid. This tubular electrode is naturally far more durable than a thin bulb, but it is convenient to use it cemented into the limb of a protective U-tube. Samples poured into the right-hand capillary limb rise around and between the tubes comprising the electrode. An electrode constructed with 25 tubes of 12 cm. immersion has a resistance between 1 and 2 megohms. Only about 10 cc. of sample are required. A convenient form of calomel electrode for use with the above electrode is described.—W. C. JOHNSON. *Chemistry and Industry*, 58 (1939), 573–574. (E. G. V.)

Hydrogen Ion Measurements—Antimony Electrode for. The molded form of antimony electrode appears to be superior to other types because of three primary considerations. (1) The active electrode surface is completely immersed in the solution. This prevents secondary reactions where the metal enters the solution, as may be in the case where a plain stick of antimony is used. The author believes that continuous measurements, using an unprotected stick of antimony give erroneous results. (2) The active portion of the metal surface is flat and the exposed metal surface has no rough edges or crevices, which may collect sediment from the liquid. Secondary potential effects are thereby prevented. The antimony metal is slowly etched and from time to time it is necessary to resurface the exposed metal in order to reduce absorption errors. It is essential that the wire lead and the upper portiou of the metal be protected from the action of the solution. (3) An electrode assembly is obtained which can withstand rough usage in the industrial field.—G. A. PERLEY. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 316–318. (E. G. V.)

Molecular Distillation—Application of, to the Concentration of Vitamins. This paper traces the development of molecular distillation as applied to vitamin A and gives some account of the features of the process which apply more particularly to the treatment of this vitamin. Vitamin A occurs in fish liver oils, chiefly in the form of fatty acid esters. When concentrated by saponification, free vitamin A alcohol is produced. Molecular distillation has been employed successfully for the concentration and purification of vitamin A on the commercial scale since 1932. The concentration of vitamin A directly from fish liver oils presents special difficulties on account of the decomposition apt to occur at high temperatures. These difficulties have been overcome and vitamin A esters can be prepared in concentrated form on a commercial scale. By molecular distillation of natural oils containing vitamins D and

E, these substances may also be concentrated. The application of the process to vitamin D and E is still in the experimental stage.—W. JEWELL, T. H. MEAD and J. W. PHIPPS. *J. Soc. Chem. Ind.*, 58 (1939), 56–64. (E. G. V.)

Molecular Distillation—General Technique of. II. General Design of Molecular Distillation Equipment. The technique of molecular distillation demands equipment specially designed to meet the particular requirements of the process, one important feature being the production and maintenance of the high vacua necessary. In order to make the apparatus proof against the leakage inward of external air, special precautions have to be observed during the manufacture of the apparatus. The designs of the various joints used must incorporate suitable seals. This paper describes various forms of continuous and discontinuous high-vacuum stills, together with the more important items of equipment. Methods of maintaining the high degree of vacuum required are discussed, and different types of condensation pumps are illustrated and described. The molecular distillation process lends itself conveniently to automatic operation. Various devices available for protection of the plant under conditions of automatic operation are considered.—G. BURROWS. *J. Soc. Chem. Ind.*, 58 (1939), 50–56. (E. G. V.)

Refractive Index Measurements in Qualitative Organic Microanalysis. A hole about 5 mm. in depth was drilled approximately 1 cm. from the edge of a piece of clear plate glass about 6 mm. thick, using a steel drill 1 mm. in diameter. The drill was rotated slowly and kept wet with turpentine at all times. A smaller drill might equally well be used and for economy of sample the hole might not be so deep. The bottom of the hole was polished with tripoli compound to prevent light diffraction, and on this polished bottom a scratch was made by inserting a small crystal of silicon carbide and rotating the drill slightly. The empty cell with cover slip was placed on a microscope stage, the scratch brought into sharp focus and the fine-adjustment setting noted. The cell was filled with the liquid to be tested and the cover slip slid on and pressed down simultaneously, using an eraser on the end of a pencil. The scratch was again brought into sharp focus with the fine adjustment and the reading taken. The cell was calibrated with a series of liquids of known refractive index, plotting refractive index against fine-adjustment readings.—P. L. KIRK and C. S. GIBSON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 403. (E. G. V.)

ORGANIC

Alkaloids

Alkaloidal Substances—New Rapid Electrical Method of Extraction of. The principle involved in the new method of extraction and the experiments undertaken are described. The automatic electron gage with extraction cell and accessory apparatus are illustrated and explained.—J. F. LEYVA. *Acta Med. Philippina*, 1 (1939), No. 1, 13–18; through *Chem. Abstr.*, 34 (1940), 218. (F. J. S.)

Alkaloids—Use of Spot Tests in the Detection of. The use of spot tests for the identification of alkaloids results in a great saving of time and reagents. A "universal reagent" is recommended consisting of 20 cc. of concentrated sulfuric acid, 4 drops of fuming nitric acid and 0.01 Gm. of ammonium molybdate, by means of which many alkaloids can be rapidly identified.—W. KARAFFA-KORBUTT. *Acta Polonia Pharm.*, 2 (1938), 97–101; through *Chimie & Industrie*, 41 (1939), 724. (A. P.-C.)

Cocaine Residues—Determination in, of Ecgonine and Its Derivatives Capable of Transformation into Cocaine. Ecgonine chloroplatinate, $(C_9H_{15}O_3N\cdot HI)_2PtI_4$ is formed with sodium iodide and chloroplatinic acid. It is nearly insoluble in glacial acetic acid and can be determined gravimetrically.—A. TORRICELLO. *Mitt. Lebensm. Hyg.*, 29 (1938), 48–53; through *Chimie & Industrie*, 41 (1939), 724. (A. P.-C.)

Ergot Derivative. A process of obtaining an ergot derivative, which on oral administration in doses of a magnitude in which ergotoxine and ergotamine are substantially ineffective induces marked contractions in the postpartum human uterus, involves subjecting an ergot extract containing the desired derivative and previously known ergot alkaloids (such as an extract obtained by use of liquid sulfur dioxide and alcohol) to the action of a silver salt in solution which serves as a selective precipitant for the previously known ergot alkaloids. The remaining solution is subsequently made highly saline and somewhat alkaline and is extracted with chloroform and the product is precipitated from chloroform solution by acidification.—MORRIS S. KHARASCH and ROMEO R. LEGAULT, assignors to ELI LILLY and CO. U. S. pat. 2,156,242, April 25, 1939. (A. P.-C.)

Erythrina Alkaloids. V. Comparative Curare-Like Potencies of Species of the Genus Erythrina. Reference is made to work previously reported. Data reported in the present paper being the total to fifty-one of one hundred and five known species. Data are collected in several tables, a great deal of detailed information being included. No species of the genus so far has been devoid of the alkaloids producing curare-like paralysis in frogs. The fifty-one tested species represent nearly all sections and groups of the genus and were collected from nearly all tropical or sub-tropical countries. There is wide variation in the potency of different species. There exists a distinct uniformity in potency of seeds of closely related species. In the pharmacological test used the threshold dose is probably the effect of the most potent alkaloids present or the alkaloids present in predominating amounts. This dose may not represent major alkaloid but only the potency of a mixture of different alkaloids which may be present. Pharmacological activity is expressed by "paralysis potency values." The action of extracts of all species tested in frogs was of short duration when compared to the duration of paralysis of extracts of curare or curare plants.—KARL FOLKERS and KLAUS UNNA. *Jour. A. Ph. A.*, 28 (1939), 1019. (Z. M. C.)

Erythrina Alkaloids. III. Isolation and Characterization of a New Alkaloid, Erythramine. A new alkaloid, named erythramine, has been isolated from the seeds of *Erythrina sandwicensis* Deg. and *Erythrina subumbrans* (Hassk.) Merrill. Hypaphorine was found also in these species. The crystalline erythramine base, hydriodide, hydrobromide and the hydrochloride have been described. The microanalyses showed that erythramine has the empirical composition, $C_{18}H_{21}NO_3$. Erythramine was strongly active in causing a curare-like paralysis in frogs. Hypaphorine was converted to methyl α-dimethylamino-β-(3-indole) propionate methiodide and this derivative was found to cause a curare-like paralysis in frogs when a high dose was administered.—K. FOLKERS and F. KONIUSZY. *J. Am. Chem. Soc.*, 61 (1939), 1232. (E. B. S.)

Lupine Studies. XIII. Octalupine, a New Alkaloid from Lupinus Sericeus Var. Flexuosus C. P. Smith. *Lupinus sericeus* var. *flexuosus* contains 0.53% of alkaloids, the principle base being octalupine, of the formula $C_{15}H_{22}O_2N_2$. The base is a 2,16-diketosparteine. The base and several of its salts are described.—J. F. COUCH. *J. Am. Chem. Soc.*, 61 (1939), 1523. (E. B. S.)

Lycorine. The presence of this alkaloid in *Crinum scabrum* is confirmed.—B. REICHERT. *Arch. Pharm.*, 276 (1938), 328–329; through *Chimie & Industrie*, 41 (1939), 723–724. (A P.-C.)

Quinine Sulfate and Quinidine Sulfate—Differentiation between. Dissolve 0.2 Gm. of the salt in 2 cc. of warm water, add 0.2 Gm. of potassium iodide and shake; a curdy precipitate is obtained with both salts. The precipitate with quinine sulfate, however, shows no luminescent properties, while that with quinidine sulfate exhibits a bright green very intense luminescence under ultraviolet light.—P. V. AUGSCHNAITER. *Pharm. Monatsh.*, 19 (1938), 99; through *Chimie & Industrie*, 41 (1939), 953. (A. P.-C.)

Quinine—Test for. Alkaloidal extracts from viscera are frequently received which are poisonous to frogs but do not give the reactions for known poisons. It is important to eliminate the possibility of the toxic principle in these extracts being quinine. About $^1/_{40}$ grain of quinine is fatal to frogs, and none of the ordinary tests for quinine will identify such a small quantity. The fluorescence test (which is best applied by taking up a speck of the substance in a drop of dilute sulfuric acid, drawing this drop up into a silica capillary tube, and exposing it to ultraviolet light) is not specific for quinine and has at best only a negative value. The herepathite test was also found to be unsatisfactory with such small quantities of quinine. *Microchemical Reagent for Quinine.*—A potassium iodide solution of iodine made strongly acid (about 5*N*) gives a characteristic crystalline precipitate with quinine (GOMBERG, *J. Am. Chem. Soc.*, 18 (1896), 331; ABSTRACT, *Analyst*, 21 (1896), 193). The reagent is prepared by mixing 5 cc. of *N*/10 iodine in potassium iodide solution with 11 cc. of concentrated hydrochloric acid (analytical reagent quality), and making up to 25 cc. with water or, preferably, glycerin. A drop of a solution of the suspected alkaloid in a 5*N* hydrochloric acid, when mixed on a microscope slide with a drop of the acid iodine solution gives, in the presence of quinine, sheaves of fine needles starting at the line of junction of the two drops and gradually spreading into the surrounding solution. Strychnine, brucine, and quinidine give different forms of crystals. Aconitine, atropine, cocaine, cinchonine, cinchonidine and morphine in dilute hydrochloric acid solution yield no crystals with the reagent. The test can be used with solutions containing from 0.01 to 5% of quinine, and crystals are obtained with $^1/_{200}$ mg. The test gave abundant crystals with the alkaloidal extract from viscera to which a fraction of a mg. of quinine had been added. The reaction can be used for the quantitative determination of quinine or strychnine if interfering substances are absent.—ANNUAL REPORT OF THE CHEMICAL EXAMINER, GOVERNMENT OF MADRAS, 1937. *Analyst*, 64 (1939), 122 (G. L. W.)

Strychnine—Detection of. A description is given of results of experiments on 29 dogs to ascertain for what period of time after death strychnine is still detectable in carcasses and what tests are essential in the testing of materials for the presence of strychnine. It was definitely established that it is absolutely essential to apply the taste test, color test (Otto's test) and biological test to materials (purified extracts), especially when only minimal quantities of strychnine are present. In 24 dogs killed with approximately five times the lethal dose of strychnine sulfate it was impossible to detect strychnine in any one of them 4 years and 2 months after death and burial. No strychnine was detectable in some of the carcasses within 18 weeks after death, and in 4 out of 8 carcasses exhumed 11 months after death it was impossible to detect strychnine.—D. G. STEYN. *Onderstepoort J. Vet. Sci. Animal Ind.*, 10 (1938), 411–418; through *Chem. Abstr.*, 33 (1939), 4159. (F. J. S.)

Essential Oils and Related Products

Cypress Oil from Kenya. A sample of oil from Kenya, probably derived from *Cupressus lusitanica*, had density at 15° 0.8750, specific rotation at 20° + 22° 40′, index of refraction at 20° 1.4788, acid value 0.5, saponification value 21.4 (after acetylation 50.9); it was soluble in 1.1 volumes of 95% ethyl alcohol, in 4.5 volumes of 90% and insoluble in 85% ethyl alcohol. The oil contained about 80% of terpenes (including α-pinene, Δ^3-carene, *d*-limonene, myrcene, camphene, *p*-cymene, α-terpinene, and α- or β-phellandrene), about 12% of alcohols (borneol, citronellol, 4-terpinenol and three unidentified alcohols), and about 5% of ketones, mainly unbellulone.—J. SFIRAS. *Recherches*, 2 (1938), 17–23, 111–119; through *J. Soc. Chem. Ind.*, 58 (1939), 663. (E. G. V.)

Essential Oils—Determination of, in Tobacco. The tobacco is distilled at 110° C. while passing a current of air at the rate of 150 to 180 bubbles per minutes; the oil is collected in a flask containing concentrated sulfuric acid. The distillates are combined and the oil is determined colorimetrically by comparison with artificial standard solutions prepared with given quantities of tropoelin O, nigrosine and Bismarck brown.—A. S. BOROZDINA. *Tabak U. S. S. R.*, 8 (1938), No. 2, 18–21; through *Chimie & Industrie*, 41 (1939), 567. (A. P.-C.)

Oil of Rose Geranium. Three types of oil—Bourbon (7 samples), Algerian (4) and French (3)—were studied and color, sp. gr., $(\alpha)_D$ and ester number are reported. The oils differ only in sp. gr. and odor.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 8 (1939), 30–32. (H. M. B.)

Poliomintha Incana—Volatile Oil of. This plant grows in sandy soils in southwestern United States. The dry herb was distilled and the oil examined The constants correspond closely to those of pulegone.—A. F. SIEVERS and C. G. MARSHALL. *Jour. A. Ph. A.*, 28 (1939), 659. (Z. M. C.)

Salvia—Volatile Oil Content of. Using Clevenger's method three samples of official sage were found to yield 1.2, 1.1 and 1.3% of volatile oil and the following constants reported: specific gravity (25° C.) 0.918, 0.925, 0.925; optical rotation (25° C.; 100 mm. tube) 9.2, 6.7, 7.5; refractive index (20° C.) 1.4616, 1.4645, 1.4640; acid number 1.8, 2.0, 1.8; ester number 4.9, 6.8, 4.5. Fifteen references.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 8 (1939), 93–96. (H. M. B.)

Volatile Oils—Chemical Investigation of Some Florida. Physical and chemical constants have been reported for the following volatile oils: Oil of *Pycnothymus rigidus*, Oil of *Solidago rigida*, Oil of *Erigeron canadensis*, Oil of *Heterotheca subaxillaris*.—P. A. FOOTE and A. W. MATTHEWS. *Jour. A. Ph. A.*, 28 (1939), 1030. (Z. M. C.)

Glycosides, Ferments and Carbohydrates

Anthelmintic Activity in Vitro of Fresh Pineapple Juice—Preliminary Study of the. The existence of a proteolytic enzyme in pineapple juice was discovered in 1891 and the name bromelin, derived from the family to which pineapple belongs, was given to it. Reference is made to the findings of other workers which in some ways are contradictory. Experimental work is reported, round worms being used. Minimum time for digestion, action of heat on proteolytic activity of the juice, dilution at which the juice will digest ascaris activity of juices from differ-

ent geographical origins and the action of canned juice all have consideration. Results are discussed and summarized as follows: (1) Fresh pineapple juice digest parasites *in vitro*. The time required for visible signs of digestion to take place is from three to four hours. Digestion takes place on the live parasite. (2) The juice maintains its digestive activity on *Ascaris* at a concentration of 15%. (3) A temperature of 65° C., or above, inactivates the enzyme present in the juice. (4) Juice from Cuban, Puerto Rican and Mexican pineapples exhibits the same digestive activity on parasites *in vitro*. (5) Canned juice has no digestive activity on parasites. —CONRADO F. ASENJO. *Jour. A. Ph. A.*, 29 (1940), 8. (Z. M. C.)

Cozymase Preparations—Production of, in Enzyme Experiments. The preparation of cozymase entailed (1) precipitation of yeast with CCl_3CO_2H, (2) separation of impurities from the filtrate with lead acetate, (3) removal of the cozymase with $Hg(OAc)_2$ according to Warburg's method and then decomposing the mercury compound with H_2S. After filtration of the HgS, a crude cozymase product is precipitated from the filtrate with MeOH. $CuCl_2$ can be used for purification and the free cozymase obtained by precipitation from solution with alcohol and ether.—AMANDUS HAHN, H. GERSTENBERGER and E. MEHLER. *Z. Biol.*, 99 (1939), 457–461; through *Chem. Abstr.*, 34 (1940), 120. (F. J. S.)

Drug Plants—Variations in Active Principles Contents of Certain, During the Vegetative Period. The variations in strengths of *Digitalis purpurea, Convallaria majalis, Rubia tinctorum, Mentha piperita, Conium maculatum, Aconitum napellus* and *Artemisia absinthium* are presented graphically. In the case of digitalis, the results lead to the hypothesis that the glucosides of this plant might be products of metabolism which are hydrolyzed during blossoming and used in the formation of the inflorescences. In convallaria leaves the glucoside content is maximum shortly after blossoming.—G. MADAUS and H. SCHINDLER. *Arch. Pharm.*, 276 (1938), 280–290; through *Chimie & Industrie*, 41 (1939), 723. (A. P.-C.)

β-Glucose—Method of Preparation of. The method is based on the fact that a solution of β-glucose when mixed with a solution of calcium bicarbonate and held at 40° C. will convert to glucose. A saturated solution of calcium bicarbonate is made at room temperature by suspending 0.70 Gm. of calcium carbonate in distilled water and passing in CO_2 gas until dissolved. A ten per cent solution of glucose in this solution is made (100 Gm. in a liter) and left at room temperature for 24 hours to complete mutarotation. The solution is filtered on paper and heated to 40° C. in a thermostat. Excess CO_2 is removed by shaking, so that the solution reacts blue to bromthymol (p_H 7.4). The solution is now mixed with an equal volume of acetone, previously treated to remove acetic acid and filtered just before use. The mixture is held at 40° C., then after 5–10 minutes 3 cc. of 0.2*N* sulfuric acid is added to 2 liters of solution, and the solution is kept at 40° C. for 2 hours. It is then clarified with active charcoal filtered rapidly through paper and vacuum evaporated to a syrup. On stirring, it solidifies and contains chiefly β-glucose.—W. RASMUSSEN. *Dansk. Tids. Farm.*, 13 (1939), 273. (C. S. L.)

Gum Arabic—Inactivation of the Enzymes in. The author discusses several methods for inactivating the oxydases and peroxydases in acacia. The presence of air and CO_2 have an effect. Drying at 103° to 105° seems to be the best method.—J. P. KIEFT. *Pharm. Weekblad*, 76 (1939), 1133. (E. H. W.)

Ouabain—*m*-Dinitrobenzene Reaction of, and Its Application to the Examination of East African Arrow Poison. The glucoside, in methyl alcohol solution is measured into a tube and the solvent removed. When cool, the residue is dissolved in 1 cc. of alcohol; 0.1 cc. of *m*-dinitrobenzene reagent added and the tube placed in a bath at 0° C. for ten minutes. After adding 0.2 cc. of 20% sodium hydroxide solution the tube is left in the bath for five minutes. The blue color is measured in a Lovibond colorimeter, some yellow units being required for a match. The amount of ouabain is read from a curve prepared with pure ouabain. Benzaldehyde, acetaldehyde, formaldehyde, acetoacetic ester and camphor give only slight colors; acetone and diacetone alcohol give a reddish violet color. Androsterone and related compounds give a similar color but under different conditions. Picryl chloride, 1-chloro-2, 4-dinitrobenzene, 2,4-dinitroaniline and picric acid give color reactions with ouabain. The method, with a suitable correction factor was applied to Tincture of Strophanthus. No ouabain was found in the dried fruit pulp or bark of *Acocanthera longiflora*. One type of arrow poison was prepared from species of *Acocanthera*, one from the seeds of *Strophanthus eminii* and another from a species of *Urginea* akin to *Urginea sanguinea*.—W. D. RAYMOND. *Analyst*, 64 (1939), 113. (G. L. W.)

Peptic Digestion—Arresting of, by Coffee and Sodium Chloride. An undiluted drink of coffee prepared in the usual manner arrests peptic digestion strongly *in vitro;* it is also noted with a considerably diluted coffee infusion, coffee beans, Coffee-Hag and Idee-Coffee; Kathreiner-malt coffee has no such action. The effect will be caused directly by the ingredients of the coffee as well as indirectly by a change of p_H of the digestive liquid as a result of the combination of the acids to the constituents of the coffee preparation. The chlorogenic acid and not the caffeine in the drink is responsible for the restraining action. Sodium chloride in concentration of 0.25% has a noticeable restraining action *in vitro;* in 1% solution a very strong one. The arresting action in each case does not accompany an irreversible change of the albumen which makes it permanently indigestible for pepsin-hydrochloric acid. Sixteen references are given.—TH. SABALITSCHKA and E. PILGER. *Scientia Pharm.*, 10 (1939), 128–131. (H. M. B.)

Potato Starch—Reactions of. The authors made an attempt to saponify the phosphoric acid molecule in the potato starch by heating the starch paste under pressure and in the presence of $CaCO_3$; it was found that the saponification process is hastened when the temperature is increased from 122° to 155°, in the presence of 3% of $CaCO_3$. The stability of the amylophosphoric acid ester is due not to the neutral reaction, because the reaction takes place even without the addition of $CaCO_3$ at a temperature of 120°.—A. TYCHOWSKI and S. MASIOR. *Biochem. Z.*, 292 (1937), 218; through *Chem. Zentr.*, 110 (1939), 129. (G. B.)

Protein and Amino Acid Content of Liver—Autolytic Changes in the. At p_H 5 the globulins (pseudo- and euglobulin) of the salt-soluble fraction serve as the principle substrate for the autoproteolytic enzymes in autolyzing liver. Accompanying amino acid liberation there is partial denaturation of some of the globulin and the salt-soluble fraction with the formation of globulin II. Addition of KIO_3 lessens considerably the rate of autolysis after the first 2 days. At p_H 7.3 globulin II serves as the principal substrate and autolysis proceeds much more slowly. Some of the globulin II disappears by conversion into more soluble globulins of the salt-soluble fraction. The liberation of tyrosine is less rapid than at p_H 5 and undergoes destruction by a tyrosine-destroying enzyme which is inactive at p_H 5. The proteolysis is still further lessened by

the addition of KIO_3 which it is assumed acts by oxidizing the sulfhydryl groups present in the proteolytic enzymes.—JAMES M. LUCK, JOHN EUDIN and CHARLES C. NIMMO. *J. Biol. Chem.*, 131 (1939), 201–209; through *Chem. Abstr.*, 34 (1940), 121. (F. J. S.)

Rutoside and Sophoraflavonoloside—Presence of, in the Green Fruit of Sophora Japonica. From 1 Kg. of fresh green fruit 6 Gm. of rutoside and 8 Gm. of sophoraflavonoloside were extracted. Sophoraflavonoloside is a glucoside of kæmpferol but it is not identical with kæmpferoside (kæmpferin), the the kæmpferol glucoside found in senna.—J. RABATÉ and J. DUSSY. *Bull. soc. chim. biol.*, 20 (1938), 459–466; through *Chimie & Industrie*, 41 (1939), 723. (A. P.-C.)

Saponins and Sapogenins. IX. Oxidation of Echinocystic Acid and Derivatives. It has been shown by oxidation that both hydroxyl groups in the triterpenoid sapogenin, echinocystic acid, are secondary and that one is β to the carboxyl group since a diketone is formed with loss of carbon dioxide. If the carboxyl group is esterified before oxidation, a diketo ester is obtained which on saponification loses carbon dioxide and yields a diketone different from that formed by a direct oxidation of echinocystic acid. Oxidation of the monoacetyl derivative in which the hydroxyl group not β to the carboxyl group is esterified, gives a monoketoacetyl derivative with loss of carbon dioxide. Removal of the acetyl group by acid alcoholysis followed by oxidation yields a diketone identical with that from the methyl ester but unlike that from the free acid. Since the esterification of the carboxyl group, or of the hydroxyl group which is not β to it, prevents a rearrangement, it is concluded that both hydroxyl groups and the carboxyl group must be relatively near each other. The preparation of a bromolactone and of a hydrogen peroxide oxidation product gives additional evidence for the close relationship of echinocystic acid to hederagenin and oleanolic acid. —W. R. WHITE and C. R. NOLLER. *J. Am. Chem. Soc.*, 61 (1939), 983. (E. B. S.)

Sophoraflavonoloside—New Holodiglucoside Derived from. From the green fruit of *Sophora japonica* L. a heteroside, sophoraflavonoloside, was obtained. This on hydrolysis gave 1 molecule of kæmpferol and a disaccharide, sophorose $C_{12}H_{22}O_{11}$. H_2O, which melts at 195° to 196° C. Aqueous solutions are mutarotatory. The compound has a free aldehyde group, contains 8 acetylizable hydroxyl groups and is hydrolyzed by dilute acids and emulsin to *d*-glucose. Its physical constants differ from those of gentiobiose and cellobiose.—J. RABATÉ and J. DUSSY. *Bull. soc. chim. biol.*, 20 (1938), 467–470; through *Chimie & Industrie*, 41 (1939), 723. (A. P.-C.)

Fixed Oils, Fats and Waxes

Animal Fat—Detection of, in Vegetable Fats. One Kg. of fat is saponified, and the sterols are precipitated from the crude fatty acids by means of digitonin (5 Gm.) and recovered from the precipitate by acetylation and saponification; the crude sterola are then dried over phosphorus pentoxide, suspended in 10 cc. of ether, treated with 8 cc. of a solution of 1 cc. of bromine in 30 cc. of glacial acetic acid and cooled for $^1/_2$ hour at 0°. Crude or pure phytosterols (sisosterol, stigmasterol) from unadulterated vegetable oils yield no precipitate (even after keeping for several days), whereas if cholesterol is present a percipitate of the dibromide is readily formed. In the case of mixed sterols from mixed vegetable and animal oils, a precipitate is always obtained which, however, is impure and contains the bromides of both cholesterol and phytosterols. If desired, this precipitate may be recrystallized from the absolute ethyl alcohol to a melting point of about 100°, and after debromination typical crystals of cholesterol can be obtained which are easily recognizable under the microscope. The test will reveal even small additions of animal to vegetable fats, provided sufficient fat is available for the test.—J. A. BROGE. *Fette u. Seifen*, 46 (1939), 131–132; through *J. Soc. Chem. Ind.*, 58 (1939), 624. (E. G. V.)

Ash Seed Oil. Ash seed oil has a specific gravity at 18° C. of 0.923, acid number 4.8, saponification number 167, ester value 162.2, iodine number 131.7, Hehner number 94.5, Reichert-Meissl number 1.04, Polenske number 0.76. It contains 8.87% of glycerol. In the saturated fatty acids palmitic and stearic acids are present in equal amounts; among the unsaturated acids, oleic, linoleic and linolenic were identified. The unsaponifiable content is 2%. E. BURES and K. BEDNAR. *Cas. Ceskoslov. Lékarn.*, 18 (1938), 107–113; through *Chimie & Industrie*, 41 (1939), 736. (A. P.-C.)

Beeswax—Purifying. The authors find that sun heat is better than boiling water in the preparation of beeswax for use in cosmetics. Sun heat helps to bleach the wax. Impurities may be removed by boiling in dilute acids, which destroy the pollen and propolis without affecting the wax. The darkening of color which has been attributed to heating, is found to be the result of chemical action between hot wax and iron. Wax can, they state, be kept hot for hours in containers of glass, stainless steel, aluminum or nickel without darkening. In making cosmetics and in pharmacy the propolis is objectionable, as it renders the wax excessively acid.—G. V. VANSELL and C. S. BISSON. *J. Franklin Inst.*, (1940), 278; through *Chemist and Druggist*, 122 (1940), 299. (A. C. DeD.)

Cacao Fat Extraction—So-Called Waste Products in, and Its Possible Pharmaceutical Application. Residual fat extracted by means of solvents after the pressure extraction of cocoa butter from cocao nibs is not suitable for the production of suppositories because of its softer consistency and longer time required for saponification.—K. H. BAUER and L. SEBER. *Pharm. Zentralhalle*, 79 (1938), 199–201; through *Chimie & Industrie*, 41 (1939), 314. (A. P.-C.)

Castor Oil—Hydrogenation of, by Nickel Catalysts Containing Manganese, Zinc or Thorium. Hydrogenation (nickel) of castor oil at 200° for 3 hours reduces the hydroxyl value to 40%, and the iodine value to 8% of the original. Both changes are retarded by zinc, accelerated by thorium, but unaffected by manganese.—K. KINO. *J. Soc. Chem. Ind. Japan*, 42 (1939), 189b; through *J. Soc. Chem. Ind.*, 58 (1939), 962. (E. G. V.)

Cod Liver Oil—Iodine in. The following observations are made: The iodine content is best determined by the principle of moist ashing and precise methods. The iodine content of medicinal oil was the highest and that of oil for animals higher than the crude oil (Jecorol). The iodine content is not changed by warming, standing in half-filled bottles, by passing in carbon dioxide or drawing through air. It is assumed that the iodine is not in the free state since the content is not influenced by heat or conduction of gases through it; also it is not considered that the iodine is present in the form of water- or alcohol-soluble inorganic salts. The limited iodine content found in the extracts of high percentage alcohol is probably due to the carrying over of small amounts of fat particles or may be explained by the fact that the iodine might be bound to free fatty acids. The possibility of a combination with albuminous bodies does not exist since these bodies could not be detected. The presence of iodized stearin or hydrocarbon in the unsaponifiable portion

might be considered although by the method of determination used the amount of unsaponifiable matter in the oil is small—not over 0.55%—and the iodine content could not be determined. There remains the assumption that the small amounts of iodine in these oils are bound to the fatty acids or to the glycerides. Upon the separation of the fatty acids there remains in one case 40.6% and in the case of the crude oil 80.2% of the iodine in the fatty acid portion and the rest in the glycerin portion. The iodine in the fatty acid portion is rather firmly bound since at temperatures over 200° C. and 2 mm. mercury pressure, only a small portion is split off. In the lowest boiling fatty acids, which solidify partially in the condenser, the iodine content was less than in the 2nd distillation, yet richer in iodine as compared to the high boiling portions in the distilling flask. It is further assumed that the saturated fatty acids, whose amounts are not exactly fixed, contain no iodine and that those most highly unsaturated show a proportionately higher iodine content. The iodine in the glycerin-containing portions indicates that the tenacity of the iodine to the glycerin and to the fatty acid is different. The great per cent difference of the iodine content in medicinal and crude oil seems to depend on the method of production. Probably the iodine occurs originally in similar solid compounds of fatty acids and these were released by water vapor and the action of the atmospheric oxygen; and that they were converted by mild saponification by alcoholic potassium hydroxide without the use of heat to alkali iodides and were washed out by the splitting up of the soap. The remainder is bound to the fatty acid.—ADOLF SCHMIDT. *Deut. Apoth. Ztg.*, 54 (1939), 807–809.
(H. M. B.)

Fats and Oils—Chemistry of the Acyclic Constituents of Natural. A review.—G. S. JAMIESON. *Ann. Rev. Biochem.*, 7 (1938), 77–98; through *Chem. Abstr.*, 33 (1939), 4065. (F. J. S.)

Fats—Chemistry of the Spoiling of. V. An Analytical Method for Distinguishing between Higher and Lower Aldehydes. Since lower aldehydes, *e. g.*, acetaldehyde, may be formed by degradation of protein, a fat sample which gives a positive aldehyde test is not necessarily rancid. It therefore becomes important to distinguish between such lower aldehydes and the higher aldehydes formed during rancidification of fats. This can be done by taking advantage of the fact that the colored reaction products of Dobner's violet with aldehydes higher than valeraldehyde are soluble in chloroform, while with lower aldehydes water-solution products are formed. For details regarding apparatus, reagents and precautions see the original. The method is sufficiently sensitive to detect 80% of butyraldehyde or 100% of heptylaldehyde in 5 Gm. of paraffin oil. Higher and lower aldehydes added to olive oil were readily detected.—K. TAUFEL and K. KLENTSCH. *Fette u. Seifen*, 46 (1939), 64–66; through *Chem. Abstr.*, 33 (1939), 4067.
(E. G. V.)

Fats—Oxidation of. A lecture. Processes of oxidation during rancidification and metabolism and drying of oils and fats are briefly described.—E. GLIMM. *Fette u. Seifen*, 36 (1939), 348–350; through *J. Soc. Chem. Ind.*, 58 (1939), 961. (E. G. V.)

Hydrogenated Oil as an Ointment Base. II. A study has been made of the hydrogenated oils that are being made commercially at the present time. Suitability for ointments from the standpoint of stability to rancidity, consistence and water retention were considered. Some hydrogenated oils used for shortening are the unhydrogenated oil mixed with enough completely hydrogenated oil to give desired consistence. Such oils are more susceptible to deterioration than partially hydrogenated oil. The advantage of hydrogenated oil over lard as an ointment base is that it is less susceptible to rancidity and ointments made with it are more stable. Oils used in the experiments were cottonseed, soy bean, coconut, palm kernel, palm, peanut, sesame and lard. None of the hydrogenated oils developed more than a trace of rancidity when kept at body temperature in the dark in unstoppered tubes. In sunlight, all partially hydrogenated oils developed some rancidity. Hard hydrogenated oils did not become rancid as rapidly as the partially hydrogenated ones. Hydrogenated oils from different manufacturers did not deteriorate in exact ratio with iodine value but hydrogenated cottonseed oils of various iodine values prepared from the same lot of oil did show a relationship, the lower the iodine value, the greater the stability. Sesame oil commercially hydrogenated and samples of the same oil hydrogenated to various degree were superior as to rancidity. Experimental details are given and two pieces of apparatus for determining consistency are described. Data on water retention showed lack of uniformity. None retained as much water as hard hydrogenated castor oil except coconut oil containing lecithin.—GEORGE W. FIERO. *Jour. A. Ph. A.*, 29 (1940), 18.
(Z. M. C.)

Iodine Values—Kaufmann Method for Determining, in Oils. The Kaufmann method (bromine in methyl alcohol-sodium bromide) gave good reproducible results for the iodine value of soya-bean oil, which were not appreciably affected by variations in temperature or illumination; a reaction time of 2 hours and a large excess (about 300%) of reagent are necessary. Tests made on a large variety of other oils showed that the Kaufmann method gave results agreeing with those from the Wijs and Hanus methods except in the case of tung and oiticica oils. (For menhaden oil the Wijs figure is high.) Figures from the Rosenmund-Kuhnhenn methods agree with the others for oils of low iodine value, but are considerably lower in the case of oils of iodine value more than 100. The acidity developed during the Kaufmann bromination is high only in the case of tung and oiticica oils, but is not a measure of substitution by the reagent, since the greater part of the acidity appears to be due to reaction (methoxylation) with methyl alcohol. A few figures obtained by the Marshall method, which shows high acidity values with oiticica and castor oils, are reported.—F. R. EARLE and R. T. MILNER. *Oil & Soap*, 16 (1939), 69–71; through *J. Soc. Chem. Ind.*, 58 (1939), 626. (E. G. V.)

Liver Oil—Extraction of. Fish (salmon or, especially, halibut) livers are steamed at about 70–80° for about 30–45 minutes, the hot liquor is discarded, and the residue rapidly chilled to less than 23.5° in closed containers, while being protected from oxidation (by a layer of paraffin or carbon dioxide, for example) and extracted with a solvent (peroxide-free ether). The extract is evaporated in a vacuum to yield an oil of exceptionally high vitamin A and D potency.—C. NIELSEN. U. S. pat. 2,078,404; through *J. Soc. Chem. Ind.*, 58 (1939), 964.
(E. G. V.)

Oils and Fats—Iodine Value of. Report by Special Sub-Committee of the N. S. W. Branch of the Australian Chemical Institute. Results and comments are given by four analysts on the iodine value of oils (coconut, olive, groundnut, maize, linseed, beef-fat) by (1) Wijs' method, (2) the pyridine sulfate dibromide method of Rosenmund and Kuhnhenn and (3) Toms' bromine vapor method. All analysts report (1) to be satisfactory. Results obtained by (2) were low compared with those obtained by (1); oils of higher iodine value showed greater variation from usual results. Results of (3) showed general agreement with those of

(1). A great improvement in (3) is the use of an etched slide. Method (3) is suitable for handling a large number of oils simultaneously and is preferred. The method is independent of standardized solutions and cheap to operate. The methods are described in detail.—ANON. *J. Proc. Austral. Chem. Inst.*, 5 (1938), 329–337; through *J. Soc. Chem. Ind.*, 58 (1939), 71. (E. G. V.)

Olive Oil—Concrete Acids of. A variation in the Bellier index of various samples of olive oil led to the investigation of the concrete acids by fractional separation using alcohol and the lithium salts. The conclusion reached is that olive oils contain, as concrete acids, palmitic acid mixed in minute proportions with arachidic acid varying according to the variety of oil. The very congealable oils contain some oleodipalmitin.—RENE MARCILLE. *Compt. rend.*, 209 (1939), 730. (G. W. H.)

Palm Oil—Bleaching of. Processes discussed for bleaching palm oil include (1) Kellens', (2) air-blowing (with and without added water), (3) treatment with bleaching earth. The recovery of vitamins from palm oil, combined with (3), is briefly considered.—G. DE BELSUNCE. *Bull. mat. grasses, inst. colonial Marseille*, 23 (1939), 79–85; through *J. Soc. Chem. Ind.*, 58 (1939), 743. (E. G. V.)

Stearone and Canauba Wax—Temperatures of Crystalline Deposition of, from Their Solutions in Various Organic Liquids. The crystallization temperatures of 0.2–10% solutions in 24 solvents are recorded.—K. KINO. *J. Soc. Chem. Ind. Japan*, 42 (1939), 186–187; through *J. Soc. Chem. Ind.*, 58 (1939), 964. (E. G. V.)

Vegetable Fat—Detecting Animal Fat in. The sterols are isolated, converted to dibromides; cholesterol dibromide is insoluble in ethyl ether whereas those of vegetable sterols are soluble.—J. A. BROGE. *Fette u. Seifen*, 46 (1939), 131; through *Am. Perfumer*, 40 (1940), No. 1, 75. (G. W. F.)

Unclassified

Acyl Compounds of the Dihydrofollicular Hormone. The dihydrofollicular hormone is treated with acylating agents such as glacial acetic acid, in the presence of strong acids such as hydrobromic acid as catalysts, for the production of acyl derivatives.—FRIEDRICH HILDEBRANDT and ERWIN SCHWENK, assignors to SCHERING A. G. U. S. pat. 2,154,272, April 11, 1939. (A. P.-C.)

Alkanolamines. VI. Physiologically Active Compounds. I. The Preparation of Substituted Anilino Alcohols. A new series of N-(*o*-amino- and *p*-aminophenyl)alkanolamines has been prepared by reduction of the corresponding nitro compounds resulting from the condensation of *o*- and *p*-nitrochlorobenzene with a series of amino alcohols. These compounds and their derivatives are of interest because of possible pressor and local anesthetic action.—C. B. KREMER. *J. Am. Chem. Soc.*, 61 (1939), 1321. (E. B. S.)

Amidines—Therapeutically Active. These are prepared from phenoxy fatty acid nitriles, amides or thioamides that are substituted in the phenyl nucleus or from quinolyloxy fatty acid nitriles, amides or thioamides in which the oxy-fatty acid nitrile, amide or thioamide residue is a substituent of the isocyclic ring by (1) converting the nitrile into its amido-ether and treating it with ammonia or a primary or secondary amine, (2) heating the nitrile with a salt of ammonia or of a primary or secondary amine, (3) converting the amide into its imido-chloride and treating it with ammonia or a primary or secondary amine or (4) causing the thioamide in free or nascent form to react with ammonia or a primary or secondary amine.—KARL MIESCHER and ERNST URECH, assignors to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. U. S. pat. 2,149,457, March 7, 1939. (A. P.-C.)

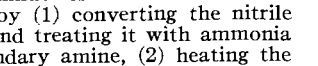
Amino Acids—New Synthesis of. When α-amino dicarboxylic acids were submitted to the Schmidt hydrazoic acid reaction, the carboxyl group remote from the α-amino group was replaced by an amino group. Thus, *d*-glutamic, α-aminoadipic and α-aminopimelic acids furnished *d*-αγ-diamino-*n*-butyric acid, *dl*-ornithine and *dl*-lysine, respectively, in good yield. A convenient method for the isolation of basic amino acids as their dipicrates is described. The synthesis of *dl*-lysine in 60% yield directly from ethyl cyclohexanone-2-carboxylate and two molecules of hydrazoic acid has been realized. *dl*-Ornithine (40% yield) was produced by similar treatment of ethyl cyclopentanone-2-carboxylate. Malonic acid, recorded in the literature as being inert toward hydrazoic acid, reacted with this reagent under suitable conditions, and glycine was isolated. It is suggested that this reaction provides a new general method for the synthesis of α-amino acids.—DONALD W. ADAMSON. *J. Chem. Soc.* (1939), 1564. (W. T. S.)

Aminobenzolsulfonamide and of Related Compounds—Names of. A review of the various names assigned to compounds of the sulfanilamide group. Ten structural formulæ are given together with names.—V. D. B. *Pharm. Weekblad*, 76 (1939), 818. (E. H. W.)

Aminonaphthoic Acids—Alkylaminoalkyl Esters of, as Local Anesthetics. Esters have been prepared which represent combinations between eight different dialkylamino alcohols and 3-, 4-, 5- and 6-amino-1-naphthoic acid. All of the esters showed decided local anesthetic activity when tested in the form of their salts. However, some of the hydrochlorides are quite irritating and are rather insoluble in water. The investigation is being continued.—F. F. BLICKE and H. C. PARKE. *J. Am. Chem. Soc.*, 61 (1939), 1200. (E. B. S.)

Analeptic Compounds. Pyrazinemonocarboxylic acid derivatives which have analeptic properties (substituted amides and hydrazides) are obtained by treating pyrazinecarbonyl chloride (prepared by the action of thionyl chloride on pyrazinecarboxylic acid) with amines in anhydrous solvents such as ethyl acetate or benzene at ordinary or elevated temperatures or by reaction of alkyl esters of the acid with amines. Details are given of the preparation of various such compounds.—OTTO DALMER and EUGENE WALTER, assignors to MERCK & CO. U. S. pat. 2,149,279, March 7, 1939. (A. P.-C.)

Animal Pigments. The pigments included are: porphyrins, hematin, bile pigments, hemocyanins, carotenoids, flavins and pterins.—R. LEMBERG. *Ann. Rev. Biochem.*, 7 (1938), 421–448; through *Chem. Abstr.*, 33 (1939), 3833. (F. J. S.)

Azobenzene Sulfonchloramide Series—Chemotherapeutic Studies in. II. Meta and Para Derivatives. After Dakin and co-workers concluded that the antiseptic action of alkali hypochlorites was due to their interaction with proteins and other amino compounds many attempts were made to find compounds of greater usefulness. In the present research, interest has centered upon dicyclic N-chlorsulfonamides in which nuclear connection is through a nitrogen to nitrogen linkage. The azobenzene nucleus,  , show that three sodium aryl sulfonchloramides and twelve disodium aryl di(sulfonchloramides) are possible. The sodium salts were selected because of their solubility in water. Experimental work is reported in detail. Potassium azoxybenzene-3,3-disulfonate was synthesized and a method is given

for the corresponding azo derivative, avoiding the azoxy stage. A new intermediate azobenzene-*m*-sulfonamide was synthesized and also three new compounds of the azobenzene sulfonchloramide series. Preliminary bacteriological results show bactericidal activity and compare favorably with chloramine-T.—SEYMOUR STERN and ABRAHAM TAUB. *Jour. A. Ph. A.*, 28 (1939), 1032. (Z. M. C.)

Barbituric Acid Series—Phenyl Alkyl Nitrogen Substitution and Reactivity in. The substitution of one methyl or one butyl group in the place of one phenyl group in 1,3-diphenyl-5,5-dibromobarbituric acid does not appear to promote a reaction of the halogens with such reagents as thiourea, potassium thiocyanate or amines. The 1-phenyl-3-methyl- and 3-*n*-butyl-barbituric acid, their 5,5-dibromo and their 5-anilinomethylene derivatives have been prepared. A convenient procedure has been developed which gives satisfactory yields of both mono and di-nitrogen substituted barbituric acids from the substituted urea and malonic acid in acetic anhydride solution.—D. NIGHTINGALE and R. G. TAYLOR. *J. Am. Chem. Soc.*, 61 (1939), 1015, (E. B. S.)

Bee Poison—Purified. The stings and poison glands of bees are extracted with a dilute organic acid which is volatile in water vapor, such as dilute formic acid, and the extract is evaporated to dryness in a high vacuum evaporator at a temperature not exceeding 20° C.; the dried extract is treated with a concentrated alcohol to remove the inactive inert substances; the residue is extracted with an aqueous alcohol of 55 to 65% concentration and the solution is evaporated to dryness under a high vacuum. The resulting product has good keeping qualities.—GEORG HAHN. U. S. 2,154,934, April 18, 1939. (A. P.-C.)

Benzoylascorbic Acid. By reaction of sodium ascorbate with benzoyl chloride, benzoylascorbic acid is obtained, which is more stable to oxidizing agents than ascorbic acid and is suitable for therapeutic use. From sodium ascorbate and veratroyl chloride, veratroylascorbic acid is obtained. Various procedure details are given.—KURT WARNAT, assignor to HOFFMANN-LAROCHE, INC. U. S. pat. 2,150,140, March 7, 1939. (A. P.-C.)

Biguanide with Bivalent Metals—Complex Compounds of. I. Copper Biguanidines. The free anhydrous cupric biguanidine has been obtained from hydrated variety. This furnishes an additional evidence in support of the constitution of these complexes, previously suggested. It has been further shown that the formation of complexes with biguanide confers greater stability on many unstable, simple cupric salts like iodide, sulfite, thiosulfate, thiocyanate and hypophosphite. Besides these, a number of other new cupric bisbiguanidinium salts, as fluoride, bromide, nitrite, carbonate, dithionate and chromate, has been described.—PRIYADARANJAN RAY and PHANINDRA NATH BATCHI. *J. Indian Chem. Soc.*, 16 (1939), 617. (F. J. S.)

Biguanide with Tervalent Metals—Complex Compounds of. VI. Cobaltic Trisbiguanidines. Tervalent cobalt has been found to combine with biguanide to form complex cobaltic trisbiguanidine, its hydrate and a series of well-defined salts, resembling the corresponding chromium complex and its derivatives in composition and properties.—PRIYADARANJAN RAY and NIHAR KUMAR DUTT. *J. Indian Chem. Soc.*, 16 (1939), 621. (F. J. S.)

Biguanide with Tervalent Metals—Complex Compounds of. VII. Cobaltic Trisphenylbiguanidines. Two different cobaltic trisphenylbiguanide hydrates have been obtained differing in their state of hydration and solubility in alcohol. Both of the hydrates give the same cobaltic trisphenylbiguanidine on dehydration. A series of salts of the complex base—chloride, bromide, iodide, sulfate, nitrate, nitrite, carbonate, thiosulfate, thiocyanate, dithionate and chromate—has been prepared and their properties described. They resemble the corresponding chromium compounds. A solution of the complex chloride has been found to give characteristic precipitates with many complex anions.—PRIYADARANJAN RAY and HARIHAR PRASAD BHATTACHARYA. *J. Indian Chem. Soc.*, 16 (1939), 629. (F. J. S.)

Bismuth Saccharates—Preparation of Alkaline. Bismuth as hydroxide or a soluble salt will dissolve in alkaline solutions of polyhydroxy acids or other polyhydroxy compounds, the solutions varying in stability with the nature of the compound used. Frequently the bismuth complex can be precipitated by the addition of alcohol. Many examples of the reaction are to be found in the literature and several different structures have been suggested. References are cited. Little has been done on experimental proof of the structure of these compounds and there is some doubt that all represent true chemical compounds. It is essential in preparing these complexes that there be two hydroxyl groups in adjacent positions. Alkaline solutions of ethylene glycol and 1,2-propylene glycol will dissolve large quantities of bismuth hydroxide while 1,3-trimethylene glycol and diethylene glycol will not dissolve bismuth hydroxide. Alkaline bismuth complexes cannot be isolated as solid compounds. The work of Rosenheim and Browning and others is discussed. Experimental work is reported in detail. Methods are described for preparing di-potassium di-bismuthyl saccharate, di-bismuthyl saccharic acid, mono-sodium di-bismuthyl saccharate, sodium potassium di-bismuthyl saccharate and di-potassium tri-bismuthyl saccharate. Potassium saccharate has been shown to be more complex than the corresponding tartrate and gluconate.—G. O. DOAK. *Jour. A. Ph. A.*, 29 (1940), 108. (Z. M. C.)

Butylchlororesorcinol. 1,3-Dihydroxy-4-butyl-6-chlorobenzene is formed by reaction of butylresorcinol with sulfuryl chloride and may be used as an antiseptic. Mention is also made of similar reactions of sulfuryl chloride with ethyl-, propyl-, amyl- and hexylresorcinol, for the production of monochloro derivatives.—EUGENE MONESS, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,151,137, March 21, 1939. (A. P.-C.)

Chloralamides. The Reaction of Phosphorus Pentachloride on Chloral-Chlorosalicylamides and Their Methyl Ethers, and the Reactivity of the Chlorine Atom. The methyl ethers of chloral-chlorosalicylamides have been reacted with phosphorus pentachloride and the corresponding α-chloro compounds have been isolated. The α-chlorine atom is very reactive and has been found to react with water, alcohols, amines, phenols and organic acids, yielding related derivatives.—N. W. HIRWE and K. N. RANA. *J. Indian Chem. Soc.*, 16 (1939), 677. (F. J. S.)

Choline and Betaine—Pyrrolidinium Analogs of. Onium Compounds. XXI. A synthesis for hygric acid, involving the catalytic reduction of a pyrrole compound, is described. Hygric acid amide and (1-methylpyrrolidyl-2)-methanol have been prepared. Several tertiary pyrrolidine and quaternary pyrrolidinium derivatives were prepared for pharmacological testing.—R. R. RENSHAW and W. E. CASS. *J. Am. Chem. Soc.*, 61 (1939), 1195. (E. B. S.)

Citral Condensation with Aldehydes. Citral may be condensed with other aldehydes using agents such as sodamide or potassium tertiary butoxide,—

Brit. Pat. 510,540; through *Am. Perfumer*, 40 (1940), No. 1, 77. (G. W. F.)

Dihydroabietic Acid—Presence of, in Pine Oleoresin and Rosin. Conversion to the isomeric lactone affords an excellent means for detecting dihydroabietic acid in the presence of large proportions of other resin acids. By this means dihydroabietic acid has been shown to be present in the oleoresin and the rosin of *P. palustris* and *P. caribæa*. Cold concentrated sulfuric acid has been shown to isomerize *l*-pimaric acid into *l*-abietic acid. Lactonized dihydroabietic acid may readily be prepared from commercial hydrogenated rosin.—E. E. FLECK and S. PALKIN. *J. Am. Chem. Soc.*, 61 (1939), 1230. (E. B. S.)

Dihydroxyestrin—Preparation of New Aliphatic Esters of. Aromatic or aliphatic acylating agents containing more than 2 atoms of carbon are made to react on esters of estradiol, the hydrogen atom of one of the hydroxyls of which has been substituted by aliphatic acid radicals containing more than 2 carbon atoms or by aromatic acid radicals.—SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 423,453, Oct. 31, 1937. (A. P.-C.)

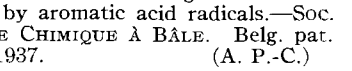
Dihydroxyestrin Series—Process for the Preparation of Partially Esterified Compounds of the, Containing a Free Phenolic Hydroxyl. Completely esterified compounds of the dihydroxyestrin series are treated cautiously with hydrolyzing agents in presence of solvents until the alkyl group has been removed from the phenolic hydroxyl.—SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 423,434, Oct. 31, 1937. (A. P.-C.)

Estrogenic Compounds—Synthetic Preparation of One. The female sex hormone has proved of value, not only in the treatment of climacteric disorders, but also in disorders of the female generative system, in general. Formerly all substances used for these purposes were derived from the animal body. Attempts to elucidate the structure of these hormones and related compounds and to prepare them synthetically led to a search for simpler substances having estrogenic activity. From the sterol derivatives *via* the tetrahydronaphthalenes and dihydro-di-phenyl derivatives the progress of simplification led to the stilbenes. Neo-estranol represents a very active estrogenic compound of the stilbene class and a substance definitely useful in those cases where the sex hormones are indicated.—ANON. *Indian Med. Gaz.*, 74 (1939), 590. (W. T. S.)

Ethers—Manufacture of. Ethers are obtained by interaction of those olefines which can be hydrated to secondary alcohols with excess of a primary or secondary alcohol in the presence of concentrated sulfuric acid at 90–180° at not less than the vapor pressure of the alcohol until not less than 20% of the olefine is converted into ether (3–36 hours). The production of ethyl-isopropyl-ether and methyl-isobutyl-ether is described and the use of propane is claimed.—A. W. FRANCIS. U. S. pat. 2,077,042; through *J. Soc. Chem. Ind.*, 58 (1939), 913. (E. G. V.)

Hæmatococcus Pluvialis—Some Constituents of. The active principle which is found in the fresh water alga is known to be euglenarhodon. This principle occurs in the alga in three different forms, which are very unstable. Esters A and B saponify very rapidly in contrast to ester C which saponifies very slowly; ester A crystallizes out from a solution containing benzol-methanol, in reddish spherical crystals, m. p. 101°. After the solution was saponified, euglenarhodon and palmitic acid were isolated; the author states that ester A is probably dipalmitinic acid ester of euglenarhodon. Ester B crystallizes out from a solution containing benzol-methanol in dark brown crystals which lose their hardness when exposed to room temperature. Furthermore ester B is found to exist in very small quantities in the alga. Ester C decomposes very rapidly and consequently crystals could not be obtained. Besides the derivatives already mentioned, the author was able to isolate in small quantities the following derivatives: hæmatoxanthin, β-carotene and also traces of α-carotene.—J. TISCHER. *Chem. Zentr.*, 110 (1939), 138. (G. B.)

Imidazolines. Compounds causing increase in blood pressure and having the general formula



(where R stands for a substituted or an unsubstituted phenyl, naphthyl or quinolyl radical, the substituent being alkyl, alkenyl, hydroxy or alkoxy, and n stands for the numbers 1 to 6) are produced by causing imino ethers of the general formula $RO(CH_2)_nC:(NH)OR'$ (in which R' represents alkyl) to react with ethylenediamine. The imino ethers may be used in the form of the free bases or as salts such as the hydrochlorides, with or without a solvent such as an alkanol or alkyl polyhalide, and with or without heating. Details of the preparation of various such compounds are given.—ADOLF SONN, assignor to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. U. S. pat. 2,149,473, March 7, 1939. (A. P.-C.)

Linoleic Acid—Elaidinization of. Linoleic acid was elaidinized with nitrogen oxides and with selenium. A crystalline linoleic acid, melting point 28–29°, a liquid isomer in an impure form and conjugated by-products were isolated from the reaction mixture. The crystalline linolelaidic acid yielded equal parts of a liquid and a solid tetrabromide, melting point 78°. Partial oxidation produced two sativic acids, melting points 122° and 146°. The noncrystalline isomer formed only liquid tetrabromides, and two sativic acids, melting points 126–127° and 156–158°. The isomerism of the linoleic acids is discussed.—J. P. KASS and G. O. BURR. *J. Am. Chem. Soc.*, 61 (1939), 1062. (E. B. S.)

Long Chain Acids—Studies in. II. Aleuritic Acid. Ethyl 16-acetoxy-10-ketopalmitate has been synthesized as a preliminary to the synthesis of 9:10:16-trihydroxypalmitic acid (aleuritic acid).—P. C. MITTER and PHANINDRA CHANDRA DUTTA. *J. Indian. Chem. Soc.*, 16 (1939), 673. (F. J. S.)

Mercury Compounds—Organic. A method of preparing an organic mercury compound in which an aromatic mercury group is linked with a compound containing an =NH group by replacement of the hydrogen of the =NH comprises reacting in an inert liquid medium a compound containing an =NH group in which both bonds thereof are joined to a bivalent residue, with a soluble aromatic mercury salt of a soluble acid in which mercury is directly connected by one of its valences to the acid radical in the salt and by its other valence to a carbon atom of an aromatic structure in which none of the carbon atoms has direct linkage with any element other than hydrogen, carbon or mercury, such as phenylmercury acetate, which by reaction with barbituric acid on heating in water forms phenylmercury barbiturate. Details of the production of numerous such compounds are given. Many of these compounds have high germicidal effect and relatively low toxicity.—CARL N. ANDERSEN, assignor to LEVER BROS. CO. U. S. pat. 2,155,922, April 25, 1939. (A. P.-C.)

Mercury Urethans—Acyloxy. Diuretic and antiseptic compounds suitable for therapeutic use are formed by the reaction upon urethans, in aqueous or alcoholic solution, of a mercury salt of the formula $XHgX$ or $XHgOH$, either as such or formed *in situ*

from acetic acid and mercuric oxide, in which X may represent the radical of acetic, propionic, tartaric, benzoic or nicotinic acid or theophylline or theobromine. Details are given of the production of a number of such compounds.—KARL MIESCHER and KARL HOFFMANN, assignors to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. U. S. pat. 2,156,598, May 2, 1939. (A. P.-C.)

p-Nitrosothymol and p-Aminothymol—Study of. Effort was made to facilitate the reduction of p-nitrosothymol to p-aminothymol and to learn more about the chemical behavior of both compounds. There is discussion of the theory involved and of this experimental work. The authors summarize their work as follows: (1) The tautomerism of the p-nitrosothymol–thymoquinonemonoxime system has been studied with a view toward determining the effect of this on the hydrolysis of the compound. (2) Thymoquinone was obtained in fair yields by hydrolyzing p-nitrosothymol by means of a catalyst in an acid solution. (3) p-Nitrosothymol was quantitatively reduced to p-aminothymol by the use of hydrogen in the presence of a palladium catalyst and in a different experiment by the use of a platinum catalyst. (4) An explanation for the color changes involved in the oxidation of p-aminothymol has been offered and supported. (5) p-Aminothymol was diazotized and thymohydroquinone was obtained from the resulting diazonium salt by means of a new method.—W. TAYLOR SUMERFORD and WALTER H. HARTUNG. *Jour. A. Ph. A.*, 29 (1940), 65. (Z. M. C.)

Organic Analysis and Synthesis. A discussion of determination of composition of natural substances: camphor, rotenone and quinine and synthesis of camphor, menthol, etc.—F. D. DODGE. *Am. Perfumer*, 40 (1940), No. 2, 32–34. (G. W. F.)

n-Pentadecylic Acid—Synthesis of. n-Pentadecylic acid has been synthesized starting with both commercial myristic acid and with tetradecyl alcohol. Procedures have been tried in which tetradecyl bromide and tetradecyl iodide are formed as intermediaries. The results obtained indicate that the iodide procedure is far less time consuming and gives substantially better yields. A general idea of the over-all production may be gained from the figures: 220 Gm. of the highly purified tetradecyl alcohol yielded 150 Gm. of highly purified pentadecylic acid by way of the iodide to the nitrile to the acid. This is a percentage yield of 69.6 on the basis of the original amount of pure tetradecyl alcohol used; not based on theoretical yields. In terms of tripentadecylin yield from tetradecyl alcohol the figure is 63.5%. A diagram is given which demonstrates the preparation of myristyl bromide from myristyl alcohol. Data is given in the form of two tables. Two illustrations are given in which the cooling curves of pentadecylic acid are shown, the time in minutes being plotted against the temperature in degrees C.—C. W. KRAWSON. *Pharm. Arch.*, 10 (1939), 88; 11 (1940), 12. (W. B. B.)

Phenoxybutanols—Arsenated. 4-Hydroxyphenylarsonic acid was condensed with isobutylene oxide to form 4-β-methyl-β-hydroxypropoxyphenylarsonic acid and this was reduced to the corresponding arseno derivative with hypophosphorous acid. 3-Nitro-4-β-methyl-β-hydroxypropoxyphenylarsonic acid was obtained directly from the nitration of 4-β-methyl-β-hydroxypropoxyphenylarsonic acid. 3-Amino-4-β-methyl-β-hydroxypropoxyphenylarsonic was obtained by the reduction of the corresponding nitro derivative with ferrous hydroxide and catalytically with Raney nickel catalyst. The corresponding arsine oxide and arseno derivatives of this amino arsenical were also prepared.—W. F. HOLCOMB and C. S. HAMILTON. *J. Am. Chem. Soc.*, 61 (1939), 1236. (E. B. S.)

Phthiocol—Antihemorrhagic Activity of Pure Synthetic. An announcement of the discovery of the antihemorrhagic activity of pure synthetic phthiocol, 2-methyl-3-hydroxy-1,4-naphthoquinone, which is generally similar to vitamin K physically and chemically. It is suggested that phthiocol is the simplest member of an homologous series of antihemorrhagic substances.—H. J. ALMQUIST and A. A. KLOSE. *J. Am. Chem. Soc.*, 61 (1939), 1611. (E. B. S.)

Pregnanolones. Organo-metallic compounds which tend to form unsaturated hydrocarbons, such as propyl-, isopropyl-, isobutyl-, cyclohexyl- and like magnesium halides (such as the iodides) are used in the production of pregnanolones from pregnandiones. Details are given of the production of a pregnanolone of the formula $C_{21}H_{34}O_2$ (melting point 204° to 216° C.), and of a pregnanolone semicarbazone of the formula $C_{22}H_{37}O_2N_3$ (melting point 143° to 155° C.).—FRIEDRICH HILDEBRANDT, assignor to SCHERING A. G. U. S. pat. 2,151,661, March 21, 1939. (A. P.-C.)

Pyrone Series—Synthetical Experiments in the. I. Attempted Oxidation of Chromanones with Selenium Dioxide. The chromanones are not oxidized with selenium dioxide to the chromones, although the flavanones and chalkones are oxidized with selenium dioxide to the flavones.—DUHKHAHARAN CHAKRAVARTI and JYOTIRMOY DUTTA. *J. Indian Chem. Soc.*, 16 (1939), 639. (F. J. S.)

Soporific Piperidine Compounds. New compounds of increased sleep-inducing properties (as compared with the initial materials) are produced by the catalytic hydrogenation of 1-methyl-2,4-dioxo-3,3-dipropyltetrahydropyridine, 1-methyl-2,4-dioxo-3,3-diethyltetrahydropyridine, 2,4-dioxo-3,3-diethyltetrahydropyridine and 1-allyl-2,4-dioxo-3,3-diethyltetrahydropyridine.—ERNST PREISWERK and OTTO SCHNIDER, assignors to HOFFMANN-LAROCHE, INC. U. S. pat. 2,151,047, March 21, 1939. (A. P.-C.)

Sterols. LX. Oxidation Products of Sarsasapogenin. Structure of C_{22} Keto Acid. A monabasic keto acid of the composition $C_{22}H_{34}O_4$ has been obtained by the chromic anhydride oxidation of sarsasapogenin acetate. Catalytic reduction of the acid yields the C_{22} hydroxy lactone previously obtained by the chromic anhydride oxidation of sarsasapogenin acetate. Reduction of the acid with sodium and alcohol gives similar results. The structure is being investigated further.—R. E. MARKER and E. ROHRMANN. *J. Am. Chem. Soc.*, 61 (1939), 1285. (E. B. S.)

Sulfanilamides—Substituted. I. N^4-Acyl Derivatives. The preparation and properties of a series of N^4-acyl derivatives of sulfanilamide are described, together with the preliminary results of the pharmacological study of their effect against experimental streptococcic infections in mice. Certain of the aliphatic acyl derivatives have been found to possess activity as antistreptococcic agents, of which the n-caproyl derivative is the most effective, having also a low toxicity.—E. MILLER, H. J. ROCK and M. L. MOORE. *J. Am. Chem. Soc.*, 61 (1939), 1198. (E. B. S.)

Sulfanilamidoaryl o-Sulfonic Acid Compounds. Compounds of the general formula RSO_2NHR' (in which R is a p-aminobenzene radical and R' is the radical of a mononuclear aryl o-sulfonic acid, or salt of such an acid) have greater bactericidal effect than sulfanilamide or related m- and p-derivatives and may be used therapeutically in the form of their salts such as the sodium, potassium, ammonium or amine salts (use of the copper, silver, zinc or other

heavy metal salts also being mentioned). Details are given of the preparation of a number of such compounds.—ELMORE H. NORTHEY, assignor to CALCO CHEMICAL CO. U. S. pat. 2,154,248, April 11, 1939. (A. P.-C.)

l-Tartaric Acid—Improvements in the Preparation of, from Racemic Tartaric Acid through Resolution by a Substituted Benzimidazol Base. The resolution of racemic tartaric acid with 2-(*d*-gluco-*d*-gulo-hepto-hexahydroxyhexyl)-benzimidazole is described. This base forms a readily crystallizable acid salt with *l*-tartaric acid, whereas the corresponding *d*-salt does not crystallize under any conditions yet investigated. The over-all yield of *l*-tartaric acid is over 90%. A new method of preparation of benzimidazoles substituted in the 2 position with sugar residues is described. This method is based on the reaction of aldonic acids (or lactones) with *o*-phenylenediamine. The properties of a number of these substituted benzimidazoles are described.—W. T. HASKINS and C. S. HUDSON. *J. Am. Chem. Soc.*, 61 (1939), 1266. (E. B. S.)

Thiobarbituric Acid Compounds. Compounds, many of which themselves or in the form of their salts (such as the sodium, magnesium or ammonium salts) are suitable for therapeutic use as sedatives and hypnotics, include numerous thiobarbituric acid derivatives. Details are given of the production of a number of these.—ARTHUR W. DOX, assignor to PARKE, DAVIS & CO. U. S. pats, 2,153,711 and 2,153,712, April 11, 1939. (A. P.-C.)

Thiobarbituric Acid Derivatives. By reactions such as the condensation of a malonic ester with thiourea, hypnotic and sedative thiobarbituric acid derivatives are obtained. A large number of examples are given.—ERNEST H. VOLWILER and DONALEE L. TABERN, assignors to ABBOTT LABORATORIES. U. S. pats. 2,153,729 to 2,153,732, April 11, 1939. (A. P.-C.)

BIOCHEMISTRY

Acetone—Determination of Urinary, by Means of the Micro Schloesing Apparatus. In determining urinary acetone by its precipitation with Nessler reagent, the apparatus used avoids separation of the acetone from the urine by distillation. The separation is effected by exposing the charged apparatus to a temperature of 37° to 38° C. for 45 minutes; acetone can be determined in the precipitate itself without separating it, by acidifying the medium with hydrochloric acid, adding a definite volume of standard iodine solution and adding the sodium hydroxide solution at once so that iodoform may form before acetone can recombine with the mercury reagent. If the urine contains acetylacetic acid, acetone must be set free from this before the urine is put into the apparatus. To do this, heat the urine for 3 minutes in boiling water in the presence of hydrochloric acid under the prescribed conditions so as to avoid losses. Two cc. of urine is used, absorbed in the apparatus by precipitated barium sulfate contained in paper trays. If B = cc. of fiftieth-normal iodine consumed, $B \times 106.37$ = mg. of acetone per liter of urine. Results by this method are accurate to about 5% when the acetone content of the urine is not less than 100 mg. per liter. Below 50 mg. the errors become large, caused by reducing substances normally in urine. To obtain accurate results down to a 20 mg. content of acetone, the precipitate is titrated with iodine after previous separation of the mother liquor by centrifuging.—P. FLEURY and J. CARBOU. *J. pharm. chim.*, 28 (1938), 102–111; through *Chimie & Industrie*, 41 (1939), 460. (A. P.-C.)

Alcohol—Determination of, in Post Mortem Examinations. Comparison of the alcohol contents of blood, urine and stomach contents gave different values in 4 out of 7 cases. For the determination in blood, the latter should be taken at a point at some distance from the stomach.—G. GULDBERG. *Norsk Mag. Laegevidenskap.*, 99 (1938), 241–278; through *Chimie & Industrie*, 41 (1939), 662. (A. P.-C.)

Antidiabetic Hormone. A process for the preparation of slowly absorbed antidiabetic hormone involves reacting an aqueous suspension or solution of insulin, at a p_H between 1 and 7, with an aqueous solution of an alum, and suspending the resultant precipitate in an aqueous medium having a p_H of 6. The product may be kept for several months without deterioration at a temperature of 5° to 10° C.—LAZAR ROSENTHAL and JONAS KAMLET. U. S. pat. 2,156,545, May 2, 1939. (A. P.-C.)

Antiserum—Preparation and Diagnostic Value of an, for Placental Protein. A precipitin for placental proteins reacted strongly with autolysates of placental tissue, kidney, liver and uterus. It reacted with a high percentage of the sera of pregnant women but not with normal sera. Some women with diseased genito-urinary tracts yielded positve sera.—HAROLD R. COHEN and VINCENT C. FREDA. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 22. (A. E. M.)

Arakawa's Reaction and Vitamin C of Human Milk. The author investigated the oxidation of the vitamin C-like substance in human milk and that of the ascorbic acid by means of the Arakawa Reagent III and knew that peroxide and guaiacol (or guaiacol-like substance) are necessary for this oxidation. The author also found that an addition of the reagent can oxidize a large amount of ascorbic acid, and was able to differentiate between human milk with AR5′(−) and Arakawa-positive milk made Arakawa-negative by ascorbic acid.—S. ISONO. *Tôhoku J. Exp. Med.*, 37 (1939), 216. (A. C. DeD.)

Ascorbic Acid—Influence of Catharsis and Diarrhea on Gastrointestinal Absorption of, in Infants. Ascorbic acid is excreted in small amounts in the stools of the normal infant. Large amounts of orally administered ascorbic acid are excreted following catharsis and during acute diarrhea. The increased fecal excretion of orally administered ascorbic acid during acute diarrhea in the infant points to its failure of absorption in the intestinal tract, and explains the low plasma value and low urinary excretion.—ARTHUR F. ABT, CHESTER J. FARMER and YALE J. TOPPER. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 24. (A. E. M.)

Barbiturates—Clinical Detection of, in Urine. The general methods are reviewed and the following procedure is recommended. Introduce the following into a separatory funnel: 25 cc. of urine, 5 drops of acetic acid and 50 cc. of ether. Shake vigorously for five minutes then let stand. Place a round-bottomed glass evaporating dish in a hole made in the center of a piece of asbestos resting on a metal cylinder (a can with top and bottom removed) and arrange so that the system may be raised or lowered over a 75-watt electric bulb, then light the bulb. Prepare a tube 25 mm. in diameter and 30 cm. long with the lower end constricted and pack with the following: a pledget of cotton first, then a homogeneous finely powdered mixture of 10 Gm. of anhydrous sodium sulfate and 0.3 Gm. of black Norit followed with another pledget of cotton. Arrange the tube so that the constricted end is about 2 cm. above the bottom of the dish. Draw off and discard the urine, then run the ether solution into the tube. The other solution should pass through the tube in about fifteen minutes. The residue is pure and well crystallized and may be examined directly under a low magnification.

Veronal and soneryl are readily identified by their characteristic crystalline forms. Deniges microchemical reactions may be applied.—F. SERVANTON. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 221–228. (S. W. G.)

Barbituric Derivatives in Urine—Rapid and Sensitive Method for Detecting. To 20 cc. of urine in a mortar add 10% acetic acid until acid to litmus, then triturate with 35 Gm. of anhydrous sodium sulfate in portions. Put the dry powder obtained in an extraction tube containing in its open base a layer of cotton, upon it 0.20 Gm. of vegetable charcoal, then 0.02 Gm. of magnesia and 2 Gm. of anhydrous sodium sulfate. Put 30 cc. of ether into the extraction tube and collect the ether slowly in a tall test-tube beneath it. This tube fits into a wider tube which forms part of a steam bath. When the ether layer in the extraction tube has disappeared finish evaporation of the ether solution in the test-tube below. If a crystalline residue is visible, add to a particle of it on a porcelain spot plate 0.5 cc. of 0.3% cobaltous nitrate in absolute alcohol, then 0.1 cc. of 1% diethylamine in absolute alcohol; a violet color is produced at once. In a 24-hour urine, 100 mg. (or less) of barbiturates per day can thus be detected.—H. GRIFFON and R. LE BRETON. *Documentation sci.*, 7 (1938), 127–130; through *Chimie & Industrie*, 41 (1939), 661. (A. P.-C.)

Biological Dyes—Monographs for. The titanous chloride method is used for assaying the dyes. A procedure for determining the solubility, the color and reactions in acid and alkaline solutions is given. Tests carried out on, and tentative monographs for 24 dyes are reported.—REPT. A. PH. A. LAB., *Bull. Natl. Formulary Committee*, 8 (1940), 97–136. (H. M. B.)

Blood Sugars—Modification of the Hagedorn and Jensen Method for the Microdetermination of. After having reviewed the methods for the microdetermination of blood sugars the author proposes a modification of the method of Hagedorn and Jensen by substituting the cadmic solution of Fujita-Iwatake and thus eliminating in this way the aspecific reduction.—B. BRUNO. *Biochim. terap. sper.*, 26 (1939), 6. (A. C. DeD.)

Carr and Price Reaction for Vitamin A—Inhibition of, by Substances in Cod Liver Oil. When furane, pyrrole, indole and skatole are added to a saponified vitamin A preparation before the addition of antimony trichloride, the reaction mixture turns purple instead of blue and in the spectroscope the 620μ band suffers considerable inhibition. The unsaponifiable faction of cod liver oil gives a stronger Carr and Price reaction than the oil itself. The color of the reaction with antimony trichloride in unsaponified cod liver oil is purple-blue, in saponified oil it is greenish blue. This inhibition of the intensity of the blue color of vitamin A in cod liver oil with the Carr and Price reagent must therefore be caused by the saponifiable fraction (cod liver oil acids). From 10 liters of cod liver oil, 43 Gm. of a reddish brown oil were obtained. This oil was esterified with absolute methanol and dry hydrochloric acid gas at 0° C. Seven different fractions were obtained by distilling in vacuum. All the fractions were found to possess nearly the same inhibiting power which did not change on saponification.—A. EMMERIE. *Rec. trav. chim.*, 57 (1938), 776–780; through *Chimie & Industrie*, 41 (1939), 527. (A. P.-C.)

Catalase and Insulin. The authors after studying the mechanism of the cellular respiration and the function of the catalase in the organism, carried out researches on the blood-catalase, the catalase-hemoglobinic index and on blood sugar in six normal and six diabetic persons, before and after injection of insulin; in addition to twenty diabetics fasting without insulin. The results showed that the catalytic power does not change with insulin and also in noticeable hypoglycemical conditions. There is no fixed relation between catalase and gravity of the disorder in the metabolism of glucose. —L. MIGONE and T. SANGUINETTI. *Biochim. terap. sper.*, 26 (1939), 24. (A. C. DeD.)

Cholesterol and Its Esters—Colorimetric Determination of, by the Liebermann-Burchard Reaction. The direct colorimetric determination of the total serum cholesterol gives invariably higher values than the determination by means of digitonin after saponification. To find out the reason for this difference, all reagents used were especially purified. the cholesterol by refluxing a saturated alcoholic solution with charcoal; the cholesterol acetate (melting-point 114° C.) and palmitate (melting-point 78.4° C.) were carefully prepared and the chloroform, alcohol, ether and acetic anhydride redistilled with special precautions. The cholesterol determination was carried out by the usual procedure, the preliminary evaporation of the sample being carried out in a stream of dry carbon dioxide. The extinction curve for cholesterol (0 to 600 mg. per 100 cc.) was established with the photometer using filter S61. As a result of these precautions it was shown that the cholesterol values obtained by preliminary precipitation with digitonin cannot be compared directly with the colorimetric values, as by the direct method cholesterol esters give by the Liebermann-Burchard reaction values which are too high.—E. C. NOYONS. *Biochem. Z.*, 298 (1938), 391–395; through *Chimie & Industrie*, 41 (1939), 662. (A. P.-C.)

Citric Acid—Influence of Diet on the Endogenous Production of. Citric acid is a normal metabolite of endogenous origin and rats receiving a predominant proportion of their energy requirements from dextrin or fat excrete a much larger amount than when protein (lactalbumin) supplies this need. With normal diets it is therefore believed that the citric acid elaborated is derived from metabolic products of fats and carbohydrates rather than of proteins. The ability of foodstuffs to give rise to citric acid appears to be independent of their acid- or base-producing rôle.—ARTHUR H. SMITH and CURTIS E. MEYER. *J. Biol. Chem.*, 131 (1939), 45–55; through *Chem. Abstr.*, 34 (1940), 140. (F. J. S.)

Cod Liver Oil Emulsions and Vitamins. A review with 18 references.—G. DULTZ. *Deut. Apoth. Ztg.*, 54 (1939), 1161, 1167–1168. (H. M. B.)

Copper Sulfate—Antidiabetic Action of. In some cases of diabetes small doses of copper sulfate produced a diminution of glucemia but it was not always accompanied by a diminution in glucosuria.—A. BERETTA. *Boll. soc. ital. biol. sper.*, 13 (1938), 881–884; through *Chimie & Industrie*, 41 (1939), 940. (A. P.-C.)

Estradiol Esterified in the 3-Position—Process for the Preparation of Compounds of the Type of. Esters of the type of estrone are treated with catalytically activated hydrogen in low-boiling aliphatic esters as solvent.—SOC. POUR L'INDUSTRIE CHIMIQUE À BÂLE. Belg. pat. 423,433, Oct. 31, 1937. (A. P.-C.)

Fibrinogen—Preparation of Stable, for Study of Streptococcal Fibrolysin. Dilute the pooled plasma with an equal volume of water and filter through a Seitz filter. Add one-fourth volume of saturated ammonium sulfate solution or one-half volume of saturated sodium chloride solution. Centrifuge and dry the precipitate over phosphorous pentoxide. The material dissolves readily in $M/100$ phosphate buffer of p_H 7.4.—L. R. CHRISTENSEN and

L. R. JONES. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 568. (A. E. M.)

Fumigation Residues in Foods—Determination of. Aeration appears to be the most logical method of isolating and concentration hydrocyanic acid in foods, and a modification of the Labatti method (*J. Soc. Chem. Ind.*, 54 (1935), 275T) is described. It combines isolation by aeration with determination by the basic titration method, and proved very satisfactory. The apparatus used is described. The limit of accuracy of the basic titration determination is equivalent to 0.5 p. p. m. on a 25-Gm. sample, which should be satisfactory for most purposes. The suitability of the phenolphthalein test for the qualitative detection and quantitative determination of hydrocyanic acid, and the possibility of devising a thiocyanate test, are discussed.—W. O. WINKLER. *J. Assoc. Official Agr. Chem.*, 22 (1939), 349–355. (A. P.-C.)

Gallic Acid—Coagulating Effect of. The effect is probably due to the carboxyl group (COOH) in the molecule, but its strength seems to depend on the hydroxyl (OH) group. This conclusion is drawn from comparisons of blood coagulation after the intravenous injection of various chemical compounds into the ear of the rabbit; 1 cc. of a 10% neutralized aqueous solution of the various substances was used.—Y. NODA and T. KURAKAKE. *Tôhoku J. Exp. Med.*, 35 (1939), 545; through *Brit. Med. J.*, 4100 (1939), 320H. (W. H. H.)

Gold Staining. This is seen in some cases in which gold salts have been used therapeutically, and can be produced experimentally in rabbits. As a rule it can be only detected by the slit-lamp, when a purple reflex may be seen in the cornea. The cornea, iris and conjunctiva are affected, and a more detailed investigation may throw light upon the nutritional interchange of fluids in these structures.—P. BONNET, G. BONAMOUR and E. KHALIFAH. *Arch. Ophthalmol.*, 3 (1939), 385; through *Brit. Med. J.*, 4103 (1939), 476E. (W. H. H.)

Gonadotrophin—Chorionic. International Standard for the Gonadotrophic Substance of Human Urine of Pregnancy. At the Third International Conference on the Standardization of Hormones, held at Geneva, it was decided that international standards should be adopted for certain hormones of the anterior lobe of the pituitary bland and analogous substances found in urines and serum, and that International units should be defined in terms of a weight of each such standard. The International unit has been defined as the specific gonadrotrophic activity of 0.1 mg. of the standard preparation, an amount of activity similar to that required, under the conditions used by many workers, to cause cornification of the vaginal epithelium of the immature rat. Samples of the international standard have been put up in tablet form. Each tablet contains approximately 100 International units. The standard is distributed by the National Institute for Medical Research, Hampstead, London.—ANON. *Pharm. J.*, 142 (1939), 498. (W. B. B.)

Heparin—Experimental Research upon the Conservation of Blood by. A comparative action of heparin and sodium citrate has been made upon the leucocytes. Heparin solution when injected into the veins of a rabbit caused hyperleucocytosis and a polynucleose, whereas sodium citrate, under the same experimental conditions, produced no change or sometimes a slight hypoleucocytosis. As far as one is able to judge the vitality of the leucocytes by the reaction of peroxydases, these elements seem to be better conserved in heparinized blood than in citrated blood. Heparin, contrary to sodium citrate does not exercise any harmful action upon alexin, either *in vivo* or *in vitro*.—A. GRIMBERG, CHAMRAEFF and PELLIER. *Soc. de Biol.*, June 17, 1939; through *Presse méd.*, 57 (1939), 1131. (W. H. H.)

Hog Livers, Etc.—Active Substances from. A process of obtaining physiologically active substances from animal livers comprises mincing finely the livers to form a suspension of tissue cells in a liquid menstruum composed substantially of the natural tissue juice without the addition of substantial quantities of aqueous fluids thereto, adding a small amount of dilute mineral acids such as sulfuric to the minced liver material, much less than the quantity of livers, in order to cause the tissue cells to swell and rupture by absorption of aqueous fluids present composed substantially of the nature tissue juice and thus release the physiologically active substances, the mixture assuming a plastic state; then adding a protein precipitant to precipitate the protein cell materials, separating the insoluble proteins from the liquid menstruum composed substantially of the tissue juice and the physiologically active substances, and recovering the physiologically active substances from the liquid menstruum.—HAVARD L. KEIL, assignor to ARMOUR AND CO. U. S. pat. 2,157,133, May 9, 1939. (A. P.-C.)

Honey—Viscometric Method for Determining Moisture in. The apparatus consisted essentially of the tube, calibrated, and mounted vertically in a metal frame. The frame and tube were placed in a diffusely illuminated glass constant-temperature bath, provided with a stirrer and surrounded by insulation, in which an observation window was cut. Following the procedure of Gibson and Jacobs, the steel balls were introduced below the surface of the honey through the 3-mm. tube. This served to free the ball of air bubbles and to ensure its fall through the center of the viscometer tube, thus eliminating two of the common sources of error alluded to above. Uniform height of column was maintained by filling the viscometer tube, with the thoroughly liquefied and well-mixed honey sample exactly to the highest calibration, while uniform conditions of fall were assured by adjusting the end of the 3-mm. tube to the mark 6 cm. from the top. The 5-cm. portion immediately below served to allow the ball to acquire velocity, while the last 15 cm. marked were used for the actual readings. When working with very viscous samples it was possible to measure the time of fall through the first and third 5-cm. subdivisions of the measuring zone, and, multiplying each value by 3 to convert to the standard 15-cm. distance, to obtain two measurements with the same ball. The relative viscosity affords a rapid and practical method of determining the moisture content of honey. The results may be evaluated either by the use of empirical equations or, more simply, by the use of a specialy constructed graph. A comparison of the results on 29 samples of honey of different floral types by the viscometric and official drying methods showed an average difference of 0.2%.—F. C. OPPEN and H. A. SCHUTTE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 130–133. (E. G. V.)

Hypodermic Needles—Sharpener for. A copper rod about six inches long which has six segments of successively decreasing diameter (from $1^2/_{10}$ to $^3/_{10}$ inches) is mounted between the perforated ends of a bent strip of iron and one end fitted with a small wheel. A leather band is passed around this wheel to a larger wooden wheel which is capable of being rotated by a hand-operated gear. The copper rod is criss-crossed all over and treated with a mixture of emery powder and oil. Rotation of the rod makes an excellent grind stone on which all size hypodermic needles or other cannulæ may be sharpened. Wiping the needle on a fine emery paper removes any "wire edge" left by the sharpener.—

T. S. GODWIN. *Chinese Med. J.*, 56 (1939), 379–380. (W. T. S.)

Insulin—Dehydration and Basal Requirements of. Depancreatized dogs maintained on a standard diet were dehydrated by producing glucosuria along with restricted water intake. The basal insulin requirement of the animals in this state was increased above that which they had normally. Glucosuria alone with sufficient water supply failed to increase the need for insulin.—D. B. TYLER, P. O. GREELY and D. R. DRURY. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 393. (A. E. M.)

Lactoflavin in Yeast. The yeast is boiled for ten minutes with water, and the extract, after being made alkaline with 0.5*N* sodium hydroxide solution and irradiated at temperatures not above 20° C. for two hours with an electric light in a special apparatus, is acidified with acetic acid. The lumiflavin produced is extracted with chloroform and determined with a step photometer.—F. REINDEL and O. FLEISCHMANN. *Biochem. Z.*, 301 (1939), 99; through *Brit. Med. J.*, 4097 (1939), 154D. (W. H. H.)

Methyl Glyoxal in Human Milk—Qualitative Reactions for. The methyl glyoxal-like substance from human milk which was determined by use of Fischler and Boethner's method showed also qualitative reactions—Denigès's reaction, pyrrol raction and precipitation reaction with 2,4-dinitrophenylhydrazine—for methyl glyoxal. It is highly probable that the methyl glyoxal-like substance which was extracted by Takamatsu from Arakawa-negative human milk for the first time is methyl glyoxal itself.—S. SATO. *Tôhoku J. Exp. Med.*, 37 (1939), 222. (A. C. DeD.)

Methyl Glyoxal-Like Substance Content in Human Milk—Variation of. When mothers secrete Arakawa-negative milk which contains a large amount of the methyl glyoxal-like substance are treated with vitamin B, or with both vitamin B and yakriton, and, in syphilitic cases, with antisyphilitic remedies, the poisonous substance will decrease remarkably, even before Arakawa's reaction has shown an improvement—a change into positive reaction. An initial and temporary increase of the poison will usually be seen at the start of the treatment. When Arakawa's reaction becomes weaker for a few days following an administration of vitamin B, it may be due to an initial and temporary increased excretion of methyl glyoxal-like substance.—S. SATO. *Tôhoku J. Exp. Med.*, 37 (1939), 230. (A. C. DeD.)

***N*-Methyltryptophan—Availability for Growth of, Administered as Its Acetyl Derivative.** Acetyl-*l*-*N*-methyltryptophan is not utilized for growth in the rat ingesting a diet deficient in tryptophan. Inasmuch as both *l*-*N*-methyltryptophan and acetyl-*l*-tryptophan both promote growth, the substitution of the methyl group for the amide hydrogen of the latter compound apparently prevents its hydrolytic cleavage in the body.—WM. G. GORDON, WM. M. CAHILL and RICHARD W. JACKSON. *J. Biol. Chem.*, 131 (1939), 189–196; through *Chem. Abstr.*, 34 (1940), 141. (F. J. S.)

Œstrogenic Activity—Analysis of Mechanism of. Œstrogenic compounds have been assayed by intraperitoneal injection into groups of 5 ovariectomized mice, smears being taken at twelve-hour intervals up to the 108th hour after the first injection. By using the percentage of positive smears (proœstrus, œstrus or metoestrus smear types being considered positive) of the 24th to 60th hour and the 72nd to 108th hour the distinctive time course in change of vaginal activity is described and its limits set. Comparison with the œstrone standard is made for œstriol, œstradiol, œstrone monobenzoate and 29 synthetic compounds, the most active synthetic compound examined being a dihydroxyoctahydrophenanthrene dicarboxylic anhydride which had 1.72% of the activity of a molecular equivalent of œstrone. Œstrone monobenzoate did not differ in either percentage activity or time course of action from œstrone on intraperitoneal injection. Phenanthrene, diphenyl and naphthalene derivatives had similar œstrogenic activities on the basis of vaginal stimulation, the activity being doubled in the phenanthrene derivatives having two hydroxyl groups on adjacent carbon atoms. Consideration of the effect of the œstrogens on the progesterone effect upon uterine proliferation, and on ovum growth, leads to the conclusion that a chain of reactions *in vivo* may be affected by, or permit the participation of, œstrogens but that some of the reactions, such as those leading to ovum growth, are labile to such compounds as œstrone and 1-keto-tetrahydrophenanthrene, while others, such as the processes involving vaginal stimulation, are affected by a great variety of compounds.—G. PINCUS and N. T. WERTHESSEN. *Proc. Roy. Soc.*, 126B (1938), 330; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 288. (S. W. G.)

Oxalic Acid—Microdetermination of, in Blood and Urine. Protein-free urine is acidified (1.5 cc. of five times normal hydrochloric acid per 20 cc.) and centrifuged; protein-containing urine is deproteinized after acidification, with 5% mercuric chloride; whole blood or serum is deproteinized with an equal volume of a solution containing 90 cc. of five times normal hydrochloric acid, 200 Gm. of sodium chloride and 50 Gm. of mercuric chloride per liter. The filtrates are freed from mercury by ammonium sulfide solution. Aliquots of the acid protein-free filtrates are extracted in a special micro-apparatus with 80 cc. of ether. The receiving flask contains a little sodium hydroxide to prevent decomposition of the oxalic acid by the extracted hydrochloric acid. After removal of the ether the extract is diluted to 10 cc. and acidified. Excess of calcium hydroxide and 3 cc. of 95% ethanol are added. After at least 9 hours for completion of precipitation, the precipitate is centrifuged and washed once with 33% ethanol saturated with calcium hydroxide. The precipitate is transferred to a special apparatus and after removal of solvent is esterified with ethanol containing fourth-normal hydrochloric acid, and the ester distilled into sodium hydroxide solution. After hydrolysis of the ester the oxalate is again precipitated as calcium salt, washed and dissolved in 10% sulfuric acid. Ethanol is removed by steam distillation and the final titration is carried out with decinormal potassium permanganate after addition of some manganese sulfate.—B. FLASCHENTRÄGER and P. B. MÜLLER. *Hoppe-Seyler's Z. physiol. Chem.*, 251 (1938), 52–61; through *Chimie & Industrie*, 41 (1939), 659. (A. P.-C.)

Pantothenic Acid as a Factor in Rat Nutrition. A calcium salt obtained from liver extract was found to stimulate rat growth. The calcium salt preparations were tested for their ability to stimulate the growth of *Streptococcus hemolyticus* and the diphtheria bacillus. They were found to behave like pantothenic acid, and for this reason it appears likely that pantothenic acid is one of the substances, in liver extracts, which are necessary for rat growth. —Y. SUBBAROW and C. H. HITCHINGS. *J. Am. Chem. Soc.*, 61 (1939), 1615. (E. B. S.)

Peptids and Proteins—Recent Chemical Studies of. A review of recent work on chemistry of peptids and proteins is given. The older Fisher method of synthesis of peptids did not permit the preparation of peptids of arginine, lysine or histidine, or peptids containing optically active amino acids, or contain-

ing sulfur. The method devised by Bergmann and Zervas has proved more generally useful, but still could not be used with cystine. Harington, in devising a synthesis of glutathione, got around this difficulty. The value of Neuberger's method of electrometric titration in alcoholic solution is discussed. The effect of iodation, acetylation, etc., on the electromctric properties of the amino acids has been made useful for study of some of the groupings in proteins such as insulin, thyroglobulin and crystalline pepsin. Some proteins contain carbohydrate groups, even egg albumin contains such a grouping. The work done to isolate the carbohydrate of egg albumin is described. A polysaccharide of constant composition has been isolated from the albumin (mol. wt. 1200). It is an amino sugar containing 5% nitrogen, partly as glucoseamine and 50% of non-nitrogenous sugar, behaving like mannose. Besides glucoseamine there may be other nitrogenous compounds not yet isolated. 100 Gm. of egg albumin gave 3.5 Gm. of polysaccharide corresponding to about one polysaccharide group per mole. of protein of mol. wt. 40,000.—C. R. HARINGTON, *Dansk Tids. Farm.*, 13 (1939), 294. (C. S. L.)

Pregnant Mare Serum—Factors Influencing Ovarian Response of Normal and Hypophysectomized Rats to. Intraperitoneal application of pregnant mare serum extract in normal and hypophysectomized rats is more effective than subcutaneous injection. In small doses, frequently repeated, the intraperitoneal route is twice as effective. The extract is twice as effective in normal as in hypophysectomized rats. The uterine response is not significantly affected by the method of application. The rate of absorption seems to be a deciding factor in the mechanism.—RICHARD I. PENCHARZ. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 525. (A. E. M.)

Protein in Nephritis. It is justifiable to reduce protein consumption to a minimum except at the onset of acute nephritis and in the terminal uremic phase of chronic nephritis. Biologically first-class protein should be provided at all other stages to maintain the general condition of the patient. Protein starvation will kill the patient more rapidly than excess of protein.—J. D. S. CAMERON. *Edinburgh Med. J.*, 46 (1939), 386; through *Brit. Med. J.*, 4099 (1939), 264A. (W. H. H.)

Prothrombin—Determination of. A drop of blood obtained from an ear lobe puncture is put on a glass slide and mixed with a drop of equal size of thromboplastin (prepared according to author's directions *J. Am. Med. Assoc.*, 110 (1938), 1658). The mixture is slowly stirred with a fine pointed stirring rod. By holding the glass slide over a light the exact clotting time can readily be determined. Normal blood clots in 15 to 20 seconds. The clotting time is equal to $a + k/c$, where c is the concentration of prothrombin and a and k are constants.—ARMAND J. QUICK. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 788. (A. E. M.)

Sexual Hormones. *2, 152, 625*—Substances having the activity of male sexual hormones as well as of a corpus luteum hormone are obtained by treating a mixture containing cinchone, sitostenone or stigmastenone with metal compounds containing large proportions of available oxygen, such as chromic acid, or with a quadrivalent lead compound such as the acetate or with an acid "derived from hydrogen peroxide" such as peracetic acid. *2,152,-626*—Similar products are obtained using an initial material containing allocholesterol.—WILHELM DIRSCHERL and FRITZ HANUSCH, assignors to RARE CHEMICALS, INC. U. S. pats. 2,152,625 and 2,152,-626, April 4, 1939. (A. P.-C.)

Sterols. LXII. *etio*-Cholanic Acids from the Pregnanediols. Treatment of *allo*-pregnanol-3(β)-one-20, pregnanol-3(β)-one-20 and pregnanol-3(α)-one-20 with benzaldehyde and sodium ethylate gave the corresponding 21-benzal derivatives in excellent yield. Preparation of the acetates of these compounds and oxidation of the acetates with chromic anhydride gave the correspondingly substituted *etio*-cholanic acids in approximately 70% yields. The treatment of pregnanedione with benzaldehyde and sodium ethylate gave a mixture which could not be separated.—R. E. MARKER and E. L. WITTLE. *J. Am. Chem. Soc.*, 61 (1939), 1329. (E. B. S.)

Sterols. LXIII. 2,3-Dihydroxyandrostane Derivatives. Upon treatment of Δ^2-cholestene with hydrogen peroxide, 2,3-cholestanediol is obtained. In a similar manner Δ^2-androstenone-17 gave androstanone-17-diol-2,3, which upon reduction with sodium gave 2,3,17-androstanetriol identical to the product obtained by treatment of Δ^2-androstenol-17 with hydrogen peroxide.—R. E. MARKER and L. PLAMBECK, JR. *J. Am. Chem. Soc.*, 61 (1939), 1332. (E. B. S.)

Sterols. LXII. Position of the Hydroxyl Group in Tigogenin and Sarsasapogenin. The hydroxy sarsasapogenin lactone was converted into its *allo* form and was found to be identical with the hydroxy tigogenin lactone. This transformation indicates that the sarsasapogenin lactone differs from the tigogenin lactone only in regard to the configuration at C-5 and that the hydroxyl groups are located at C-3.—R. E. MARKER and E. ROHRMANN. *J. Am. Chem. Soc.*, 61 (1939), 1291. (E. B. S.)

Sterols. LXV. Progesterone from *allo*-Pregnanedione. The destructive distillation of the pyridine salt of 2-bromo-*allo*-pregnanedione gave a mixture of products from which progesterone and an isomeric product $\Delta^{1,2}$-*allo*-pregnenedione were isolated. Isomerization of *allo*-pregnanedione gave iso-*allo*-pregnanedione which could be isomerized back to the original.—R. E. MARKER, E. L. WITTLE and LOUIS PLAMBECK, JR. *J. Am. Chem. Soc.*, 61 (1939), 1333. (E. B. S.)

Sterols. LXVI. Reactions of Tigogenin. Tigogenin appears to have a ketone spiro acetal group in the side chain. The substance, though similar to sarsasapogenin in a number of ways, differs from it in its behavior toward Clemmensen reduction.—R. E. MARKER and E. ROHRMANN. *J. Am. Chem. Soc.*, 61 (1939), 1516. (E. B. S.)

Sterols. LIX. Sarsasapogenin Derivatives. Desoxysarsasapogenin. The method of preparing desoxysarsasapogenin has been simplified and the reactions characteristic of sarsasapogenin have been extended to the desoxy compound.—R. E. MARKER and E. ROHRMANN. *J. Am. Chem. Soc.*, 61 (1939), 1284. (E. B. S.)

Sterols. LXI. The Steroidal Content of Steers' Urine. The steroidal content of steers' urine, was found to contain no pregnanediols. A relatively large amount of cholesterol was found, but no equistanol. The ketonic fraction gave androsterone, dihydroisoandrosterone and estrone in approximately the same proportions as found in bulls' urine. The non-distillable carbinols gave a small amount of androstanedione on oxidation. The characteristic urinary hydrocarbon, $C_{28}H_{58}$, was found.—R. E. MARKER. *J. Am. Chem. Soc.*, 61 (1939), 1287. (E. B. S.)

Sulfanilamide—Excretion of, in Human Breast Milk. Quantitative estimations were made on blood and milk of nursing mothers, and on blood and urine of breast-fed babies, in cases of administration of sulfanilamide to the mother. Sulfanilamide was shown to be present in all body tissues except bone and fat. Twenty-eight normal women were studied during their first 8 post-partum days. They were divided into 2 groups, one receiving 30 grains, the

other 60 grains daily. Blood and milk were collected daily before the ten o'clock nursing period. Urine and blood studies were made on the babies, and all were closely watched for toxicity. Free sulfanilamide showed in breast milk, corresponding to the values in blood. Nursing babies showed traces in blood and urine, but no toxic manifestations. A baby cannot receive an adequate therapeutic dose from its mother. When 6 women were given sulfanilamide during labor, the drug was found in the cord blood and amniotic fluid.—H. L. STEWART, JR. and J. P. PRATT. *J. Am. Med. Assoc.*, 111 (1938), 1456. (G. S. G.)

Sulfate in Blood Serum—Determination of Total. Dilute 2 cc. of serum with 6 cc. of water, add 3 cc. of 20% trichloroacetic acid, mix thoroughly and filter through a dry ashless filter after 15 minutes. Place 2 cc. of the filtrate in a 15-cc. centrifuge tube, add 0.4 cc. of concentrated hydrochloric acid, hydrolyze for 2 hours in a boiling water bath and evaporate to dryness in vacuum at 100° C. Dissolve the residue in 2 cc. of 2% trichloroacetic acid and precipitate the sulfate with 5 cc. of 0.5% acetone solution of benzidine. After thorough mixing place the tube in a stoppered wide-mouthed bottle; keep overnight in a refrigerator, wash the precipitate and determine the sulfate colorimetrically by Cuthbertson and Tompsett's method, omitting the addition of 15% sodium hydroxide. The hydrochloric acid which usually interferes with the determination of total sulfates by the benzidine method is removed by the vacuum evaporation. If the sample is abnormally high in phosphorus the residue from the vacuum evaporation should be dissolved in 2 cc. of 3% trichloroacetic acid. The method gave very satisfactory recovery of 0.002 to 0.004 mg. of sulfate sulfur added to serum filtrate.—N. C. D. GUPTA. *Indian J. Vet. Sci.*, 8 (1938), 119–125; through *Chimie & Industrie*, 41 (1939), 660. (A. P.-C.)

Sulfonamides—Effect of, on Blood Serum. Two cases are described in which treatment with a sulfonamide over a long period and in large doses (uleron 423 gr. in one case and sulfonilamide 748 gr. in the other) was followed by an alteration in the blood serum which precluded the finding of a suitable donor for blood transfusion. Normal serum treated *in vitro* with sulfanilamide for four days or more agglutinated the red blood cells of donors of the corresponding blood group and the cells of universal donors. When these drugs were administered over shorter periods and in similar doses to six other patients such a change in the blood serum did not take place.—G. A. SCOTT and O. MEERAPFEL. *Lancet*, 237 (1939), 244. (W. H. H.)

Thiamin—Choline Esterase and Esters of. The acetyl ester of thiamin chloride was found to be a poorer inhibitor of choline esterase than free thiamin, while the pyrophosphoric ester has even less inhibitory action. The affinity for the enzyme of the former was calculated to be 5.3, and of the latter 1.7, times that of acetylcholine. The acetyl ester was slowly hydrolyzed by horse serum, the magnitude of the enzyme splitting being approximately equal to that due to the hydroxyl-ion scission at the same p_H (7.4).—DAVID GLICK and WILLIAM ANTOPOL. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 396. (A. E. M.)

Thrombocytes of Mothers with Different Arakawa's Reaction. The author performed a further study on the relationship between the blood platelet count and Arakawa's reaction in apparently healthy lactating mothers. The blood platelet count was low (or within the normal limits) in most of Arakawa-positive mothers and was more or less high (or over the normal limits) in Arakawa-negative mothers; the results obtained by J. Kimura in 1934 and 1935 were thus confirmed again by the present paper.—S. KIMURA. *Tôhoku J. Exp. Med.*, 37 (1939), 241. (A. C. DeD.)

Thyroid—Biochemistry of the. A review of the chemical and biochemical work on the nature of the active principle of the thyroid gland. It is concluded that the majority of the iodine in the food is taken up by the thyroid and converted to thyroxine, then built up into thyroglobulin. The actual hormone of the gland appears to be a peptid which probably contains both thyroxine and diiodotyrosine. This peptid is freed out of the thyroglobulin according to the needs of the organism under the control of the anterior hypophysis, and is transported to the periphery where it exerts its action. Decrease of iodine intake leads to compensatory enlargement of the thyroid gland (simple goiter). An overproduction of thyrotropic hormone of the hypophysis stimulates the thyroid to over activity and decreases its ability to store the hormone, overflooding the system with hormone and giving the condition known as Grave's disease.—C. R. HARINGTON. *Dansk Tids. Farm.*, 13 (1939), 285. (C. S. L.)

Urobilin and Urobilinogen—Origin and Diagnostic Value of. Both are normal elements of liver bile, and are derived from hemoglobin, as is bilirubin. They are, however, more easily diffused through the tissues, especially through the kidney. They are reabsorbed by the intestine and are transported back to the liver by the blood stream. The main cause of a pathological content of urobilin or urobilinogen in the urine is bile retention and consequent cholemia. This may be due to occlusion of the bile ducts or to lesions of the liver parenchyma.—D. ANTITCH and R. RUBENOVITCH. *Arch. des Maladies de l'Appareil Digestif*, 29 (1939), 365; through *Brit. Med. J.*, 4100 (1939), 320E. (W. H. H.)

Vitamin A—Biological Assay of Philippine Fish Liver Oils for. I. The Vitamin A Potency of "Sanga" (Mobula Eregoodoo-Tenke) Liver Oil. The oil contained 2400 U. S. P. units of vitamin A per Gm., determined by the rat-growth method.—M. GUTIÉRREZ. *Acta Med. Philippina*, 1 (1939), No. 1, 1–10; through *Chem. Abstr.*, 34 (1940), 218. (F. J. S.)

Vitamin A Concentrates—Activity of, from Fish Liver Oils. Examination of the activity of vitamin A concentrates and of samples of cod liver oil, spectroscopically and biologically, shows that the factor 1600 adopted by the Permanent Commission on Biological Standardization for converting the $E^{1\%}_{1\,cm.}$ value at 328 mμ into the biological activity in terms of International units, is too small. The vitamin A activity of the samples was determined by the increase in weight of rats and by the kolpokeratose test, though the latter is not considered a satisfactory test since difficulty arises in assessing small responses by the animals to small doses of vitamin. Statistical consideration of the results fails to account for the discrepancy between the factor found by the authors for converting the E value into International units and the factor 1600. For unsaponified vitamin A concentrates the conversion factor found varied from 3300 to 3600. Spectroscopic examination showed that esterified vitamin A possessed similar activity to the saponified fraction containing the alcohol axerophthol, but biological examination showed that the free alcohol possessed only half the activity shown by the ester.—T. MOLL and A. REID. *Z. Physiol. Chem.*, 260 (1939), 9; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 290. (S. W. G.)

Vitamin A in Concentrates—Determination of. Vitamin A has been shown to exist in two chemical forms, namely, as free alcohol or as ester. Vitamin

A concentrates not prepared by saponification contain the ester form, which is the native form, for in the liver almost all the vitamin A is esterified. Concentrates made by saponification of fish liver oils contain the vitamin largely in the form of the alcohol, axerophthol. Vitamin A ester was found more stable in oil solutions than was free vitamin A alcohol. Under the influence of oxygen of the air and light there was little decrease of spectroscopic extinction value (E value) or in the blue unit value obtained by the Carr-Price reaction within a time period of irradiation or exposure in which concentrates containing free vitamin A displayed lowering of the blue value, or the E value, to half the initial values. In biological assays, with comparison against the International Standard preparation of carotene, vitamin A ester was found biologically more active than vitamin A alcohol, probably because of the greater stability of the ester in the body. From the comparison of E values and biological assays it was evident that the factor, 1600, cited in the B. P. and by the International Standardization Committee, for conversion of E values to biological activity in International units per Gm., was not correct. No one factor was correct for both types of vitamin A. Since determination of the factor was concerned with the range of variable response of the animals used in the bioassay, one should cite the conversion factors with a mean error. The factors found in the studies reported were: for free vitamin A alcohol, 1800 ± 400; for the esterified vitamin A, 3400 ± 600 (or about double the official factor of 1600). The factor to be used was found to differ according to the source of the material and mode of preparation of the concentrate under test. Hence a proper potency value could not be found by spectrophotometry for a preparation of unknown past history. The preparation "Vogan," is stated to be made from high-potency fish liver oil without saponification, hence was assumed to contain the vitamin A in the form of native ester. Measurement of its biological activity in comparison with the International Standard preparation gave a potency of 120,000 ± 20,000 International units per Gm. For conversion from E values the factor 3400 ± 600 was found correct for this preparation.—W. GRAB. *Arch. exp. Path. Pharmakol.*, 193 (1939), 170. (C. S. L.)

Vitamin A—Influence of, upon Urea Clearance in the Rat. Vitamin A in the diet affects the magnitude of urea clearance in the rat. In avitaminosis A there is a 23 to 77% decrease in urea clearance. This is due to a functional deficiency without pathological changes. Administration of carotene in 5 of 7 rats resulted in 30 to 170% increase in urea clearance above the level in avitaminosis.—R. C. HERRIN. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 695. (A. E. M.)

Vitamin A in Ling Cod Liver Oil. Absorption curves are given for ling cod liver oil, Pacific whale oil and for average halibut and cod liver oils. Ling clod liver oil has a typical absorption around 328 mμ (vitamin A), and is more potent than halibut liver oil.—L. B. PETT, MARIAN LIPKIND and G. A. LEPAGE. *Nature*, 144 (1939), 634; through *Chem. Abstr.*, 34 (1940), 226. (F. J. S.)

Vitamin B_1 and Manganese—Interdependence of. II. III. Manganese, Copper, Iron Metabolism in B_1 Deficient Rats. Upon addition of one mg. manganese to a diet deficient in vitamin B_1 the rats stored 72%, while the controls stored only 25%. After addition of 400 gamma B_1 the Mn retention dropped to 34% in spite of continued Mn feeding. When the latter element was omitted, the balance became negative since the excess, which had been stored, was gradually eliminated. An increase of Mn retention by higher feeding caused a drop in copper absorption. This was not materially changed by the addition of vitamin B_1.—MARTA SANDBERG, DAVID PERLA and OLIVE M. HOLLY. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 369, 371. (A. E. M.)

Vitamin B_1—Colorimetric Method for Determining. The method is based on the oxidation of vitamin B_1 to thiochrome by means of alkaline potassium ferricyanide solution, conversion of the resulting ferrocyanide into Prussian blue, and comparison of the color with that of standard solutions of Prussian blue. In a test-tube place 1 cc. of vitamin solution containing 0.06 to 0.8 mg. of the vitamin; in 2 separate tubes place 1 cc. of standard solution containing 0.06 mg. and 0.40 mg., respectively, of vitamin; to each of the three tubes add 0.5 cc. of 1% potassium ferrocyanide solution, mix and add 1 cc. of a reagent prepared by dissolving 30 Gm. of pure sodium hydroxide and 0.3 Gm. of pure potassium cyanide in 80 cc. of distilled water and, after cooling, dilute to 100 cc. (the reagent must be prepared fresh daily); shake each solution for 1 minute at room temperature, then add 1.5 cc. of four times normal sulfuric acid, mix and add 5 cc. of Folin and Malmros' ferric gum ghatti reagent; dilute to 10 or 20 cc. according to the amount of vitamin present and compare in a colorimeter using a yellow light filter.—H. TAUBER. *Mikrochimie Acta*, 3 (1938), 108–109; through *Chimie & Industrie*, 41 (1939), 528. (A. P.-C.)

Vitamin B_1—New Techniques for Biological Assay of. The method is based on the determination of the number of days elapsing before the body temperature of the pigeon drops below 41.5° C. when deprived to vitamin B_1. In previous work the diet was practically devoid of all the vitamin B complex. This has now been corrected by giving 2 Gm. of autoclaved yeast per day to supply vitamins B other than B_1. By this method one International unit (10 mg. of standard rich bran preparation) corresponds to 3.1γ of synthetic vitamin B_1 hydrochloride. Using young rats as the test animal, the diet was supplemented by autoclaved yeast to supply the other B vitamins. By the rat growth curve method the same value for synthetic vitamin B_1 was obtained as with the above pigeon method, showing that the two methods are of equal value.—LUCIE RANDOIN and P. LEGALLIC. *Compt. rend. soc. biol.*, 128 (1938), 1052–1054, 1055–1057; through *Chimie & Industrie*, 41 (1939), 728. (A. P.-C.)

Vitamin B_6 Analogues—Antidermatitic Effect of. Acetylation does not diminish the antidermatitic effect of vitamin B_6. Methylation or ethylation of one of the hydroxymethyl groups diminishes the vitamin activity considerably, but less than methylation of the phenolic hydroxyl group. Replacement of one or more hydroxy-methyl groups by methyl or amino groups destroys the vitamin activity.—KLAUS UNNA. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 122. (A. E. M.)

Vitamin B_6—Structure of. I. The methyl ether of vitamin B_6 was oxidized to give a lactone $C_9H_9O_3N$ and a dibasic acid $C_9H_9O_5N$, which was shown to be 2-methyl-3-methoxypyridine -4,5-dicarboxylic acid. Vitamin B_6 was shown to be 2-methyl-3-hydroxy - 4,5 - di - (hydroxymethyl) - pyridine.—E. T. STILLER, J. C. KERESZTESY and J. R. STEVENS. *J. Am. Chem. Soc.*, 61 (1939), 1237. (E. B. S.)

Vitamin B_6—Structure of. II. 3-Cyano-4-ethoxymethyl-6-methyl-2-pyridone was made from ethoxyacetylacetone and cyanoacetamide. This 2-pyridone derivative was used for the syntheses of the lactone of 2-methyl-3-methoxy-4-hydroxymethyl-5-carboxypyridine and the 2-methyl-3-methoxy-4,5-pyridinedicarboxylic acid. This lactone and this acid were found to be identical with the lactone, $C_9H_9O_3N$, and the dibasic acid, $C_9H_9O_5N$, obtained

by the oxidation of the methyl ether of vitamin B_6. Thus, the structure of vitamin B_6 has been proved to be 2-methyl-3-hydroxy-4,5-di-(hydroxymethyl)-pyridine.—S. A. HARRIS, E. T. STILLER and K. FOLKERS. *J. Am. Chem. Soc.*, 61 (1939), 1242. (E. B. S.)

Vitamin B_6—Synthesis of. A complete synthesis of vitamin B_6 starting with ethoxyacetylacetone and cyanoacetamide has been accomplished. The synthetic vitamin B_6 hydrochloride is identical with the natural vitamin B_6 hydrochloride. A single dose of 100 gamma of synthetic vitamin B_6 hydrochloride gave a curative effect which paralleled that of the natural vitamin B_6.—S. A. HARRIS and K. FOLKERS *J. Am. Chem. Soc.*, 61 (1939), 1245. (E. B. S.)

Vitamin C and Toxins. IV. The Effect of Tetanus Toxin on Vitamin C Metabolism. The effect of the injection of 0.5 M. L. D. of tetanus toxin caused a decrease in true ascorbic acid value in the blood, liver, kidney and adrenal tissues of guinea pigs. The urinary excretion of free ascorbic acid was lowered during toxic condition with simultaneous increase in combined ascorbic acid. Also, a comparative study was carried out for the estimation of combined ascorbic acid in the urine by the method of Scarborough and Stewart and that of Sen-Gupta and Guha.—BAIDYANATH GHOSH. *J. Indian Chem. Soc.*, 16 (1939), 657. (F. J. S.)

Vitamin C—New Biochemical Method of Determination of. Guinea pigs subjected to the scorbutic diet of L. Randoin received daily doses of from 1.5 to 96 mg. of ascorbic acid incorporated in the diet. Eighteen days after the beginning of the experiment, the animals were sacrificed and the ascorbic acid determined in certain organs (suprarenals, kidneys, liver) using the dichloroindophenol method. The values found in the suprarenals give the most significant results. They permit the establishment, according to the method of least squares, of the following relationship between the ratio of the ascorbic acid of the organs (y) and the daily dose of ascorbic acid administered: $y = 68.44 \log (x + 1) - 4.90$. This new biochemical method is very specific and furnishes precise quantitative results.—L. RANDOIN and C. P. LEBLOND. *Compt. rend.*, 208 (1939), 941. (G. W. H.)

Vitamin C—Requirements of. A minimum of 30 to 35 mg. of ascorbic acid is required daily by human beings. The quantity of vitamin C needed depends partly on the composition of the diet; it should be increased—to 60 to 70 mg.—in pregnancy and lactation, and in general diseases. Even under normal conditions it is probably advisable to include more than 30 to 35 mg. of vitamin C in the diet.—W. NEUWEILER. *Klin. Wochschr.*, 18 (1939), 769; through *Brit. Med. J.*, 4100 (1939), 320A. (W. H. H.)

Vitamin D and Provitamins D—New Application of Kinetic Colorimetry to the Determination of. Using a 3-cc. portion of a freshly prepared reagent consisting of 30 cc. of a saturated solution of antimony trichloride in chloroform, 3 cc. of acetic anhydride and 5 drops of concentrated sulfuric acid and 0.5 cc. of the chloroformic solution of the sterol containing 50γ, the absorption luminescence is measured electrophotometrically at 30-second intervals for 5 minutes and the results expressed graphically. With a sterol having a double bond, as cholesterol, the reaction is developed slowly. With compounds of two conjugated double bonds in the cycle B as lumisterol, ergosterol (provitamin D_2) and 7,8-dehydrocholesterol (provitamin D_3), the reaction at once attains a certain intensity which is maintained at a constant value. With compounds of three conjugated double bonds as vitamins D_2 and D_3, the coloration, very intense at the start, diminishes rapidly to become fixed at a certain level.—YVES RAOUL and PAUL MEUNIER. *Compt. rend.*, 209 (1939), 546. (G. W. H.)

Vitamin D Potency of Different Fish and Fish Products. The vitamin D potency of three samples of fresh small herring "sild" was found to vary from 70 to 160 I. U. per Gm. of oil. Twelve samples of canned "sild" sardines, packed in tin and aluminum containers, had a vitamin D potency in the oil varying from 15 to 45 I. U. per Gm., equaling 390–1000 I. U. per 100 Gm. of canned product. Of the twelve samples, nine were 7–9 years old. Storage of the canned product does not appear to have any unfavorable influence on the vitamin D content, nor does the packing material. In two of these packs of "sild"sardines, known amounts of olive oil were used. A calculation of the vitamin D content of the total oil in the canned product (mixture of fish oil and olive oil) compared with the vitamin D value obtained by biological assay on the mixture of fish oil and olive oil furnished no evidence of destruction of vitamin D during the canning process. The vitamin D potency of different fish and fish products was determined with the following results: vitamin D of canned cod roe, 60 I. U. per Gm. of fat, or 85 I. U. per 100 Gm. of product; mackerel liver, 800 I. U. per Gm. of fat, 11,300 I. U. per 100 Gm. of product; mackerel flesh, 60 I. U. per Gm. of fat, 1100 I. U. per 100 Gm. of the product; red char, salted, 200 I. U. per Gm. of fat, 1120 I. U. per 100 Gm. of product; tuna, ventral part, 80 I. U. per Gm. of fat, 1570 I. U. per 100 Gm. of product; tuna, dorsal part, 70 I. U. per Gm. of fat, 430 I. U. per 100 Gm. of product; dogfish liver, 35 I. U. per Gm. of fat, 2420 I. U. per 100 Gm. of product; shrimp, 60 I. U. per Gm. of fat, 150 I. U. per 100 Gm. of product.—V. ASCHEHOUG, H. KRINGSTAD, and G. LUNDE. *J. Soc. Chem. Ind.*, 58 (1939), 220–223. (E. G. V.)

Vitamin E in Medicine. A review of the functions of vitamin E, especially concerning the experimental work of this vitamin on rats. During the past year, α-tocopherol, a substance which has the largest activity when tested on rats, and to which much of the activity of natural sources of vitamin E is due, has been synthesized together with other related active compounds.—M. M. O. BARRIE. *Pharm. J.*, 142 (1939), 513. (W. B. B.)

Vitamin K Activity in the Benzoquinone Series. Phlorone (2,5-dimethylbenzoquinone) is apparently the simplest compound with vitamin K activity investigated to date. Although it is approximately 2000 times less active than 2-methyl-1,4-naphthoquinone, the speed of action and period of efficiency are practically identical for the two compounds, unit for unit. (ALMQUIST and KLOSE, *Chem. Abstr.*, 33, 9382.)—S. ANSBACHER and ERHARD FERNHOLZ. *J. Biol. Chem.*, 131 (1939), 399–400; through *Chem. Abstr.*, 34 (1940), 142. (F. J. S.)

Vitamin Oils—High-Vacuum Distillation of. *2,150,683*—For the prevention of oxidation during the distillation of materials such as cod liver oil or tuna liver oil, the distillation is effected in a high vacuum (suitably at a pressure of less than about 0.1 mm.) and in the presence of an intoxicant which distils at least in part with the vitamin fraction, such as 1,2,4-trihydroxybenzene or a similar compound. *2,150,684*—This relates to various details of a short-path, high-vacuum distillation of solid substances such as vegetable or animal materials containing vitamins and glycerides. *2,150,685*—This relates to exhausting closed vessels to a high vacuum by use of a condensation pump which may be filled with amyl phthalate and which has a high velocity steam ejector connected on the low vacuum side.—KENNETH C. D. HICKMAN, assignor to DISTILLATION

PRODUCTS, INC. U. S. pats. 2,150,683 to 2,150,685, March 14, 1939. (A. P.-C.)

Vitamins A and A_2—Comparison of, by Distillation. The temperature of the elimination maximum of vitamin A_2 is only 3° above that of vitamin A indicating that the molecules of the two vitamins contain the same number of carbon atoms.—E. LEB. GRAY. *J. Biol. Chem.*, 131 (1939), 317–326; through *Chem. Abstr.*, 34 (1940), 142. (F. J. S.)

Vitamins K_1 and K_2—Derivatives of. As further proof of the isolation and suggested structure for vitamins K_1 and K_2, the diacetates of dihydro vitamin K_1 and dihydro vitamin K_2 have been prepared and are described.—S. B. BINKLEY, D. W. MACCORQUODALE, L. C. CHENEY, S. A. THAYER, R. W. MCKEE and E. A. DOISY. *J. Am. Chem. Soc.*, 61 (1939), 1612. (E. B. S.)

Vitamins K_1 and K_2—Isolation of. Verification, properties, analyses and hydrogenation of vitamins K_1 and K_2 are discussed.—R. W. MCKEE, S. B. BINKLEY, D. W. MACCORQUODALE, S. A. THAYER and E. A. DOISY. *J. Am. Chem. Soc.*, 61 (1939), 1295. (E. B. S.)

Vitamins—Collective Reference of. A collective reference for vitamin information; structural formulæ, proprietary preparations and their vitamin content and other pertinent data. The vitamins discussed include A_1, A_2, B-complex, B_1, B_2, B_3, B_4, B_5 and B_6; C, D-complex, P, K and F.—C. G. VAN ARKEL. *Pharm. Weekblad*, 76 (1939), 980–992 and 1017–1027. (E. H. W.)

ANALYTICAL

Amino Acids—Manometric Determination of, with Ninhydrin in the Warburg Apparatus. The ninhydrin reaction, which takes place with the carboxyl groups only of amino acids, whereby carbon dioxide is set free, is carried out in a Warburg apparatus. The technic is discussed.—C. SCHLAYER. *Biochem. Z.*, 297 (1938), 395–397; through *Chimie & Industrie*, 41 (1939), 461. (A. P.-C.)

Aminopyrine—Separation and Determination of, in Mixtures. There is a growing tendency to combine several synthetic organic substances in one remedy, sometimes even four in a single dose, acetophenetidin aminopyrine, caffeine and barbital or phenobarbital. So many inquiries about separation were received by the Food and Drug Administration that an attempt was made to device means of separating aminopyrine from caffeine, acetophenetidin, barbital, phenobarbital, antipyrine and cinchophen as well as various combinations of them. The work of other investigators was reviewed and the experimental work is reported in detail. Several methods of extraction were tried and the most satisfactory was the removal of all the drugs except aminopyrine by shaking with chloroform or chloroform-ether mixture in the presence of 5% sulfuric acid. The aminopyrine remained in the acid solution and was removed by chloroform after addition of alkali. Traces of aminopyrine were persistently carried over in chloroform extractions but in most cases the error was negligible. The two procedures described are not applicable to all separations. Recoveries by recommended methods range from 98 to 104%. Precipitation of the aminopyrine as a double salt with cadmium iodide or with mercuric chloride were not satisfactory. Attempts to separate the several substances by the differences in their solubilities in various solvents were not satisfactory.—L. E. WARREN. *Jour. A. Ph. A.*, 29 (1940), 115. (Z. M. C.)

Ampul Monographs of the National Formulary—Review of Tentative Changes in the. General discussion includes tests of identity and purity, official assays, direction for preparation of the ampul solutions, testing of small and large glass containers. Specific items in the monographs discussed are tests for ampul glass and assay of the following ampuls: bismuth and potassium tartrate in oil, bismuth subsalicylate, calcium chloride, calcium gluconate, ephedrine sulfate, green iron and ammonium citrates mercuric salicylate, sodium chloride, sodium iodide and sodium salicylate.—R. K. SNYDER and E. N. GATHERCOAL. *Jour. A. Ph. A.*, 29 (1940), 30. (Z. M. C.)

Antipyrine—Detection of, in Pyramidon. The method is based on the reaction which takes place in hot aqueous medium between antipyrine and mercury chloramide, whereas under the same conditions pyramidon does not react. The reaction product fixes 1.5 atoms of iodine per molecule of antipyrine. Dissolve 0.2 Gm. of sample in distilled water, add 0.5 Gm. of finely powdered mercury chloramide, heat to boiling, after cooling filter, wash the residue, dissolve 8 to 10 Gm. of potassium iodide in the filtrate, add a few cc. of starch solution and titrate with standard iodine solution. Number of cc. of iodine consumed multiplied by 6.25 = % pyramidon. If the amount of pyramidon present is large, take 0.1 Gm. instead of 0.2.—F. MONFORTE. *Ann. Chim. Applicata*, 28 (1938), 170–173; through *Chimie & Industrie*, 41 (1939), 951. (A. P.-C.)

Areca—Improved Assay for. The following method based on the German and Swiss procedures is recommended: Place 8 Gm. of areca, in moderately fine powder and accurately weighed, into a suitable flask, add 80 cc. of ether, shake well, add 4 cc. of ammonia T.S., and shake (preferably in a mechanical shaker) during 10 minutes. Allow to settle and decant the ethereal solution into another flask. Add 0.5 Gm. of talc to the decanted ether solution and shake for 3 minutes, then add 2.5 cc. of water and shake for 3 minutes more. Let stand until clear, decant 50 cc. of the ethereal solution, equivalent to 5 Gm. of areca, and distil off about $^2/_3$ of the ether. Extract the remaining ether in a separatory funnel, with 15 cc. $N/50$ sulfuric acid and then with 3 portions of water using 5 cc. each time. To the combined acid solution and washings, add methyl red T.S. and titrate the excess acid with $N/50$ sodium hydroxide solution. Each cc. of $N/50$ acid is equivalent to 0.0031 Gm. arecoline.—REPT. A. PH. A. LAB. *Bull. Natl. Formulary Committee*, 8 (1939), 6–8. (H. M. B.)

Arsenic—Rapid Volumetric Micromethod for Determining. The technic of the iodine-titration method previously referred to (*J. Assoc. Official Agr. Chem.*, 21 (1938), 200) has been worked out and is described in minute detail. It is suitable for determining 0.005 to 0.500 mg. of arsenic trioxide. After the necessary sample preparation, the determination proper can be carried out in less than 10 minutes. The main features that make this rapid method possible are: (1) heating of the evolution solution to 95° C., (2) an artificial resin delivery tube that prevents the mercury arsenides formed at one stage from adhering to the inside of the delivery tube, (3) addition of gum arabic to the absorbing solution to keep the arsenides in suspension, (4) adjustment of p_H (7 to 8.5) for complete rapid oxidation, (5) development of an apparatus (illustrated and described) and the use of an extraordinarily efficient arsine absorbent (1.6 Gm. of mercuric chloride and 0.05 Gm. of U. S. P. gum arabic in 100 cc. of water), which permits the use of the small volumes necessary for microtitrations. The results of 34 recovery experiments showed an average recovery of 99.5% with a standard deviation of 0.85%. Results are also presented to show that the procedure is satisfactory on apple strip solutions.—C. C. CASSIL and H. J. WICHMANN. *J. Assoc. Official Agr. Chem.*, 22 (1939), 436–445. (A. P.-C.)

Arsenic—Report on the Determination of, in Foods. A collaborative study of the determination of arsenic in shrimp and tobacco, using a wet sulfuric-nitric-perchloric acid digestion and the Gutzeit method for the final determination, gave very erratic results, which are attributed to variations in the Gutzeit procedure and not to sample preparation.—C. C. CASSIL. *J. Assoc. Official Agr. Chem.*, 22 (1939), 319–320. (A. P.-C.)

Barbiturates—Determination of. The work of work of Paget and Tilly (*Bull. sci. pharmacol.*, 43 (1936), 587; *J. pharm. chim., Paris*, 25 (1937), 222) on the identification of the barbiturates by Millon's reagent has been studied with a view to extending their conclusions to further derivatives of malonylurea. Their method of identification is based on the nature of the precipitate, and the time taken for it to be produced, using a special Millon's reagent. In a series of experiments based on their work difficulty was experienced in obtaining consistent results with the time factor, but the characteristic precipitation reactions led to further experimentation in this direction. Using solutions of the various barbiturates in the same concentration as Paget employed, and preparing the reagent in a similar manner, a series of characteristic reactions was observed, largely excluding the time factor and unaffected by small variations in the preparation of the reagent. The reagent was found to give consistent results, and to remain stable for some time (about three weeks). The reagent was prepared as follows: 50 Gm. of mercury were placed in a 500-cc. flask and 38.5 cc. of pure nitric acid (sp. gr. 1.390) added. The flask was placed in a fume cupboard until the reaction had ceased and the mercury was dissolved; 77 cc. of distilled water were added, mixed and the reagent was ready for use. The barbiturate solutions were prepared by dissolving 1 Gm. of the pure substance (or the equivalent number of tablets containing 1 Gm.) in acetone, filtering, and adding acetone to 80 cc. Four cc. of the solution, equivalent to 0.05 Gm. of the barbiturate under test, were placed in a test-tube, and 5 drops of Millon's reagent added from a 1-cc. pipette. Characteristic reactions were then observed for the following: Barbitone, Dial, Rutonal, Prominal, Evipan, Phanodorm, Gardenal, Amytal, Soneryl.—R. F. CHATFIELD. *Pharm. J.*, 143 (1939), 346. (W. B. B.)

Bentonite—New Monograph for. A complete monograph is offered.—REPT. A. PH. A. LAB. *Bull. Natl. Formulary Committee*, 8 (1939), 29–30. (H. M. B.)

Bismuth in Lead—Rapid Method for the Determination of Traces of. A 20-Gm. sample of the lead was dissolved in dilute nitric acid and most of the lead precipitated as lead chloride. The filtrate from this was mixed with a small amount of ferric salt and the bismuth co-precipitated with iron by neutralizing the solution with sodium hydroxide until the beginning of precipitation of lead hydroxide then acidifying to dissolve the lead hydroxide. The iron and bismuth were dissolved out with a mixture of tartaric acid (3 Gm.) and 5 cc. of 1:1 sulfuric acid in 50 cc. of solution. This solution was treated with hypophosphorous acid to reduce the ferric iron, diluted to 100 cc., and then added to 1.5 Gm. of potassium iodide. The color of the bismuth iodide solution was measured in a Lovibond tintometer. Each 0.0001 Gm. of bismuth corresponds to 0.7 Lovibond yellow units. Antimony does not interfere if the solution tested for color contains no more than 5 cc. of 1:1 sulfuric acid in 100 cc.—R. G. ROBINSON. *Analyst*, 64 (1939), 402. (G. L. W.)

Calcium Gluconate-Glucoheptonate. A New Water Soluble Calcium Salt. The article includes a discussion of the preparation, analytical characters and an investigation of calcium gluconate-glucoheptonate, a new calcium preparation intended for parenteral use.—A. SALOMON. *Pharm. Weekblad*, 76 (1939), 914. (E. H. W.)

Calomel. A discussion of the properties and tests for calomel with data covering the physical and crystallographic properties of 17 samples from various sources.—L. VAN ITALLIE. *Pharm. Weekblad*, 76 (1939), 1010. (E. H. W.)

Calomel—Method for the Determination of, in Tablets. A method, which is useful when presence of other ingredients makes the iodine method inapplicable, involves conversion to metallic mercury by heating with sodium bicarbonate, $Hg_2Cl_2 + 2NaHCO_3 \rightarrow 2Hg\uparrow + 2NaCl + CO_2\uparrow + H_2O\uparrow$. After leaching with water, volumetric silver nitrate and nitric acid are added. Excess of silver nitrate is titrated with solution of ammonium thiocyanate with ferric ammonium sulfate as indicator. It is also possible to determine the sodium bicarbonate and calomel in the same sample. After ignition and leaching with water the filtrate is titrated with sulfuric acid with methyl orange as indicator and then a chloride titration is run. The amount of bicarbonate which was not consumed in the reaction with the calomel plus the amount consumed gives the total present.—R. A. BOSEE and L. A. PERLENFEIN. *Jour. A. Ph. A.*, 29 (1940), 132. (Z. M. C.)

Camphor Liniment—Determination of Camphor in. An Accurate and Simplified Volatilization Method. The simplified method devised consists essentially of heating the liniment of camphor on a boiling water bath in a current of air to constant weight. Tabulated results show rapidity and dependability. Twenty-four determinations averaged 99.75% recovery. Aluminum vessels may be used instead of glass. The method makes it possible to make a large number of determinations concurrently; it is unnecessary to use an electric oven, it eliminates need for drying tubes, delivery tubes and carbon dioxide generator.—SOLOMON M. BERMAN. *Jour. A. Ph. A.*, 29 (1940), 120. (Z. M. C.)

Cantharides—Studies on. I. The Titration of Cantharidin. Cantharides has been used for centuries and its action is pretty well known. Its action is due to cantharidin, so evaluation of cantharides depends on determination of cantharidin and no satisfactory method has been found. Cantharidin is the anhydride of a dibasic acid but it cannot be titrated quantitatively. Scoville and others have offered several explanations. Experimental work undertaken, began by repeating the work of several investigators. Experiments done included direct titration with aqueous and with alcoholic potassium hydroxide, residual titration with cantharidin in acetone and in alcoholic solution, residual titration after refluxing with alkali both alcoholic and aqueous, residual titration using a weak acid, effect of strong acids on salts of cantharidic acid, an attempt at residual titration using barium hydroxide, determination of the p_H of potassium cantharidate solutions, residual titration of cantharidin with removal of organic solvent. Titration of other water insoluble anhydrides was undertaken; residual titration of benzoic and phthalic anhyrides in alcohol were also made after refluxing with aqueous alkali of the same anhydrides with removal of the organic solvent. Results of Scoville, Gadamer and Danckwortt were confirmed. Failure to titrate cantharidin in the presence of organic solvents was found to be due not to the hydrolysis, or the buffer action, or the action of strong mineral acid on the salt formed but to some effect of the organic solvent used to dissolve the cantharidin. Apparently it is a depression of the ionization or neutralization of the can-

tharidin possibly due to the law dielectric constant of the solvent and its inability to ionize. The effect of alcohol on benzoic and phthalic anhydrides indicated that it is general for all water-insoluble acid anhydrides. Report is made of a method which completely removed the organic solvent during the titration. Results were equally good with cantharidin, benzoic and phthalic anhydrides. From the p_H of solutions of potassium salts the ionization constant of the free acid was calculated and it was possible also to calculate degree of hydrolysis of the potassium salt.—BENJAMIN F. HECHT and LLOYD M. PARKS. *Jour. A. Ph. A.*, 29 (1940), 71. (Z. M. C.)

Chamomile Fluidextract or Similar Commercial Preparations—Evaluation of, by an Absolute Colorimetric Method of Determination of Azulene. An exact procedure is described in detail which will give the amount of volatile oil and of pure azulene in these products. In a series of experiments it is shown that the content of the volatile oil as an indication of the value of the preparations as previously thought is not so significant as the determination of the azulene content since it is generally accepted to-day that the therapeutic action is due to this substance. Two tables and 3 graphs are given.—H. KAISER and H. FREY. *Deut. Apoth. Ztg.*, 54 (1939), 882–885. (H. M. B.)

Chloropicrin—Determination of, in Grain Treated with the Gas. The method is based on the pyrogenic decomposition of chloropicrin into phosgene and nitrosyl chloride by drawing the vapor through a tube heated to 300° to 400° C. These products in turn are decomposed into chlorine, nitrogen oxides, hydrochloric acid, etc., which are passed through a potassium iodide solution. The iodine liberated by the chlorine is titrated with sodium thiosulfate.—N. SOSSEDOV and Z. DROZDOVA. *Mukomolié*, 13 (1938), No. 6, 7–10; through *Chimie & Industrie*, 41 (1939), 764. (A. P.-C.)

Copper—Determination of Traces of. An improved method for the determination of small amounts of copper by means of sodium diethyldithiocarbamate reagent is presented. Improvement in technic and increased reliability are accomplished by appropriate changes in (*a*) the ashing of the sample and treatment of the ash (procedures for ashing milk, elixirs and animal tissues are described as examples), (*b*) the use of isoamyl acetate as solvent for extraction of the colored copper-carbamate complex and (*c*) the use of several monochromatic light filters for more precise photometry of the colored solution. The color filters recommended are Wratten filters No. 29F, No. 62 and No. 75*n*, each in conjunction with Corning glass filter No. 430, 0.95 mm. thick. Considerable evidence is adduced in justification of the use and merits of these filters. Iron, which forms colored complexes with diethyldithiocarbamate, does not interfere with the copper determination when the copper-carbamate complex is extracted in presence of ammonium citrate at p_H 8.5 to 9.0, or in the presence of 4% sodium pyrophosphate (which forms insoluble ferric pyrophosphate). In most biological materials of animal origin the contamination of copper by nickel, cobalt or bismuth will be of an order of magnitude that will not produce serious error in the copper determination, since the development of color due to the other metals will be very small. In the case of heavy contamination of the copper by these metals, the only effective means of separating copper from nickel and cobalt appears to be a hydrogen sulfide treatment in acid solution. Contamination by bismuth can be effectively corrected as follows: carry out one determination by the usual technic, which gives a value for total pigment as copper + bismuth diethyldithiocarbamate; in a second determination, after adjustment of the p_H, but before addition of the carbamate reagent, add 5 cc. of 0.08 molar potassium cyanide (approximately 33 mg. per 5 cc.); the color development obtained in the second case is due solely to the bismuth, and the difference between these two determinations represents the color due to copper.—DAVID L. DRABKIN. *J. Assoc. Official Agr. Chem.*, 22 (1939), 320–323. (A. P.-C.)

Copper in Ampuls of Iron, Arsenic and Copper—Microcolorimetric Method for the Determination of. The procedure worked out for determining copper in blood and milk was modified by a simple preliminary treatment to separate the copperion from the organic compounds of iron and arsenic. The copper was determined by the development of the cupric sulfocyanate-pyridine complex, soluble in chloroform and possessing a characteristic green color. The results of a number of determinations indicate that the method is sufficiently accurate for use in estimating micro quantities of copper salts in medicinal preparations.—ROLAND A. BOSEE and PAUL FEHDER. *Jour. A. Ph. A.*, 29 (1940), 141. (Z. M. C.)

Copper, Lead and Zinc—Determination of Small Quantities of, by Means of Dithizone, Especially in Biochemical Materials. Treat solutions containing 5 to 60γ of copper with 10% sulfuric acid and treat with the dithizone reagent (6 mg. in 100 cc. of carbon tetrachloride); wash the extract with ammonium hydroxide (1:1000), and determine the extinction coefficient in the step photometer with filter S53. With lead solutions extract with the dithiazone reagent after addition of about 1:100 of 2% ammonium hydroxide. Make up the extract to 30 cc. with carbon tetrachloride and shake with 1% potassium cyanide solution to remove excess dithizone, treat with a little 10% hydrochloric acid and examine the green color in the photometer with filter S61. Extract zinc solutions in a similar manner and wash the extract with 1:100 ammonium hydroxide until no more color is extracted; examine the color with filter S53. The extinction coefficients are different for copper, zinc and lead but they are all proportional for amounts up to 60γ. For mixtures of these metals the following procedure is recommended. Add 5 cc. of 10% sulfuric acid to 100 cc. of the neutral solution to be analyzed and extract with small amounts of the dithizone reagent until the green coloration remains unchanged. Dilute the combined extracts to 30 cc. with carbon tetrachloride, wash with 10 cc. of water and then with 10-cc. portions of 1:1000 ammonium hydroxide until this remains colorless. Shake the carbon tetrachloride solution with 1% sulfuric acid and examine in the step photometer with filter S53. Mercury if present, reacts like copper, but the mercury complex can be destroyed by washing the extract first with 10 cc. of 5% potassium iodide solution. To the original solution from which copper was removed add 3 cc. of 20% Rochelle salt and 9 to 10 cc. of 5% ammonium hydroxide and extract with dithizone reagent (double the ordinary strength) until this remains colorless or slightly green. Dilute the combined extract with carbon tetrachloride to 60 cc. and wash a portion with 10-cc. quantities of 1% potassium cyanide solution until this remains colorless. Set free with hydrochloric acid the dithizone combined with the lead and study the color in the photometer. To another portion of the carbon tetrachloride solution add 10 cc. of sodium sulfide solution, and wash repeatedly until no more color is obtained. This treatment removes lead, and also cadmium and other metal complexes. Then determine the zinc-dithizone remaining in the solution.—J. SCHWAIBOLD, B. BLEYER and G. NAGEL. *Biochem. Z.*, 297 (1938), 324–331; through *Chimie & Industrie*, 41 (1939), 460. (A. P.-C.)

Coumarin—Quantitative Determination of. The condensation of coumarin with diazo-*p*-nitroaniline is shown to be applicable to imitation vanilla when clarified with lead acetate solution, thus forming the basis of a quick method for the determination of coumarin in imitation vanilla (technic described in detail). True vanilla extracts are shown to contain a substance, not vanillin, that yields color with the reagent, so that in the case of true vanilla the test should be applied to a distillate as recommended by Duncan and Dustman (*Ind. Eng. Chem., Anal. Ed.*, 9 (1937), 416) before it may be concluded that this ingredient has been added to the vanilla.—JOHN B. WILSON. *J. Assoc. Official Agr. Chem.*, 22 (1939), 392–396. (A. P.-C.)

Decaffeinating Coffee. The coffee beans are subjected to the action of cold water at a temperature of approximately 20° C. until the beans have a water content of approximately 21 to 22%. The water is withdrawn and the beans are subjected to steam at a temperature of approximately 93° C. for about 4 hours, thereby evenly distributing the water content throughout the beans. The moisture is drained off from the beans, which are then extracted with a hot solvent (suitably trichloroethylene). All the solvent is withdrawn except that contained in the beans, and the latter are again subjected to the action of steam to remove the remaining solvent.—WALTER C. HASSELHORN and JOSEPH J. THOMPSON, assignors to THE KELLOGG CO. U. S. pat. 2,157,956, May 9, 1939. (A. P.-C.)

Diethyl- (or Diallyl-) Barbituric Acid—Volumetric Determination of. Dissolve 0.15 Gm. of the barbiturate in 25 cc. of boiling 5% borax solution, add 1 cc. of 10% potassium chromate solution and titrate the boiling hot solution with decinormal silver nitrate until the yellowish green solution (which turns milky due to precipitation) acquires a reddish color which persists even after boiling. One cc. of decinormal silver nitrate = 9.205 mg. of diethylbarbituric acid and 10.405 mg. of diallylbarbituric acid.—E. SCHULEK and P. ROZSA. *Z. anal. Chem.*, 112 (1939), 404–415; through *Chimie & Industrie*, 41 (1939), 724. (A. P.-C.)

Diodrast and Inorganic Iodide Iodine—Rapid Micro Method for Determining, in Blood and Urine. The iodine containing sample is digested in an acid solution of potassium permanganate, the iodine thereby being oxidized to iodate and the organic matter destroyed. The excess permanganate is reduced by addition of nitrite and the excess nitrite destroyed by urea. The iodate is then titrated against standard 0.0004715*N* thiosulfate solution in the presence of an excess of potassium iodide. Blood or plasma must first be deproteinized with trichloracetic acid and the filtrate is used. Each 0.1 cc. of titration represents 1 microgram of iodine. A correction is necessary to compensate for the loss in the precipitation of proteins. The correction factor is for whole blood 100/65.6, for plasma 100/84.6 and for cells 100/51.5.—H. L. WHITE and DORIS ROLF. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 1. (A. E. M.)

***s*-Diphenylguanidine as an Acidmetric Standard.** Due to a lack of satisfactory acidmetric standards, the author has investigated borax, sodium carbonate and *s*-diphenylguanidine to determine which of these compounds is most desirable for this purpose. A special burette which was used for the titrations is described. The methods used for the purification and the storage of borax, sodium carbonate and *s*-diphenylguanidine are outlined. A comparison of the factors obtained by titrating borax and sodium carbonate in water and *s*-diphenylguanidine, in various alcohols, against samples of 0.1*N* and 1*N* hydrochloric acid, using several indicators, revealed *s*-diphenylguanidine to be a satisfactory acidimetric standard. Moreover, this organic base is stable on long storage.—F. W. YOUNG. *Can. J. Research*, Sec. B., 17 (1939), 192–197. (W. T. S.)

Drugs—Some New. The structure, physical and chemical properties, solubilities, identification tests and microchemical tests are given for the following new drugs: Degenan 693 [α(*p*-aminophenyl-sulfamido)pyridine], Dormovit (an isopropyl-furfuryl-barbituric acid), Propavine (the hydrochloride of the ester of diethylaminoethanol and propylphenylacetic acid), Veritol (the sulfate of *p*-hydroxylphenylpropylmethylamine) and Jucundal (tri-*n*-butyl-aceamide).—L. ROSENTHALER. *Pharm. Acta Helv.*, 13 (1938), 359. (M. F. W. D.)

Exalgine (Methylacetanilide)—Identification of, and Its Detection in Antineuralgic Mixtures. The physical and chemical properties of exalgine are given. The following microchemical reactions are recommended for the identification of the compound. The reactions are carried out on a slide with 1 or 2 drops of solution, and the mixture obtained after addition of the reagent is stirred with a small glass rod for five to fifteen seconds. (1) To 2 drops of sample (about 1% solution) add 1 drop of gold chloride solution (5%) and 1 drop of 10% sulfuric acid. Mix to obtain a yellow precipitate of laced needles. (2) To 1 drop of sample add 1 drop of 5–10% sulfuric acid and 1 drop of 10% potassium ferrocyanide solution. Mix to obtain a white precipitate of square or rectangular plates and prisms. (3) To 1 or 2 drops of sample add an equal volume of a reagent containing 30% acetic acid 19 cc., alcohol 5 cc., and 10% sulfuric acid 1 cc. Then add 3 drops of an alcoholic solution of iodine (10%). Mix, let stand for 1 or 2 minutes. A precipitate of brown needles, which are seen under high magnification, is formed. (4) To 2 drops of sample add 2 drops of hydrochloric acid and 2 drops of 10% potassium iodate solution. Mix to obtain a yellow crystalline precipitate of small needles and prisms. (5) To 1 drop of sample add 1 drop of 2% Reinecke's salt solution and 2 drops of 10% sulfuric acid. Mix to obtain a precipitate of tetrahedral plates. *Exalgine-phenacetine-acetanilid mixture (0.5:2:2)*. Macerate 1 Gm. of the mixture with 5 cc. of cold water, then filter. Test the filtrate, which contains most of the exalgine with traces of the other ingredients, with gold chloride, potassium ferrocyanide, potassium iodate-hydrochloric acid and acetic acid-iodine. All these tests are positive for exalgine and are not given by the other compounds. *Antipyrine-exalgine mixture (8:2)*. The following procedures are given: (*a*) Macerate 0.5 Gm. of the mixture with 10 cc. of cold water, add 20 cc. of Lugol's solution, mix and let stand for thirty minutes. Filter through a moistened filter, decolorize the filtrate with thiosulfate, alkalinize with sodium hydroxide solution and extract three times with ether. Filter the ether extracts through a dry filter, evaporate the ether solution to dryness and take up the residue in 2 cc. of water. This solution should not give a precipitate with 1% picric acid solution, indicating the complete removal of the antipyrine. The solution gives positive microchemical reactions with the above reagents. (*b*) Macerate 0.2 Gm. of the mixture with 10 cc. of cold water, add 50 cc. of 1% picric acid solution, stir for five minutes, then filter. Alkalinize the filtrate and extract three times with ether, passing the extracts through a dry filter. Evaporate, take up the residue in chloroform and filter, evaporate again and take up the new residue in 2 cc. of water. Tests with gold chloride, ferrocyanide and acetic acid-iodine are positive. The solution contains a little sodium picrate which gives a yellow color. To 1 drop of the solution add 1 drop of 10% sulfuric acid and 1

drop of 40% ammonium thiocyanate solution. Mix. No precipitate indicates complete removal of the antipyrine. (*c*) Macerate 0.2 Gm. of the mixture with 10 cc. of cold water and 2 cc. of 10% sulfuric acid. Add 20 cc. of 40% ammonium thiocyanate and stir vigorously for five minutes. Filter with suction through a sintered glass filter, alkalinize the filtrate with sodium hydroxide solution and continue as under procedure (*a*). *Exalgine-pyramidon-antipyrine mixture (1:2:2).* Treat with Lugol's solution as above in (*a*) to remove the pyramidon and antipyrine. The filtrate contains the exalgine.—A. DENOEL. *J. pharm. Belg.*, 21 (1939), 691–695, 709–711. (S. W. G.)

Flavoring Constituents in Commercial Flavors—Identification of. VI. Identification of β-Ionone as *m*-Nitrobenzhydrazide. The optical crystallographic properties of β-ionone-*m*-nitrobenzhydrazide, determined by the immersion method, are described. Three samples each of red and black raspberries, consisting of as much as 24 lb. and 22 lb., respectively, were examined, and no β-ionone was found. Certain samples of commercial so-called true fruit raspberry flavors were found to contain β-ionone, and in other cases none was found.—JOHN B. WILSON and GEORGE L. KEENAN. *J. Assoc. Official Agr. Chem.*, 22 (1939), 389–392. (A. P.-C.)

Flavoring Constituents in Commercial Flavors—Identification of. V. Quantitative Determination of β-Ionone. Several procedures recommended by various authors for the determination of β-ionone were tried out and found to give unsatisfactory results. A number of procedures involving the use of 14 different reagents recommended for the precipitation of aldehydes or ketones were then tried, and it was found that one reagent, *m*-nitrobenzhydrazide, gave a precipitate with β-ionone that seemed suited to its quantitative determination. Several procedures recommended for the application of this reagent to aldehydes and ketones were tested, and the most suitable one selected. A method was then devised, and is described in detail, which was found suitable for determining quantities of 10 to 100 mg. of β-ionone in flavoring extracts. The method is essentially as follows: Steam distil 250–1000 Gm. of sample (containing not more than 100 mg. of β-ionone) and collect 300–500 cc. of distillate; add sufficient water to reduce the alcohol content to about 10% or less, extract with ether, add 95 to 100 mg. of *m*-nitrobenzhydrazide and 0.2 cc. of acetic acid, evaporate on the steam bath (passing a current of air into the flask to hasten evaporation and keep down the temperature) until 1 to 3 cc. of watery liquid (and perhaps some oily residue) remain, dissolve the residue in 5 cc. of alcohol, add 5 cc. of water (warming if necessary to obtain a clear solution), add 0.2 cc. of acetic acid, let stand 2 hours, add 5 cc. of water dropwise with continuous rotation of the flask, keep at room temperature for at least 1 hour (over night does no harm), place in the refrigerator over night or up to 48 hours, filter on fritted glass crucible of porosity 4, wash with about 30 cc. of dilute alcohol, dry in a vacuum oven at 70° C. and weigh; weight of precipitate × 0.541 = β-ionone.—JOHN B. WILSON. *J. Assoc. Official Agr. Chem.*, 22 (1939), 378–388. (A. P.-C.)

Flavors—Possible Organic Solvents for. A qualitative test for acetone consists of mixing 2 cc. of distillate with 5 cc. of alcoholic *o*-nitrobenzaldehyde (5%) and 1 cc. of 10% sodium hydroxide. Shaken with a small quantity of chloroform, a blue color in the chloroform indicates acetone. Methods for determining isopropyl alcohol in water mixtures are given both in presence and in absence of acetone.—R. D. STANLEY. *Am. Perfumer*, 40 (1940), No. 2, 49–50. (G. W. F.)

Fluidextract of Belladonna Leaf, Fluidextract of Hysocyamus and Fluidextract of Stramonium—New Assay Process as Applied to. As a result of a critical study of the N. F. VI methods revisions for the three assays are offered.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Comm.*, 8 (1939), 88–93. (H. M. B.)

Fluorescence Analysis as Applied to Some Alkaloids and Crude Drugs. In the experiments reported the source of the rays was a quartz mercury-vapor arc so devised that a constant output of rays could be maintained. A light-proof hood encased the apparatus. A special glass filter was fitted to an aperture in the bottom of the hood. Quinine, strychnine, brucine, hydrastine, hydrastinine and emetine were used in the experimental work. The nature of the fluorescence before and after purification was noted. In some cases moisture in the powder influenced the color and the intensity of fluorescence. Precipitates of the alkaloids with common alkaloidal precipitating reagents in most cases showed no fluorescence. The appearance after precipitates were dissolved was observed. In experimenting with crude drugs, several things were determined. Fluorescence of alcoholic extracts of ipecac is due to an alkaloidal substance but it is not emetine or cephaline because color and intensity of fluorescence are not altered by their removal. It is not a decomposition product produced by heat, because unheated extracts showed the same color. The alkaloid may be psychotrine, *o*-methyl psychotrine or emetamine. The first two are the more likely because emetamine and solutions of its salts are non-fluorescent in daylight. Solutions of the substance darken and deposit a brown substance. Psychotrine is reported to do this. Ether extracts of ipecac do not display the same fluorescence that alcoholic ones do. Psychotrine is insoluble in ether and soluble in alcohol. Chloroform will extract the fluorescent constituent from ipecac. Psychotrine is soluble in chloroform. Psychotrine or *o*-methyl psychotrine or both apparently cause fluorescence of alcoholic extracts of ipecac.—A. SLESSER and C. B. JORDAN. *Jour. A. Ph. A.*, 29 (1940), 134. (Z. M. C.)

Fluorides—Detection of, in Wines, Beers, Preserves, Jellied Fruits, Butters and Margarines. The following procedure is recommended. *Wines.*—Place 5 cc. of the wine in a 50-cc. Berlin dish, add 2 cc. of a solution containing 10% ammonium acetate and 5% acetic acid (I), then add 3 cc. of a 2.5% solution of lanthanum acetate (II). Shake the mixture frequently during the first hour then let stand for at least twelve hours. Filter, using a 6-cm. filter, and wash the dish and filter with two 5-cc. portions of solution I. Dry the filter, then ignite in a platinum crucible without exceeding a dull redness. Allow the crucible to cool, place a rubber ring around the lip of the crucible, add 0.5 cc. of sulfuric acid and immediately cover the crucible with a piece of ordinary window glass, the under side of which has been covered with carnauba wax in which a mark has been made with a pen point. Set the crucible in a hole made in a piece of asbestos, place a pledget of cotton moistened with water on the upper surface of the glass, then carefully heat only the bottom of the crucible with a small flame until the contents mix; remove the flame for fifteen minutes, then heat the crucible again for forty-five minutes with a small flame placed 10 cm. below the bottom of the crucible. The etched mark can be distinguished if the sample contains at least 5 mg. of fluorine per liter. *Beers.*—Proceed as under wines, but in addition to the other reagents add 2 drops of a saturated solution of sodium phosphate. *Preserves and Jellied Fruits.*—(The above method cannot be used when more than a trace of

citric acid is present.) In the absence of more than a trace of citric acid proceed as follows: Add 4 cc. of solution I, 5 cc. of solution II and 3 drops of a saturated solution of sodium phosphate to 10 Gm. of the sample. Let stand for twelve hours, shaking frequently during the first hour. Add 20 cc. of distilled water, heat to boiling, filter hot on a heated, pleated 9-cm. filter and wash with two 5-cc. portions of hot solution I. Continue as under wines. Five mg. of fluorine per Kg. can be detected. *Butters and Margarines.*—Carefully melt 75–100 Gm. of the sample and transfer 5 cc. of the aqueous layer to a dish. Add 0.5 cc. of a 1:2 solution of trichloroacetic acid. Heat to boiling, add 4 cc. of solution, again heat to boiling and add 3 cc. of solution II and 2 drops of a saturated solution of sodium phosphate. Let stand for twelve hours and continue as under wines. One-half mg. of fluorine per 100 Gm. of sample can be detected.—G. DESTREE. *J. Pharm. Belg.*, 21 (1939), 501–504, 527–530. (S. W. G.)

Glycerin—Determination of. Glycerin is separated from soap by dialysis.—W. SCHULZE. *Fette u. Seifen*, 46 (1939), 66; through *Am. Perfumer*, 40 (1940), No. 1, 75. (G. W. F.)

Glycerin—Quantitative Determination of. The author suggests the following method for the quantitative determination of glycerin: Weigh not more than 10 cc. of the glycerin solution containing not more than 500 mg. of glycerin into a 100-cc. volumetric flask; add water to 10 cc. Add 10 cc. of a 7.5*N* sodium hydroxide solution (30 Gm. in 100 cc.) and 60 cc. of strong alcohol (or methyl alcohol) and mix. Follow this by the addition of small quantities of a 10% alcoholic solution of copper chloride ($CuCl_2.2H_2O$), added from a graduate, with constant shaking until a distinctly perceptible precipitate of copper hydroxide remains undissolved. After this, a volume of alcoholic copper chloride solution equal to that already added, is added and the whole shaken, cooled to room temperature and filled to the 100-cc. mark with strong alcohol. It may be cleared by centrifuging or the liquid may be allowed to settle by standing over night in the closed volumetric flask, the following day brought to the temperature at which it was filled and the clear liquid siphoned off. If more than 75 cc. are obtained, 25 cc. may be used for an orientation titration. Add 4 cc. of dilute (4*N*) sulfuric acid, 20 cc. of water and 1 Gm. of potassium iodide after which the iodine is titrated with *N*/10 thiosulfate with starch solution as an indicator. For the final titration 50 cc. of the clear liquid is placed in a titration-Erlenmeyer and evaporated to a small volume on the water bath. When the alcohol is evaporated (determined by odor), 8–10 cc. of diluted (4*N*) sulfuric acid and 1 Gm. of potassium iodide, the latter dissolved in 10 cc. of water, are added and the titration carried out with *N*/10 thiosulfate using starch solution as an indicator. 1 cc. of *N*/10 thiosulfate = 9.2 mg. glycerin.—N. SCHOORL. *Pharm. Weekblad*, 76 (1939), 777. (E. H. W.)

Halogens—Determination of, in Organic Compounds. A weighed sample of thoroughly desiccated organic halide (equivalent to approximately 25 cc. of 0.1*N* silver nitrate, except in cases of halogenated nitro compounds where an amount approximately equivalent to 10 cc. of silver nitrate was used) was placed in a 250-cc. Erlenmeyer flask fitted with a reflux condenser. The required amount of absolute alcohol previously distilled over metallic sodium in order to remove aldehydes was then added and the flask warmed over a low Bunsen flame until the sample had dissolved. The burner was then removed and the required amount of sodium cut into rods about 2.5 cm. long was introduced through the top of the condenser. At least 0.5 hour was allowed for the dissolution of the sodium and at no time were there more than three pieces of sodium in the flask. During the latter part of the addition, the reaction of the sodium was aided by a small flame under the flask. The solution was then gently refluxed for one hour, after which it was allowed to cool and diluted with about 15 cc. of water. The flask was now held under running water, and two drops of phenolphthalein were added, followed by addition of approximately 6*N* nitric acid until the solution decolorized. The required amount of absorption indicator was next added (8 drops of dichlorofluorescein in the case of chlorides and 2 drops of eosin for bromides and iodides) and the solution was titrated with 0.1*N* silver nitrate. Just before reaching the end-point the flocs formed a large number of grainy particles which in the case of dichlorofluorescein became distinctly pink and in the case of eosin changed from a pale pink coloration to a bright rose red at the equivalence point. These color changes were best observed by keeping the contents of the flask in motion during the titration.—H. B. FELDMAN and A. L. POWELL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 89–90. (E. G. V.)

Homeopathic Preparations with Dithizons—Examination of. A simple method which may be carried out quickly in the pharmacist's laboratory for the qualitative and quantitative testing of homeopathic heavy metals including copper, silver, mercury, zinc, lead, cadmium, bismuth, gold and cobalt is outlined and the results obtained with 18 commercial products (9 dilutions and 9 triturations) are offered. It is established that in the manufacture of higher dilutions, quite often there is a diminution and occasionally a complete disappearance of the content of the active constituent.—B. BLEYER, G. NAGEL and J. SCHWAIBOLD. *Scientia Pharm.*, 10 (1939), 121–124. (H. M. B.)

Iodine in Thyroid—Determination of. Comparison of a Rapid Method with the U. S. P. XI Method. Accuracy of the U. S. P. XI method may be increased by consideration of the titration time factor but still one assay required nearly a day. An adaptation of the Matthews, Curtis and Brode modification of the Leipert procedure to thyroid products gave speed, accuracy and manipulative ease. The method depends upon the initial chromium trioxide oxidation in a special apparatus and subsequent titration with sodium thiosulfate, preferably hundredth normal. The time required is about an hour. Experimental work is described, apparatus is shown in a photograph and a drawing.—CHARLES E. NICKLAUS and NELSON TIPPETT. *Jour. A. Ph. A.*, 29 (1940), 124. (Z. M. C.)

Iodine Number. Using carbon tetrachloride in place of chloroform did not appreciably change the iodine value in the case of glycerides, but in the case of wool fat, it was nearly halved.—W. NORMAN. *Fette u. Seifen*, 46 (1939), 273; through *Am. Perfumer*, 40 (1940), No. 1, 75. (G. W. F.)

Iron—Determination of, in Iron Salts of Organic Acids Containing Phosphorus. Reference is made to several methods mentioned in the literature which may be used for assay of iron salts of organic acids containing phosphorus. In each of these, the organic matter must first be destroyed. The authors describe a method which in some instances can be used without that step. Iron adenylate was assayed by two methods and these are given in detail.—C. F. PICKFORD, A. E. JURIST and W. G. CHRISTIANSEN. *Jour. A. Ph. A.*, 28 (1939), 1028. (Z. M. C.)

Lead—New Color Reagent for, and Its Use as an Indicator in the Titration of Various Cations and

Anions. The indicator solution was prepared by mixing 30 cc. of purified pyridine, 120 cc. of water, 2 cc. of diluted nitric acid (sp. gr. 1.2) and 10 cc. of an alcoholic solution of diphenylcarbazide (1.5%). The mixture was allowed to stand over night when it was ready for use. The reagent (10 cc.) when added to 100 cc. of a solution containing 0.002 Gm. of lead nitrate gave a dark cherry-red solution. The addition of acetone is helpful in obtaining a color free from the effect of the reagent itself. Red colors are formed with the following ions as well as with Pb^{++}; Fe^{++}, Cd^{++}, Sn^{++}, V^{+5}. The red color is faint with Bi^{+3} and is fleeting with Cu^{++} giving way to blue. Intense violet colors are produced with Hg^{++}, Hg^{+}, V^{+4}; purplish red colors which precipitate are produced with Zn^{++}, Co^{++}, Ni^{++}; a slight reddish brown with Mn^{++}; pale orange-brown with Mo^{+6}; slight yellow with U^{+6}; slight brownish-red with Ag^{+}. No color is given with Cr^{+3}, Cr^{+6}, W^{+6}, Ti^{+4}, Sn^{+4}, Tl^{+}, Cl', SO_4'', NO_3', PO_4''', AsO_4''', AsO_3''', SO_3''. Citrates and tartrates appear to destroy the color of the lead complex and that of V^{+5} and V^{+4}. The color with Zn, Co, Ni may be extracted with chloroform; that with lead may be partially extracted but is slowly destroyed, the reagent passing into the chloroform. The color with lead is bleached on further acidification with dilute nitric acid and is changed to the orange-brown color characteristic of alkaline solutions of diphenylcarbazide when dilute ammonia is added in excess. The color is destroyed by the addition of ions which precipitate lead at the p_H existing in the solution such as phosphates, arsenates, tungstates, vanadates, molybdates, citrates. A volumetric determination of lead is made by titrating a solution of lead nitrate to which the color reagent has been added with a very dilute solution (1:12500) of phosphoric acid (85%) to the disappearance of the red color. The acid radicles mentioned above which give no color with the reagent may be titrated in the presence of the indicator with neutral solutions of lead nitrate to the appearance of the red color.—B. S. EVANS. *Analyst*, 64 (1939), 2. (G. L. W.)

Liquor Carmini and Liquor Cocci—Comparative Study of. Color formulæ and names for these solutions have been postulated in accordance with the Munsell System. The behavior of each to various concentrations of acid and base is studied. Chemical standard matching solutions are prepared and a method of colorimetric standardization of the solutions has been developed. The color qualities of Liquor Cocci tend toward a purple quality; in intensity the color of Liquor Carmini is about 6 times stronger. On the basis of these results the authors see no valid argument for deleting one or the other solution from the National Formulary.—ELMER H. WIRTH, FRANK T. MAKER and VICTOR LINDBLADE. *Bull. Natl. Formulary Committee*, 8 (1939), 10–15. (H. M. B.)

Lovibond Tintometer in Pharmaceutical Research. The author describes the Lovibond tintometer in detail and discusses its application to qualitative and quantitative color determinations. With reference to qualitative color determinations he presents data on the colors of powdered cascara sagrada, powdered frangula, powdered rhubarb, Syrup of Frangula, Liquid Extract of Cascara Sagrada, Wine of Cascara Sagrada, Syrup of Rhubarb, aqueous tincture of rhubarb and Wine of Rhubarb. Quantitative determinations include data and discussion on (*a*) the determination of the adrenaline content of adrenaline-containing preparations, and adrenal extracts by the ammonium molybdate method and by the Vulpian reaction; (*b*) the determination of the aloin content of Curacao aloe by the reaction of Klunge and Plugge; (*c*) the determination of meconic acid in opium; (*d*) the determination of the morphine content of opium and opium preparations; (*e*) the determination of the alkaloidal content of ergot; (*f*) the determination of the cholestrin content of oils and fats; (*g*) the determination of the vitamin A content of cod liver oil; (*h*) the determination of the ascorbic acid content with phospho-18-tungstic acid and (*i*) the determination of the manganese content of powdered and reduced iron.—J. VAN AS. *Pharm. Weekblad*, 76 (1939), 929. (E. H. W.)

Medicines—Contribution to the Analysis of. A study of the analysis of spirit of camphor and of castor oil. Determination of camphor in the former is based on its separation by means of 10% salt solution; taking up the precipitated camphor in a measured volume of benzene, and measuring the increase in volume of the benzene, which is proportional to the amount of camphor dissolved in it. Study of the solubility of castor oil showed that it is completely soluble not only in absolute and in 96% alcohol, but even in 90% alcohol. It is also easily soluble in absolute and in 97.5% methanol; but the solubility falls off rapidly with the degree of dilution of the solvent.—K. HANDKE. *Deut. Apoth. Ztg.*, 53 (1938), 853–854; through *Chimie & Industrie*, 41 (1939), 953–954. (A. P.-C.)

Mercury—Determination of Traces of. A study was made of the concentration and isolation procedures and of the photometric estimation in the dithizone method for mercury. By a very simple procedure (described in detail) mercury can be removed completely from its solution by precipitation of ferric hydroxide. Direct oxidation of the extracts is accomplished by shaking them with an acid solution of potassium permanganate previously warmed to 50° to 55° C.; nitric acid was substituted for sulfuric acid in the oxidizing solution because of the greater solvent power of the former toward mercury. This procedure yielded high results, probably due to attack of the chloroform solvent by the oxidizing mixture, and further experiments with other procedures indicated that the reducing agent used was not entirely satisfactory; the use of hydroxylamine hydrochloride as reducing agent did not prove quite so effective as had been anticipated; reduction with hydroxylamine sulfate followed by addition of hydrazine sulfate was found to maintain the stability of the dithizone very effectively. The transfer of the mercury from the dithizone extracts to the acid sodium thiosulfate appears to be complete. Reduction of the excess oxidant can be effected by 30% hydrogen peroxide, and provided the oxygen liberated in the reduction is entirely removed, hydrogen peroxide stabilizes very well the dithizone in the determinative extraction. The manipulation of the photometric determination is briefly discussed. The mercury-dithizone solution does not come to equilibrium in the photometer immediately, and in most cases the reading is observed to rise; the reading recorded should be at the maximum when equilibrium has been obtained.—W. O. WINKLER. *J. Assoc. Official Agr. Chem.*, 22 (1939), 341–346. (A. P.-C.)

Methyl Salicylate—Determination of Free Phenols in. Determination of traces of phenolic impurities in methyl salicylate is often necessary. The Dodge method, used extensively, is sensitive only to 0.02% and does not preclude error due to volatilization of some salicylic acid along with phenols. Since methyl salicylate is a phenol, the method involves separation of two phenols. Methyl salicylate is a much weaker acid than phenol, so the phenolic ester is extracted with a dilute solution of sodium hydroxide. The small amount of methyl salicylate extracted may be converted into

sodium salicylate and methanol by saponification—$C_6H_5OH + NaOH \rightleftarrows C_6H_5ONa + H_2O$; $C_6H_4OH.COOCH_3 + NaOH \rightleftarrows C_6H_4.ONa + COOCH_3 + H_2O$; $C_6H_4.ONa.COOCH_3 + H_2O \rightarrow C_6H_4.OH.COONa + CH_3OH$. The excess alkali is then removed by acidification to p_H of 9. The solution is then buffered at this value and the phenol is distilled and separated from the salicylate. It can then be determined in the usual way. Details of the method are given and distillation apparatus is illustrated. As little as 0.001% of free phenolic bodies may be detected.—R. W. TOWNE, R. M. HITCHENS and M. S. MCCAULEY. *Jour. A. Ph. A.*, 29 (1940), 130. (Z. M. C.)

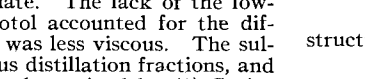
Mitigal and Mesulfen Preparations. I. Mitigal, Bayer, is claimed to be dimethyldiphenylene disulfide, containing 25% sulfur. Mesulfen, Disp. Dan., 1938, is a mixture of organic sulfur compounds, prepared by heating toluol and sulfur with anhydrous $AlCl_3$, followed by distillation. It consists chiefly of 2,6-dimethylthianthrene (sulfur content: 24.4–25.5%), which is synonymous with "dimethyldiphenylene disulfide." The Danish firm, Alfred Benson, issued a similar preparation under the name Sulfotol. Preparation of Mesulfen was studied: Pure toluol, best a preparation with a boiling range of few degrees, should be used. Preparations were made by the method of Boeseken and Koning (*Rec. trav. chim.*, 30 (1911), 312), by the method of Cohen and Skirrow (*J. Chem. Soc.*, 67 (1895), 826), and by D. R. P. 365,169, using Merck toluol. These were light yellow oils which slowly crystallized. Using (in the D. R. P. method) pure toluol, b. p. 109–110.5° C., the oil soon crystallized. In addition thianthrene was made by the D. R. P. method using benzol in place of toluol, (Thianthrene: m. p. 158–159° C., recrystallized). Pure 2,6-dimethylthianthrene was isolated from Mitigal, Sulfotol and Mesulfen, by separating the crystals which eventually appeared, washing them with petrol ether and recrystallization (m. p. 121–123° C.). Ditolyldisulfide (4,4′-dimethyldiphenylsulfide) was prepared by Boeseken and Koning's method, and also by treating thiocresol with iodine; m. p. 48° C., recrystallized. Microphotographs of the crystals are shown. In a further test the b. p. curves at 3 mm., the specific gravity, viscosity and sulfur content of the preparations were compared. The b. p. curves for Mitigal and Mesulfen were practically identical, that of Sulfotol did not display the same low boiling fraction. Specific gravity was determined at 20°/4° and 25°/4°, and these results are tabulated as well as the viscosities of the preparations. The viscosity of Sulfotol was nearly double that of Mitigal, that of Mesulfen was intermediate. The lack of the low-boiling fraction in Sulfotol accounted for the difference, as this fraction was less viscous. The sulfur content of the various distillation fractions, and of the preparations, was determined by (1) Carius method, (2) the concentrated sulfuric acid and potassium chlorate method cited in Disp. Dan. and (3) Ter Meulen's method (oxidation in quartz tube with Pt catalyst). Results checked by all methods. The fraction boiling at 184° C. at 3 mm. had practically identical sulfur content to that of pure 2,6-dimethylthianthrene.—H. RAME. *Dansk Tids. Farm.*, 13 (1939), 21. (C. S. L.)

N. F. Ointments—Adaptation of Assay Methods for Some. III. Compound Ointment of Resorcinol. The procedure used for the determination of resorcinol is a combined adaptation of the U. S. P. XI method and the N. F. VI assay method for Strong Paste of Resorcinol. Practical methods were devised and used for the separation of the bismuth subnitrate and zinc oxide so that these ingredients could be determined quantitatively. The zinc oxide was determined by conversion to the acetate and subsequent precipitation as the carbonate followed by ignition to the oxide. As a result of the methods outlined the following standards are prescribed for the ointment: resorcinol 5.5–6.5%, bismuth subnitrate 5.5–6.5% (= 4.35–5.14% Bi_2O_3) and zinc oxide 5.5–6.5%.—WILLIAM B. BAKER and DOROTHY L. KUTZLY. *Pharm. Arch.*, 10 (1939), 65–68. (H. M. B.)

Nicotine—Photometric Determination of, on Apples. A rapid photometric method is described in detail for determining the amount of nicotine spray-deposit on apples. It involves stripping of the fruit with dilute sodium hydroxide solution, purification of the extract by means of a calcium bentonite coagulate, formation of a colored compound from nicotine by means of cyanogen bromide and β-naphthylamine, and measurement of the color with a photometer. Since no distillation is required, the method is suitable for rapid mass operation.—L. N. MARKWOOD. *J. Assoc. Official Agr. Chem.*, 22 (1939), 427–436. (A. P.-C.)

Nitrous Oxide—Interferometer Method for the Assay of. Consideration of possible methods for the assay of nitrous oxide pointed to the interferometer method as one having considerable promise. Analysis of a large number of nitrous oxide samples containing from 0.1 to 10% nitrogen that had been previously analyzed by one of the following methods: water solubility, explosion, condensation, showed the method with interferometer to be accurate within 0.2%. Experimental work is described in detail, results are shown by means of tables and by graphs and apparatus is illustrated. A simple method for calibration of the interferometer is given. —FREDERICK K. BELL and JOHN C. KRANTZ, JR. *Jour. A. Ph. A.*, 29 (1940), 126. (Z. M. C.)

Novocaine and Larocaine—Reaction for the Distinction of, as Well as the Detection of Pantocain. The following procedure is recommended: Dissolve 0.01 Gm. of the substance in 30 drops of water, add 1 drop of sodium nitrite solution (1:10) and a drop of 2.5% hydrochloric acid and immediately 20 drops of 2% phenol water. An orange-red color appears at once in the liquid. With novocaine (A), small shiny golden-yellow leaflets begin to form at once; with larcocaine (B), crystals appear only after about 10 minutes. Crystals with B appear as yellow bundles of numerous needles which begin to decompose with discoloration and the evolution of gas at 120° C. while those of A appear as small flat leaves of irregular outlines, are colorless because of their thinness and decompose at 150° C. With tutocaine (C), no crystals appear even upon long standing. The derivative of A was found to be an azo dye of the

structure  .

For the identification of pantocaine (D), dissolve a small amount in a small drop of water and add a drop of sodium nitrite solution (1:10) and a mass of long colorless needles often with notched ends appears. The same test was applied to A, B, C, cocaine, percaine, psicaine and only percaine gave upon the addition of much reagent an oil separation which did not solidify on long standing. The compound with D possesses the characteristic anesthetic action of D, melts at 104–105° C., soluble in water (1:80) and its solubility is strongly lowered by an excess of nitrite indicating that the nitrite of D is formed, $C_{15}H_{24}O_2N_2.HNO_2$.—F. BIEDEBACH and H. WEIGAND. *Scientia Pharm.*, 10 (1939), 140. (H. M. B.)

Ointments, N. F.—Adaptation of Assay Methods for Some. II. Ointment of Calamine. The assay method for Prepared Calamine, N. F., may be suc-

cessfully adapted for use in the assay of Ointment of Calamine, N. F., as shown by the satisfactory results obtained in the experiments reported in this article. The trace of ferric oxide present in Prepared Calamine causes no interference with the analytical results obtained. The procedure suggested for the assay of Ointment of Calamine for zinc oxide is as follows: Place about 2 Gm. of Ointment of Calamine, accurately weighed, in a crucible of about 30 cc. capacity. Heat the crucible and contents gently over a Bunsen flame until the ointment is liquefied. Gradually increase the temperature and ignite to eliminate the ointment base. Digest the residue remaining in the crucible after ignition with 25 cc. of normal sulfuric acid until solution is complete. Then titrate the excess of sulfuric acid with normal sodium hydroxide, using methyl orange T. S. as indicator. Each cc. of normal sulfuric acid corresponds to 0.04069 Gm. of ZnO. It is recommended that the above method for the determination of zinc oxide in Ointment of Calamine be adopted for admission to the N. F., and that the following standard be prescribed for the Ointment: Ointment of Calamine contains not less than 16% and not more than 18% of ZnO.—W. B. BAKER and R. C. BACHMANN. *Pharm. Arch.*, 10 (1939), 49. (W. B. B.)

Ointments, N. F.—Adaptation of Assay Methods for Some. I. Ointment of Potassium Iodide. The U. S. P. XI assay method for potassium iodide could not be adapted for use in the determination of potassium iodide in Ointment of Potassium Iodide, N. F. VI, because of interference during the titration of the sodium thiosulfate in the ointment. However, the potassium iodide content of Ointment of Potassium Iodide could be determined satisfactorily by employing a modification of the assay method for Iodine Ointment, U. S. P. XI. This modified U. S. P. XI method was especially suitable because the procedure did not require prior isolation of any of the ingredients in the Ointment of Potassium Iodide. The procedure suggested for the assay of Ointment of Potassium Iodide for potassium iodide is as follows: Accurately weigh about 5 Gm. of Ointment of Potassium Iodide and place in a crucible of about 50 cc. capacity, containing 5 to 10 Gm. of anhydrous potassium carbonate. Then cover the ointment with a sufficient amount of anhydrous potassium carbonate. Heat the crucible and contents gently over a Bunsen flame until the ointment is liquefied. Gradually increase the temperature, but do not exceed a dull redness, until the ointment is completely carbonized. Extract the residue with boiling distilled water and wash on a filter until the last washing, acidified with nitric acid, yields no precipitate with silver nitrate, T. S. Heat the combined filtrate and washings, which measure about 150 cc., to boiling and add approximately 20–25 cc. of solution of potassium permanganate (5%) until the hot solution remains permanently pink. Add just enough alcohol to remove the pink tint, and cool to 25° C. Then add sufficient distilled water to make exactly 250 cc. Filter the mixture through a filter which has not been previously moistened, rejecting the first 50 cc. of the filtrate. To 50 cc. of the subsequent clear filtrate add about 2 Gm. of potassium iodide, acidify with diluted sulfuric acid and titrate with tenth-normal sodium thiosulfate solution, using starch T. S. as the indicator. Each cc. of the ten-normal sodium thiosulfate solution is equivalent to 0.002767 Gm. of potassium iodide. It is recommended that the method described above be adopted for admission to the N. F., and that the following standard be prescribed for the ointment: Ointment of Potassium Iodide contains not less than 9.5% and not more than 10.5% of KI.—R. TZUCKER and W. B. BAKER. *Pharm. Arch.*, 10 (1939), 33. (W. B. B.)

Organic Bases in Hair Dyes—Identification of. A method covering all amines is described.—J. DESHUSSES. *Mitt. Sebensm. Hyg.*, 30 (1939), No. 1–2, 10; through *Am. Perfumer*, 40 (1940), No. 1, 75. (G. W. F.)

Oxygen in Soap—Determination of. Mix 2-Gm. sample with 20 cc. dilute sulfuric acid. After 10 minutes, triturate with standard potassium permanganate. After 10 minutes, shake out with carbon tetrachloride and again titrate. Total permanganate is an index of oxygen present.—C. BERGELL. *Seifens Ztg.*, 66 (1939), 750; through *Am. Perfumer*, 40 (1940), No. 1, 75. (G. W. F.)

Pharmaceutical Chemistry—Use of the Polarograph in. The methods of determining quantitatively the content of various ions and organic substances in solutions by means of the polarograph and dropping mercury electrode are reviewed. The technics and apparatus of Heyrovsky and his coworkers are described. In pharmaceutical chemistry the polarograph can be used for determining mixtures of metals, for example the content of traces of Cu, Pb or Cd in analytical grade zinc, impurities in chemicals such as Pb in sodium bromide or calcium gluconate, Zn in ammonium bromide, bromate in potassium chlorate, iodate in potassium bromate, Cu in citric acid, nitrite in nitrate, Pb in blood, alkali salts in mineral waters. The purity and rate of decomposition of galenical solutions may be determined, ketoses may be determined in the presence of aldoses, content of methyl alcohol in ethyl alcohol, aldehyde or peroxides in ether, purity of nitroglycerin, saccharin, various alkaloids such as nicotine, cinchona alkaloids, some opium alkaloids but not morphine. The formaldehyde content of Formamint or Lysoform may be determined, the ketose content of saponin, arsenoxide in arsphenamine derivatives, ascorbic acid in fruit juices, cystine or cysteine and all proteins containing these amino acids (insulin, for example), thiamin and other substances. Polarographic curves are given by nearly all inorganic cations, many inorganic anions and by many oxidizable or reduceable organic or inorganic molecules. Sometimes 6–8 different substances may be determined in the same sample, which may be 0.1 cc. in volume, or less, and the concentration may be as low as 10^{-5} mol; sometimes several hundred times lower concentration is permissible. One can determine very accurately 0.01 microgram of a metal ion, or the cystine content of a hair 6–8 cm. long. Small contents of impurities can be determined in the presence of large quantities of other substances. Twenty-two literature references are cited.—F. REIMERS. *Dansk. Tids. Farm.*, 14 (1940), 1. (C. S. L.)

Pharmacopœial Ether—Purity of. Owing to the autoxidation of ether, it should be tested for hydrogen peroxide and for dihydroxyethyl peroxide by Stamm's phenolphthalein test, and also for acetaldehyde or vinyl alcohol by means of Nessler's reagent. At the beginning of oxidation, the phenolphthalein produces a pink or red ring in 1 to 2 minutes, while the Nessler test remains negative. When autoxidation has proceeded, phenolphthalein at first gives a pink ring, gradually becoming reddish to red in about 20 to 30 minutes owing to the formation of dihydroxyethyl peroxide; the Nessler test also is positive.—J. STAMM. *Pharmacia*, 18 (1938), 71–76, 103–116; through *Chimie & Industrie*, 41 (1939), 951. (A. P.-C.)

Picrates and Picrolonates—Organic, Volumetric Determination of, with Methylene Blue. Advantage is taken of the fact that picrates and picrolonates form compounds with methylene blue which are soluble in chloroform but practically insoluble in water. Quantities of 0.001 to 0.015 Gm. of the

picrate or picrolonate are dissolved in water in a separatory funnel, chloroform is added and the mixture is titrated with $N/1000$ methylene blue solution. The methylene blue solution is standardized against $N/1000$ picric acid. The chloroform is renewed as it becomes saturated with the methylene blue picrate or picrolonate. The end-point is the appearance of a blue color, in the aqueous layer, which cannot be extracted with chloroform.—A BOLLIGER. *Analyst*, 64 (1939), 416. (G. L. W.)

Potassium Chlorate—Determination of. About 0.1 to 0.15 Gm. (accurately weighed) potassium chlorate is dissolved in 50 cc. water and treated with 1 Gm. of 40% formalin, 5 cc. of 10% sulfuric acid and 20 cc. of $0.1N$ silver nitrate in a cork-stoppered flask and then heated on a water bath till clear. The solution is cooled, transferred to a 100-cc. volumetric flask and made up to the mark. The liquid is filtered and a 50-cc. aliquot titrated with $0.1N$ ammonium thiocyanate using ferric sulfate as the indicator. Each cc. of $0.1N$ silver nitrate solution used is equivalent to 12.256 mg. of potassium chlorate. The values check well.—L. ROSENTHALER *Pharm. Acta Helv.*, 13 (1938), 358. (M. F. W. D.)

Ptorodon Pubescens—Chemistry and Applications of the Resin and Oil of. The Brazilian name of sucupira is applied to many leguminous plants, among which the most common are *P. pubescens* and *Bowdichia virgiloides*. The former is studied here. The resin contains the following: Free and combined aromatic acids, especially cinnamic acid; resin acids which appear to be oxyacids; resin alcohols; and resenes comprise about 33.6% of the resin. The resin is used in varnishes and paints. A layer dries in several hours giving a brilliant, durable, transparent and flexible film. The oil, obtained by steam distillation of the seeds, is a clear yellow liquid with a cedar odor; very soluble in 95% alcohol; exposed to the air it resinifies and takes on a deeper yellow color. It contains caryophyllene and cedrene. It is used as a fixative in perfumery; in painting; as a substitute for cedar oil; and as an insecticide.—A. MACHADO and A. DA SILVEIRA PEIXOTO. *Rev. flora med.*, 5 (1939), No. 6; through *J. pharm. Belg.*, 21 (1939), 756. (S. W. G.)

Riboflavin—Determining. A Fluorometric and Biological Method. Fluorometric and biological methods for determining riboflavin have been described which give concordant results and show a 95 to 96% correlation when applied to pure riboflavin solutions of unknown concentration, riboflavin concentrates obtained as eluates from fuller's earth, and fuller's earth adsorbates. Neither method is of value when applied to carbon adsorbates. Both methods show in excess of 90% correlation when applied to dry yeasts and raw peanuts; from 80 to 85% when applied to alfalfa meal and liver; and less than 50% correlation when applied to soy bean meal and corn meal. One microgram of lactoflavin (natural riboflavin derived from milk) per rat per day causes a growth response of substantially 1 Gm. per week for a period of 6 to 8 weeks through a 2- to 10-microgram per day feeding range.—G. C. SUPPLEE, R. C. BENDER and O. G. JENSEN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 495–498. (E. G. V.)

Ringer's Solution as a Solvent—Monograph for. At the suggestion of the National Formulary Committee a monograph has been prepared for a Ringer's solution suitable for use as a solvent for hypotonic solutions for parenteral use or when the chlorides of sodium, potassium and calcium in the tissues have been diminished. The monograph includes description and physical properties, tests for heavy metals, arsenic, sterility, assays for calcium and potassium chlorides and total chlorides. Necessary reagents and indicator, not now in the Formulary, are given. Analytical data are submitted.—NORMAN PINSCHMIDT and JOHN C. KRANTZ, JR. *Jour. A. Ph. A.*, 29 (1940), 28. (Z. M. C.)

Rotenone—Determination of, in Derris and Cube Powders. Use of Carbon in the Chloroform Extraction Method. In the analysis of cube powder by the Jones-Graham method (*Ind. Eng. Chem., Anal. Ed.*, 19 (1938), 19) higher percentages of rotenone were obtained, and the rotenone-carbon tetrachloride solvate crystallized more readily and had a purer composition when carbon was used in the extraction flask. The use of carbon in the extraction flask, in the case of the derris powders tested, caused no significant difference in the results for rotenone.—J. J. T. GRAHAM. *J. Assoc. Official Agr. Chem.*, 22 (1939), 408–411. (A. P.-C.)

Salicylic Acid—Microchemical Detection of, as Silver Salicylate. The microscopic appearance of the silver salt identifies as little as 0.4 gamma of salicylic acid. It may be distinguished from benzoates.—H. JURANY. *Mikrochemie*, 26 (1939), 314; through *Am. Perfumer*, 40 (1940), No. 1, 75. (G. W. F.)

Sarsaparilla Preparations—Assay of. Since the value of sarsaparilla is questioned some means of assay was sought. Numerous references in the literature state that absorption of various drugs is increased by means of saponins. For this reason it seemed apparent that a sarsaparilla assay should be for saponin. It has been shown that activity of saponins is best evaluated by the hemolysis of red blood cells in physiological salt solution in a given time. Accordingly experimental work was along this line. The results reported give only relative results. Further study of the possibility of using the hemolytic index is necessary. Also a study as to whether the hemolytic index parallels the degree to which absorption of standard drugs are increased by saponin.—B. FANTUS and H. A. DYNIEWICZ. *Jour. A. Ph. A.*, 29 (1940), 26. (Z. M. C.)

Sodium Carbonate—Detection of, in Sodium Bicarbonate. A short note describing a method for detecting 1 part of sodium carbonate in 200 parts sodium bicarbonate.—L. ROSENTHALER. *Pharm. Acta Helv.*, 13 (1938), 362. (M. F. W. D.)

Sodium Glycerophosphate—Free Phosphate Test for. A turbidimetric test for free phosphate ion in sodium, calcium, ferric and manganese glycerophosphates is described.—REPT. A. PH. A. LAB., *Bull. Natl. Formulary Committee*, 8 (1939), 38–40. (H. M. B.)

Sulfanilamide in Tablets—Assay of. In the control testing of uncoated sulfanilamide tablets it is desirable to isolate the sulfanilamide so that its purity and identity can be demonstrated by means of the melting point. It is only slightly soluble in ether, chloroform or ethylene dichloride and dissolves with difficulty in petroleum ether and benzene. It is soluble in acids and bases but cannot be separated from alkaline or acid solution by ether or chloroform. It is more soluble in ethyl and methyl alcohol. If the dry mixture of sulfanilamide and tablet excipients were treated with a cold saturated aqueous solution of sulfanilamide to free it of other soluble material, the sulfanilamide could be recovered from the residue by extraction with hot alcohol. The final residue then was close to the proper weight and melting point.—W. E. HONSINGER and R. E. SCHOETZOW. *Jour. A. Ph. A.*, 29 (1940), 133. (Z. M. C.)

Tannic Acid, U. S. P.—Comparative Study of. A survey of previous work on the chemistry of tannic acid was made and considerable experimental work was carried out with the hope of developing an assay method. Application of U. S. P. tests for

purity gave proof of the variable composition of available samples. Melting point, refractive index, surface tension, optical activity, titratable acidity nor spectroscopic analysis could be used in developing an assay. Critical study of various color reactions and an electrophotometric analysis led to the conclusion that an assay using color reactions is impractical.—CLIFTON E. MILLER and L. W. RISING. *Jour. A. Ph. A.*, 28 (1939), 658. (Z. M. C.)

Thallium—Contribution to Analytical Chemistry and Microchemistry of. The author discusses the variable nature of thallium with respect to the behavior of the free element and its compounds as compared with metallic lead, mercury, monovalent copper and silver, and the alkali metals. The properties similar to those of lead are utilized in analyses for thallium. The sample studied was an ant exterminator which appeared to have a honey base (pollen present) to which the toxic substance was added in aqueous solution. The aqueous solution gave a black precipitate with sodium sulfide, yellow with alkaline chromate and iodide, white with chloride and formed a bromide having the properties characteristic of lead and thallium. No reaction was noted with sodium carbonate or ammonium carbonate nor with sodium phosphate or sodium sulfate, which indicated only thallium was present. This conclusion was confirmed by the insolubility of the above precipitates in the presence of alkali, and by the green color given by the thalliferous honey to the flame (a greenb and—λ = 535$\mu\mu$). The precipitation reactions may be carried out using 1 drop of the product, on white paper for the colored precipitates, and 1 drop of reagent. This procedure will detect 2 Gm. of thallium sulfate per Kg. of diluted honey. *Determination.*—Dilute a definite weight of sample with ten times its weight of water, mix and filter. To a known volume of filtrate add 2 drops per cc. of a syrupy solution of gum arabic, as a colloid protector to prevent the gelification of the thallium iodide, then add 10% potassium iodide solution. Carry out a control determination using standard thallium sulfate in aqueous or diluted honey medium. Best results are obtained with samples containing between 0.005 to 0.1 Gm. of thallium ion per liter; using 1 cc. of sample, 2 drops of gum and 1 drop of potassium iodide solution. If lead is present, the procedure may be used after strongly alkalinizing the sample. *Microchemistry.*—The microcrystalline reactions are given as follows: Picric acid (saturated aqueous solution) and sodium benzoate solution (5%) are especially convenient because several particles of a thallium salt placed in a drop of reagent become covered with crystals analagous to those obtained with an aqueous solution of the salt. With 2 drops of solution of thallium salts (about 2%) picric acid gives almost immediately after admixture a crystalline precipitate showing barbed plaques and brushes at 120–150X. With 1% thallium the mixture should be stirred until a yellowish white border is noted before examination. Many prismatic needles are formed. The sodium benzoate reagent is a little less sensitive but is more specific for thallium. With about 2% solution square or rectangular plates are formed, with square based octahedra around the edges. The iodic acid is most sensitive but its use is recommended especially for highly diluted solutions.—G. DENIGÉS. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 193–202. (S. W. G.)

Thallous Sulfate—Determination of, in Ant Poisons. A gravimetric iodide method has been developed and is described in detail. It consists essentially in destroying organic matter by sulfuric-nitric acid digestion, neutralizing with ammonia, making slightly acid with sulfuric acid, adding 1 Gm. of sodium bisulfite to reduce thallium from the thallic to the thallous state, adding considerable excess of 10% potassium iodide solution, letting stand over night, filtering through a tight Gooch crucible containing 2 disks of S & S 589 white-ribbon paper covered with a medium pad of asbestos, washing with potassium iodide solution and then with absolute alcohol, drying to constant weight at 105° C. and weighing as thallous iodide. Weight of precipitate multiplied by 0.7616 = weight of thallous sulfate. When tried on mixtures similar to commercial ant exterminators, recoveries were within −0.56 to +0.32% of theoretical.—C. G. DONOVAN. *J. Assoc. Official Agr. Chem.*, 22 (1939), 411–414. (A. P.-C.)

Thyroid Specialties. Various assay methods for thyroid preparations are reviewed. The determination of total iodine was made according to the German Pharmacopœia VI. The preparations were then tested for the presence of inorganic iodides as follows: 0.2 to 0.3 Gm. dry thyroid powder is extracted with 5 cc. water, the extract filtered and the powder extracted with two more portions of water which are passed through the filter. The filtrate is evaporated to dryness on a water bath and the residue treated with 0.05 Gm. potassium arsenate, 0.2 cc. of sulfuric acid and then 2 to 3 drops of 1% starch solution. After standing a few minutes, a blue color develops in the presence of 0.01 mg. of potassium iodide in the sample. Pure thyroid powder gives no positive reaction. Modifications of the above method are given for testing tablets containing starch or dragées containing chocolate or sugar. A table of 14 specialties shows the total iodine content as compared to statements on the labels which were usually in terms of the dried gland. It is possible to use the chemical assay for total iodine as an indication of the potency of the thyroid preparation if the qualitative test is run to indicate the absence of added inorganic iodide.—K. REBER. *Pharm. Acta Helv.*, 13 (1938), 270. (M. F. W. D.)

Titration in Acidimetry and Alkalimetry—Errors of. Formulæ are considered for determining the error of acid-base titrations.—F. SCHMELING. *Farm. Revy*, 38 (1939), 254, 269. (C. S. L.)

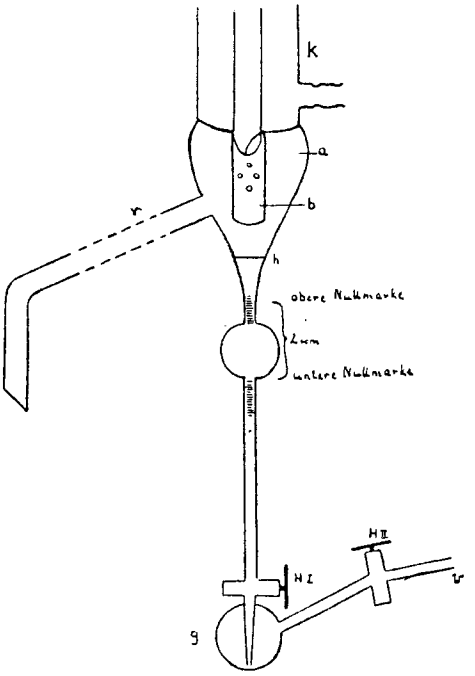
Ultraviolet Light—Use of, in the Laboratory. The following uses are discussed: comparison of colors, detection of unhydrogenated oils, determining keeping qualities of soap and testing for essential oils.—P. I. SMITH. *Am. Perfumer*, 39 (1939), No. 5, 32–33. (G. W. F.)

Vitamin K—Color Reaction for. It is announced that the color reaction of vitamin K with sodium ethylate in alcoholic solution is not a criterion for the presence of the vitamin. The experiment is given.—E. FERNHOLZ, S. ANSBACHER, M. L. MOORE. *J. Am. Chem. Soc.*, 61 (1939), 1613. (E. B. S.)

Vitamin K Concentrates—Color Reactions in. During studies of the inactivation of vitamin K by its reaction with bases, an alcohol-soluble reddish pigment was separated. It is possible to emply the final, relatively stable, reddish brown color as a quantitative measure of the vitamin. A table is given showing results of tests for agreement of color reaction with activity. The results strongly indicate that the color reaction is due to the vitamin itself. The character of the pigment is being studied further.—H. J. ALMQUIST and A. A. KLOSE. *J. Am. Chem. Soc.*, 61 (1939), 1610. (E. B. S.)

Volatile Oils in Drugs—Quantitative Determination of the. A review of the known methods of the determination of these oils (60 references) is offered. The disadvantages of the methods devoted to the volumetric estimation of the oils are (1) the measuring tube in which the oil is measured is always wet so that an increase of the oil column is unavoidable

by the water adhering to the walls of the tube, returning condensed water is in all cases turbid indicating an incomplete separation of the oil and (3) oils with a specific gravity greater than that of the water are only determined in this manner if a liquid is added to the condensed water in the measuring tube that has a smaller specific gravity and is miscible with the volatile oil and completely immiscible with water. To avoid these errors the following monobrombenzol apparatus is described: The distillation flask is a 1-liter round-bottomed flask which is attached with a tightly fitting cork to *r*. The condensation and draining apparatus consists of a conical glass cylinder *a* fused directly to the condenser *k*. The cooling tube is smooth and has the smallest amount of surface. The length of the cooling chamber is 25 cc. The projecting cooling tube is so blown that the condensate drops from the middle of the cylinder *b* surrounding the free end of the cooling tube; *r* is the side tube for the vapors to



enter the condensing chamber. On the end of *a* is fused a measuring device consisting of a tube of about 1 cc. capacity divided into $^1/_{100}$ cc. Above, the tube passes into a sphere (2 cc.). The lower end stops with a flask for mercury provided with 2 stopcocks, H-I, H-II. In the flask heat the water, the brombenzene and the drug, and the vapor mixture of the three components rises in *r*, *a* and *k* and drops in the mercury column at *h*. The oil and brombenzene mixture separates from the water—the former on the mercury and the water gradually rises in *a* and finally drains out through *r* after closing the lower end of the cylinder *b*. At the end of the distillation, H-I is opened, the mercury moves slowly into *g* and the oil-brombenzene mixture fills the sphere and a portion of the measuring tube; when the upper meniscus reaches the zero point, close H-I and read the volume. Ten drugs were so examined. The brombenzene used must be freshly distilled and should be kept in dark bottles. The apparatus must be standardized by the following method: Wash the apparatus with dichromate cleaning solution and dry well; pour mercury through tube *v*, until the flask is about $^3/_4$ full. By means of a small hand bellows at *v*, force the mercury to point *h* above the measuring tube and close H-I. Put 250 cc. water and 2 cc. brombenzene in the distilling flask and heat slowly to boiling temperature. As soon as the condensate begins to drop from *k*, add 2–3 times a small amount of water through *k*. Repeat 3 or 4 times during the course of 1 hour. As soon as the bulk of the brombenzene has passed over, lower the mercury column about 1 cm. After 1 hour rinse the condenser with water and lower slowly the mercury column. When the layer between the water and the solvent has entered the capillary tube, close H-I and allow the temperature to become constant, then lower the mercury column until the meniscus of the mercury has reached the lower zero mark and then observe the upper mark where the layer of the two liquids is seen. Each determination must be adjusted to this mark, and in each, the amount of volatile oil is determined as the cc.'s read off in the measuring tube below the lower zero mark.—H. PANZER. *Deut. Apoth. Ztg.*, 54 (1939); 1000–1002. (H. M. B.)

War Materials—Detection Methods of, Proposed in Literature. A review dealing with dichlordiethylsulfide, war chemicals containing arsenic (aliphatic and aromatic) phosgene, Perstoff and chloropicrin. Twenty references are given.—GEORGE DULTZ. *Wien. Pharm. Wochschr.*, 72 (1939), 548–552. (H. M. B.)

War Poisons—Identification of Some. The author describes tests for the identification of bromobenzylcyanide, halogenated ketones, Lewisite (a mixture of β-chlorovinylarsine dichloride, β-dichlorovinylarsine chloride and β-trivinylarsine) and other arsines.—G. BECK. *Pharm. Acta Helv.*, 13 (1938), 302. (M. F. W. D.)

Zinc—Determination of Traces of. A detailed description is given of the technic of a dithizone-carbamate method for the determination of traces of zinc. Eight metals (excluding bismuth) are shown to readily form colored complexes with dithiazone or carbamate reagents in fiftieth-normal hydrochloric acid or ammonia solution; these complexes are used for the separation and colorimetric determination of specific metals such as lead and zinc. As the amount of non-reacting bases and acids in the ash solution of most samples materially exceeds that of the reacting metals, a preliminary extraction with dithiazone and carbon tetrachloride from fiftieth-normal ammonia, buffered with ammonium citrate, is advisable to prevent possible interference; the ammoniacal aqueous layer is of no value and may be discarded. The solvent layer containing the reacting metals is drawn off and extracted with fiftieth-normal hydrochloric acid for the removal of lead and zinc (also cobalt, silver and cadmium) in solution in the acid aqueous layer as chlorides, leaving the copper (also mercury) in the original solvent; the copper in the solvent layer can be determined if desired. To the acid aqueous layer sufficient ammonia is added to produce a fiftieth-normal solution; the solution is buffered with ammonium citrate, dithizone is added, and it is then extracted with carbon tetrachloride in presence of carbamate reagent, which inhibits the lead and leaves the zinc complex in the solvent layer for determination against a standard solution in a Duboscq colorimeter or other instrument. If the carbamate reagent is omitted and potassium cyanide is added, zinc can be inhibited in the ammoniacal solution and the lead complex determined in the solvent layer in a colorimeter against a standard solution.—E. B. HOLLAND and W. S. RITCHIE. *J. Assoc. Official Agr. Chem.*, 22 (1939), 333–338. (A. P.-C.)

Zinc—Determination of Traces of, in Biological Material and Natural Waters. The material is ashed and taken up with dilute hydrochloric acid.

To each 100 cc. of dilution, 0.2 Gm. of tartaric acid, 1 cc. of 10% solution of resorcinol in alcohol, a few drops of thymol blue indicator solution and 5*N* ammonia are added until the solution assumes a slate-blue color. The alkaline solution is extracted with successive portions of a chloroform solution of diphenylthiocarbazone. This solution is extracted with *N*/10 hydrochloric acid and the acid extract diluted to a convenient known volume. If heavy metals are present these are removed from an aliquot portion of the acid extract, diluted with an equal volume of acetone, with hydrogen sulfide. From the residue from this separation, after evaporation to dryness with nitric acid, potassium chlorate and lastly ammonia is taken up with *N*/2 acetic acid and the zinc precipitated with a 2% solution of the sodium salt of α-quinoline carboxylic acid. After separation and washing of the precipitated zinc salt, it is dissolved in acetic acid and the solution added to a mixture of phthalic anhydride, naphthalene and zinc. After boiling, the solution is diluted to definite volume and the intensity of color produced is measured in a Lovibond tintometer. A table of values for known quantities of zinc from 10–70γ is included. Nickel and cobalt interfere with the determination.—N. L. ALLPORT and C. D. B. MOON. *Analyst*, 64 (1939), 395. (G. L. W.)

PHARMACOGNOSY

VEGETABLE DRUGS

Asclepias Syriaca—Phytochemical Study of. An extensive investigation on *A. syriaca*, which has revealed: (1) the composition of the fixed oil obtained from the seeds, and the presence of a sterol, and probably of some hydrocarbon in the seeds; (2) the presence of a sterol, a hydrocarbon, uronic acids, Cross and Bevan and *alpha* cellulose, a glucoside which yields a yellow acidic aglycon and lignin in the seed hairs; (3) the relative quantity of rubber and the presence of *alpha* amyrin, a fixed oil, a hydrocarbon and several substances which were not identified, because of the small quantities present, in the follicle walls. The seed hairs serve as a good source for lignin which the writer feels should be investigated, inasmuch as the lignin from this source has never been studied in detail. Usually, the lignin investigated has been from wood, and consequently lignin from an entirely different source should yield interesting and worth-while results. The plants of the genus *Asclepias* offer seed hairs, seed oil and rubber which can be utilized by man. The parts of the plant that remain could be converted into paper and wallboard. The data given are tabulated in a dozen tables throughout the article. The following procedures are given in outline form: separation of rubber, separation of amyrin esters, further treatment of the "oily droplets," separation of fatty acids. —A. E. RHEINECK. *Pharm. Arch.*, 10 (1939), 53, 69, 93. (W. B. B.)

Cephalanthus Occidentalis Linné (Fam. Rubiaceæ)—Studies of the Anatomy of. An extensive study of the microscopic study of certain above-ground parts of *Cephalanthus occidentalis* Linné, commonly known as button-bush, pond dogwood, globe flower, buttonwood, crane willow and swamp dogwood. The study was carried out on the leaf, fruit, peduncle, young stem, older stem, cambium and the wood of stem. The lamina of the leaf shows dorsiventral structure and stomata occur only in the lower epidermis. Collenchyma cells occur within the epidermis of the midrib and of the petiole. In microscopic structure the pedicle and the young woody stem are similar. Pericyclic fibers which are present possess thick, but non-lignified walls. Various parenchymatous cells of the leaf midrib, petiole, pericarp and bark possess, in their lumina, a finely divided crystalline material which appears to be crystal sand. The wood tends toward the ring-porous type because the largest vessels occur in the early portion of each growth ring. Six microscopic illustrations are given.—M. W. QUIMBY. *Pharm. Arch.*, 10 (1939), 37, 51. (W. B. B.)

Drugs Occurring in European Commerce—Most Important, Their Identification, Adulteration and Uses. The roots of *Mandragora officinalis* (L.) Vis. and *M. autumnalis* Spreng., *Ononis spinosa* L., *Petroselinum sativum* Hoffm., *Pimpinella saxifrage* L. and *P. magna* L., *Polypodium vulgare* L., *Primula veris* L. and *P. elatior* Schreber., *Krameria triandra* Ruiz and Pav., *Rheum rhaponticum* L. and *R. tanguiticum* Maxim., salep, saniculus, white saponaria, sarsaparilla (4 varieties), sassafras, senega, sumbul, *Taraxicum officinale* Weber, *Potentilla erecta* L., *Urtica dioica* L. and *U. urens* L., valeriana, *Veratrum album* L. and *V. viridis*, *Allium Victorialis* L. and *Gladiolus plaustris* Gaud. are described in detail (30 illustrations) including adulterants and tests.—FRANZ BERGER. *Scientia Pharm.*, 10 (1939), 145–148, 149–153, 156–159. (H. M. B.)

Jalap—Recent Substitute for. Examination of a fraudulent substitute for Jalap which has appeared on the American market has been identified as the tuberous root of *Mirabilis Jalapa* L. Report concerning it includes a description of physical characteristics, histology and details about the powdered root. Features which distinguish it from Jalap are non-lignified character of the cork, presence of raphides of calcium oxalate, small resin content, characteristic starch grains, absence of rosette aggregates of calcium oxalate, bordered pored tracheæ, absence of lignified fibers and stone cells. Assay showed 2.78% of total resins. The powdered root is an irritant to skin and mucous membrane. The article is illustrated.—HEBER W. YOUNGKEN. *Jour. A. Ph. A.*, 29 (1940), 62. (Z. M. C.)

Medicinal Plants in Wartime—Cultivation of. A brief discussion on the problem of plant and herb raising during wartime. The author feels that a shortage of adquate supplies of essential herbs and roots, for making galenicals, is liable to occur in England. It is suggested that chemists look ahead and not let the matter drag on for two years as it did on the last occasion.—H. M. HIRST. *Pharm. J.*, 143 (1939), 380. (W. B. B.)

Root Drugs—Cultivation of the, in Germany. Gentian, *Levisticum officinale* Koch, *Saponaria officinalis* L., *Glycyrrhiza glabra* L. and *Atropa Belladonna* L. are discussed.—WALTER VOCKING. *Die Deut. Heilpflanze* (1939), 46–48; through *Deut. Apoth. Ztg.*, 54 (1939), 2229. (H. M. B.)

Rosaceæ—Contribution to the Knowledge of the Native Medicinally Used. *Potentilla sylvestris* Necker and *Agrimonia eupatoris* L. are discussed.—HEINZ HARMS. *Die Deut. Heilpflanze* (1939), 45–46; through *Deut. Apoth. Ztg.*, 54 (1940), 1229. (H. M. B.)

Salicornia Herbacea L. A general discussion including culinary uses of the plant.—H. LECLERC. *Bull. sci. pharmacol.*, 46 (1939), 278–82. (S. W. G.)

Viburnum Prunifolium—Pharmacognostic Changes in. A revised monograph is offered.—H. W. YOUNGKEN. *Bull. Natl. Formulary Committee*, 8 (1940), 138–140. (H. M. B.)

ANIMAL DRUGS

Beeswax—Bleaching of. A composition of hydrogen peroxide, sodium peroxide, sodium perborate or sodium percarbonate as a wax bleaching agent in place of more destructive chemicals.—U. S. pat. 2,113,433; through *Am. Perfumer*, 39 (1939), No. 4, 79. (G. W. F.)

PHARMACY

GALENICAL

Calcium Gluconate—Control of, and Its Injectable Solutions. Control of calcium gluconate for pharmaceutical use should include: permanganate titration of calcium, polarimetric determination of gluconic acid in saturated ammonium molybdate solution and tests for impurities.—I. VINTILESCO, C. N. IONESCU and N. STANCIU. *Bul. Soc. Stiinte Farm. Romania*, 3 (1938), 334–342; through *Chimie & Industrie*, 41 (1939), 952. (A. P.-C.)

Cod Liver Oil in Emulsions—Stability of. After consideration of the various substances which may be present in cod liver oil and affect the stability of the emulsion, the methods of extraction of the oil from emulsions is considered, also the preparation of the unsaponifiable fraction of the oil and the methods of chemical and physical determination of vitamin A (Carr-Price reaction and ultraviolet spectroscopy). There is considerable discussion of the conversion factor for estimating biological units from extinction values. The author prefers the factor 2300. Biological assay for vitamin A is considered in some detail. Curves are constructed for the relationship of weight gain of rats to the log. dose of β-carotene for 3-week and 5-week periods of assay, and a similar curve for cod liver oil isolated from emulsions, compared to direct determination of the original oil used in the emulsion. Cod liver oil isolated from fresh emulsions was 1.16 times more active biologically than the original pure oil. In an emulsion aged two months there was a loss of 9–10% of the weight gain over 5 weeks' assay period. The errors were considered and it was concluded that the apparent loss of potency was within the error of bioassay. The vitamin D_2 content was similarly studied and found not to alter over a long period of storage of emulsions. Various factors which might affect the vitamin A content of emulsions were considered. A series of preparations differing as to mode of preparation, bottling, stoppering, storage at different temperatures, and addition of various flavoring agents, were followed by the Carr-Price reaction and the E values, as regards influence of these factors on the potency. The method of preservation had the greatest influence.—H. LINDHOLM. *Arch. Pharm. Chemie*, 46 (1939), 689, 739; 47 (1940), 1. (C. S. L.)

Datura Stramonium Linné—Chemico-Pharmaceutical Study of. A comprehensive chemico-pharmaceutical study of *Datura stramonium*, beginning with an extensive historical account of the drug. The older galenical preparations of stramonium, made in accordance with the directions of the earlicr editions of the U. S. P., were restudied. A list of sixty-four synonyms of stramonium is given. Experimental work consisted of a study of the extractive matter of Fluidextract of Stramonium Seed, U. S. P. 1890 and of Tincture of Stramonium Seed, U. S. P. 1890. A comparison is made of the extractives of the fluidextract and tincture, after extraction with petroleum-ether and from the fat-free seeds.—R. W. CLARK. *Pharm. Arch.*, 9 (1938), 89; 10 (1939), 1, 23. (W. B. B.)

Emulsions—Preparation of, Containing Volatile Ingredients. Tables are given showing the loss of weight of mixtures containing various volatile compounds in olive oil. The authors conclude that the specific gravity of the oil and the gum solutions have great effect upon the stability of the emulsions. Dissolving volatile substances (chloroform and bromoform) in the oil seems to have little effect on the surface tension.—I. WESTERHOF and P. VAN DER WIELEN. *Pharm. Weekblad*, 76 (1939), 811. (E. H. W.)

Fluidextract of Gnaphalium Arenarium—Rational Method for the Preparation of. Percolate 1000 Gm. of the cut plant with boiling water containing 0.05% of nipagin; after 24 hours make a second percolation with pure boiling water, press the residue, decant, evaporate the combined extracts in vacuum at not over 40° C. until about 800 Gm. of extract are obtained; cool the liquor for about 24 hours and add 300 Gm. of 90% alcohol; after 5 days decant, filter and wash the precipitate with a 7:3 hydroalcoholic mixture until 100 Gm. of extract are obtained.—M. B. SHVARTSMAN. *Farmatsevtitchni J.*, 11 (1938), No. 2, 14–15; through *Chimie & Industrie*, 41 (1939), 724. (A. P.-C.)

Lactuca Virosa Latex—Production of Water-Soluble Medicine with Good Keeping Qualities from. The fresh latex is divided into a liquid fraction containing the active constituents and a solid inactive fraction. The solution is separated and dried.—KNOLL A. G. CHEMISCHE FABRIKEN. Belg. pat. 422,044, Oct. 31, 1937. (A. P.-C.)

Medicinal Preparations—Process for the Manufacture of Concentrated Aqueous Solutions of Difficultly-Soluble or Insoluble. 3,4-Dimethoxybenzyl alcohol is used to facilitate solution.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 431,695, Jan. 31, 1939. (A. P.-C.)

Phenol in Ointment of Phenol, U. S. P.—Status of. It had been shown that there is loss of phenol during preparation and loss in storage. Experiments were undertaken to determine variation in product when the U. S. P. ointment is made by different people. Results showed conclusively that there is decided loss by U. S. P. XI procedure. A modified method in which phenol was not added until melted wax and petrolatum were cooled to about 70° C. gave much better results. The average loss in the pharmacopœial ointment is 16.65% while the modified procedure showed 1.8% loss. Error in weighing and improper mixing may contribute, but volatilization is the chief factor in loss during preparation. The modified procedure gave ointments meeting the U. S. P. requirement, 1.8 to 2.2%, but the U. S. P. procedure yielded ointments as low as 1.59%.—WILLIAM A. PROUT and A. CLIFTON SMITH, JR. *Jour. A. Ph. A.*, 29 (1940), 86. (Z. M. C.)

***k*-Strophanthin, Theophylline and Grape Sugar—Process for the Preparation of Stable Solutions Containing.** Solution of these substances in water is obtained by the addition of aromatic hydroxy acid salts of alkyl or alkylene amines.—CHEMISCH-PHARMAZEUTISCHE A. G. BAD HOMBURG. Belg. pat. 431,123, Dec. 31, 1938. (A. P.-C.)

Uva Ursi—Sectional Percolation Studies on. It has been assumed that during the extraction of a drug by percolation the percolate becomes more and more concentrated as the menstruum passes through the drug, until, when it reaches the bottom of the percolator, it is at the most concentrated stage. That this assumption does not hold true in the percolation of cinchona with alcohol was shown by Wruble and also by Powers. The anomalies observed by Wruble and Powers in the percolation of cinchona have also been observed in the percolation of uva ursi. The author studied the extraction of uva ursi, recording the results in the form of two tables and three graphs. No attempt is made to explain the results obtained in the experiments on uva ursi. They are presented as a further confirmation of the results of Wruble and Powers with the hope that at some future time, when sufficient data of this sort have been obtained from other sources and with other drugs, they may be helpful in formulating a better understanding of the whole problem of drug extraction.—L. M. PARKS. *Pharm. Arch.*, 10 (1939), 17. (W. B. B.)

PHARMACOPŒIAS AND FORMULARIES

Transparent Plastics—U. S. Test for. An accelerated aging test for the durability of transparent plastics when exposed to direct sunlight in the presence of air has been developed at the National Bureau of Standards of the U. S. Department of Commerce. Plastics made according to old formulæ were found to craze, turn yellow or otherwise lose their transparency on prolonged exposure to direct sunlight in presence of air. The defect has been largely overcome in the newer types of plastics, but continued improvement must be based upon experiments. The accelerated method consists of exposing the material first to fog and then to ultraviolet light and repeating. The test has been checked against actual exposure to weather in Washington, Florida and Panama, and the results have been found reliable.—ANON. *Chemist and Druggist*, 132 (1940), 367. (A. C. DeD.)

U. S. P. XI Supplement. The Second U. S. P. XI Supplement includes new monographs for ascorbic acid, cyclopropane, mandelic acid, methylrosaniline chloride, nicotinic acid, purified cotton, soluble pentobarbital, sulfanilamide, surgical catgut, thiamin hydrochloride, tribasic calcium phosphate, tribasic magnesium phosphate, natural vitamin A in oil, and natural vitamins A and D in oil. All of these substances are official in the U. S. P. for the first time. The Supplement also includes a revision of eighty-five of the monographs of the original U. S. P. XI, the revision of antipneumococcic serum, including the recognition for the first time of types II, V, VII and VIII; under tetanus antitoxin, the use of animals other than the horse is permitted; under diphtheria toxoid, the alum precipitated form is given official recognition. It also contains a new bioassay method for thiamin hydrochloride (vitamin B_1). Improved assays for vitamin A and vitamin D are also given. There is a cumulative index which lists all U. S. P. titles and indicates where the present official monograph now in force may be found.—ANON. *Pharm. J.*, 143 (1939), 290. (W. B. B.)

United States Pharmacopœia Standards for Catgut. New standards for surgical catgut become official in the United States of America on July 1, 1940. From that date any suture marketed for surgical use must, under the Federal Food, Drug and Cosmetic Act, 1938, meet the requirements of the United States Pharmacopœia, and any manufacturer distributing, for surgical use, catgut which differs from the pharmacopœial requirements must label his product to indicate that it is not of U. S. P. quality, and state every respect in which it differs from the pharmacopœial product. A definition of surgical catgut, together with its physical properties, tests for purity, procedure for labeling and storage, etc., is given in second supplement to the U. S. P. eleventh decennial revision.—ANON. *Chemist and Druggist*, 132 (1940), 207. (A. C. DeD.)

NON-OFFICIAL FORMULÆ

Chocolate and Chocolate Syrup—New Monograph for. Objection is made to the use of starch in the preparation of this syrup and the following formula is proposed: Liquor chocolate 1 lb., sugar $5^1/_4$ lb., water 2 qts. Bring to boil and hold at this temperature for 15 to 20 minutes. Strain while hot and when cold add: Tincture of vanilla 1 oz., glycerin $1^1/_3$ oz. and water *q. s. ad* 1 gallon. This syrup should be homogenized to retain the cocoa butter which occurs to the extent of 50% in the liquor chocolate. The glycerin is added to prevent a greasy smear on the glass ware.—R. S. SHERWIN. *Bull. Natl. Formulary Committee*, 8 (1940), 140. (H. M. B.)

Colloidal Clay in Powders. The use of colloidal clay in powders is due to its smoothness, whiteness and ability to absorb moisture. A light powder is made from 250 parts colloidal clay, 200 magnesium carbonate, 200 white talc and 100 zinc stearate. A compressed powder contains 370 parts of talc, 250 colloidal clay, 350 starch and 50 zinc oxide. It may be compressed without binding agent.—JOSEF AUGUSTIN. *Am. Perfumer*, 39 (1939), No. 5, 30–31. (G. W. F.)

Cosmetic Manual. Shampoos. Thirty-two formulæ are offered consisting of soaps made from coconut oil or coconut fatty acids modified by the addition of other oils such as castor, olive, palm, peach kernel or sesame saponified by sodium and/or potassium hydroxide and diluted with water, alcohol and water, alcohol, water and glycerin.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 46 (1940), 280–281. (H. M. B.)

Make-Up Base. This base may be used alone or as a base under face powder and rouge serving to make the appearance of the finished make-up smooth and flat by hiding the underlying blemishes and masking wrinkles and also forming a water-insoluble coating around each particle of powder and rouge making it impervious to moisture. The following formulæ are offered:

	Stick Type	Paste Type
Mineral oil	50	60
Petrolatum	50	50
Paraffin	20	10
Ozokerite	30	30
Titanium dioxide	10	10
Zinc oxide	20	20
Kaolin	20	20
Talc	20	20
Color	as needed	as needed.

—HARRY HILFER. *Drug and Cosmetic Ind.*, 46 (1940), 282–283. (H. M. B.)

Powder Bases—Tinted. A good powder base should be a foundation for a powder and have enough moisture to cause the powder to cling to the face over a long period of time, act as a protective film for the face, serve as a universal mask for demarcations of make-up, blemishes, scars and freckles. The following formulæ for tinted products are offered: (1) Vanishing cream (pearly) 60.0, glycerin 15.0, face powder (dark, rose rachelle) 22.5, prepared Karaya gum solution 2.0, perfume 0.5. Prepare the vanishing cream in the usual manner and add the glycerin and mix well, then add the perfume and the face powder. Next add the Karaya gum solution, that has been previously prepared with the correct preservative. This should be thin enough to pour freely. Now run the entire mixture through a roller mill. (2) Calcium carbonate 8.0, zinc oxide 10.0, glycerin 6.0, alcohol 15.0, perfume 0.1 and water to make 100.0 color to suit usually pink or ochre combinations.—PAUL SARENSEN. *Drug and Cosmetic Ind.*, 46 (1940), 418–419. (H. M. B.)

DISPENSING

Aqueous Extracts—Preparation of, from Various Common Drugs. The author discusses the best methods for preparing infusions and decoctions of various vegetable drugs and assay methods are also discussed. The drugs include (1) chondrus, assay method based on viscosity of the mucilage and p_H; (2) althaea, assay method based on viscosity of the mucilage and p_H; (3) uva ursi, assay method based upon arbutin and hydroquinone; (4) digitalis, bioassays; (5) senna, bioassay using mice; (6) cinchona, assay based on alkaloidal yield and p_H; (7) ipecac, (8) senega, assay based on hemolytic index of the saponins and (9) condurango.—M. M. MEIJERS. *Pharm. Weekblad*, 76 (1939), 1099. (E. H. W.)

Camphoric Acid-Methylacetanilide and Camphoric Acid-Acetanilide. The incompatibility of the first of these two mixtures, revealed in the preparation of wafers, is explained by the simple fact that there is a eutectic at 32° C. for the mixture containing 45% camphoric acid; but the second mixture is stable because the eutectic corresponding to a concentration of 44% of camphoric acid occurs at 88° C.—D. PONTE. *Boll. chim. farm.*, 77 (1938), 285–287; through *Chimie & Industrie*, 41 (1939), 950. (A. P.-C.)

Cane Sugar for Injection—Solution of. Preparation of a 50% solution of cane sugar for injection is described. Because of hydrolysis in sterilization the solution must be buffered with McIlvaine's phosphate-citrate buffer to p_H 7.8. In each liter of solution, 100 cc. of water is replaced by this buffer. This reduces decomposition to less than 1%, and the final p_H is 7.4. Sterilization is for one hour at 100° C. Hydrolysis slowly continues, and the solution can be kept only 2–3 months. Formula for Solutio Saccharosi Pro Injectione: Saccharum 500 Gm., Acidum Citricum 0.10 Gm., Natrii Phosphas 3.65 Gm., Aqua Destill. Sterilis *ad* 1000 cc.—K. JESPERSEN. *Dansk Tids. Farm.*, 14 (1940), 27. (C. S. L.)

Emulsifier—Description of. The apparatus which is described and illustrated turns out opaque emulsions containing particles small enough to show Brownian movement.—R. CLUZAN. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 216–220. (S. W. G.)

Emulsifying Agent. Cyclohexylamine soaps are recommended.—Brit. Pat. 501,521; through *Am. Perfumer*, 40 (1940), No. 1, 58. (G. W. F.)

Gum Acacia for Intravenous Injection—Preparation of Solutions of. The preparation of stable solutions of gum acacia, or of gum acacia with dextrose, presents many difficulties. One explanation that has been given for the precipitate which often forms in the preparation of gum acacia solution gave the main cause as being incomplete primary autoclaving. It was decided to prepare the solutions in small unit quantities, and in a concentrated form, until the first autoclaving was completed. This proved to be satisfactory, and the initial method adopted was as follows: Gum acacia (in tears) 2500 Gm., sodium chloride B. P. 187.5 Gm., distilled water to 5000 cc. (To produce approximately 20 liters of solution of gum acacia 6% in physiological saline solution.) The sodium chloride is dissolved in the distilled water and heated to boiling, the acacia added and the solution is stirred until the gum has dissolved. The concentrated solution is strained through fine muslin to remove extraneous material. The container, covered with parchment paper, is autoclaved at 15 lb. for 90 minutes. Two hundred grams of purified kieselguhr is added to the solution, which is filtered through Buchner funnels, using a coarse filter paper, and a good vacuum. The autoclaving vessel is rinsed with a small quantity of distilled water and the washings filtered through the kieselguhr left in the funnel. The clear filtrates are mixed and allowed to cool. A small quantity is diluted and estimated for its sodium chloride content. The accurate dilution figure is worked out and the whole of the concentrated solution diluted to contain 0.9% of sodium chloride. The resulting solution is filtered through an ordinary 50 Whatmann filter paper and distributed into suitable containers. There are autoclaved at 5 lb. for 45 minutes, or 10 lb. for 30 minutes. If a stable concentrated solution is desired the filtered concentrated solution can be filled into ampuls, sealed and autoclaved at 10 lb. for 30 minutes, each ampul containing sufficient to prepare a definite quantity of 6%. It is shown that the natural acidity of the solution can be neutralized to an optimum p_H, but neutralization beyond this point results only in the discoloration of the solution. When tested physiologically, on rabbits or mice, the resulting solutions were satisfactory.—H. GARTSIDE. *Pharm. J.*, 143 (1939), 223. (W. B. B.)

Homeopathic Triturations and Trituration Methods—Study of. Using methods of determining degree of dispersion which have already been described in the literature, the author has shown that the preparation of homeopathic triturations of insoluble materials by hand should be replaced by machine-made preparations. Samples prepared by 12 pharmacists varied widely in their degree of dispersion. The storage of homeopathic triturations results in a certain degree of agglutination which is greater, the less the dilution of the active principle. This was shown not to depend on the moisture content but seemed to be in some measure dependent on exposure to light. Data on the dispersions is tabulated.—K. KOCH. *Scientia Pharm.*, 9 (1938), 111. (M. F. W. D.)

Homeopathic Triturations—Preparation of, by Means of the Mechanical Mortar. On the basis of the author's experiments with turbidity values for sulfur, the variations which were obtained do not prove the usual conclusion that it is more desirable to triturate two 50-Gm. portions rather than a single 100-Gm. portion. However, it is satisfactory in all cases if a 50-Gm. portion is triturated for 2 hours and a 25-Gm. sample for 1 hour. The results obtained are only valid for the trituration apparatus used (the mortar mill) and were conducted with sulfur D-1 only. With other triturations the relationships are stated to be the same.—K. KOCH. *Scientia Pharm.*, 10 (1939), 124–126. (H. M. B.)

Iodine Ointment—Non-Staining. A paper dealing with (1) the variation of the iodine content of commercial samples of non-staining iodine ointment, (2) the action of iodine on fixed oils, and (3) a description of alternative methods of preparing the ointment. The ointment prepared according to the British Pharmaceutical Codex 1934 usually shows a considerable deficiency of iodine. Total iodine content of ten samples examined showed a variation from 1.3 to 5%. Another worker obtained results in the N. F. ointment varying from 2.10 to 4.81% of total iodine. The author confirmed the losses reported by examining various samples obtained from pharmacies, wholesalers and laboratories, and recorded his results in the form of tables. In order to prepare the ointment without loss of iodine, it is suggested that the iodine should be stirred with the oil until dissolved and set aside for a period of about two months. The brown color of the iodine gradually disappears and a bright green colored liquid is formed. Other alternative methods are given for the preparation of the ointment, but none of them are entirely practical. It is suggested that the Codex adopt a standard for total iodine content of not less than 4%.—J. C. PENMAN. *Pharm. J.*, 143 (1939), 96. (W. B. B.)

Lotio Flava, N. F. VI—Notes on the Preparation of. A study of this preparation was undertaken with the object of determining the reason for a reddish brown precipitate sometimes. Examination of the results from ten different experiments indicated that the preparation is sensitive to the carbonate ion and that the reddish brown precipitate appears when the lime water has been exposed to the air or when the ion (CO_3^{--}) has been introduced. This would indicate that part of the precipitate might be a basic carbonate. Observations seemed to refute the statement made by other investigators that the reddish brown precipitate is due to too much mercuric chloride or lime water deficient in calcium hydroxide. It would be well for the National Formulary to direct the use of freshly pre-

pared lime water for this preparation.—HENRY M. BURLAGE. *Jour. A. Ph. A.*, 29 (1940), 88. (Z. M. C.)

Ointment Bases—How Can One Save on? The following classes of ointments are discussed: (1) indifferent ointments, (2) ointments with oil-soluble constituents including cod liver oil, volatile oils, dyestuffs, hormones and vitamins, iodine, pyrogallol, chrysarobin and disinfectants, (3) ointments with insoluble or difficultly soluble constituents as protective ointments, zinc paste, mercury and sulfur and (4) ointments with water-soluble constituents such as boric acid, tannic acid and salicylic acid. The authors conclude that many ointments can be diluted without harm with water and with talc: (1) preserving indifferent bodies such as cooling ointments might from a clinical standpoint be diluted in many cases with water, those in (2) may be diluted in many cases with water without harm, those in (3) are prepared water-free and those in (4) should be dispensed dissolved in the form of emulsions.—v. CZETSCH-LINDENWALD and SCHMIDT-LA BAUME. *Deut. Apoth. Ztg.*, 54 (1939), 1110-1111. (H. M. B.)

Pharmaceutical Ointments and Emulsions. Cosmetic cream bases are finding use as ointment bases. A proprietary wax composed of stearyl alcohol containing a minor percentage of wetting agent is suggested.—R. G. HARRY. *Mfg. Chemist*, 10 (1939), 366; 11 (1940), 13; through *Am. Perfumer*, 40 (1940), No. 4, 77. (G. W. F.)

Pituitary Emulsions—Stable, for Use in Diabetes Insipidus. Preparations of posterior pituitary solely are of consistent value in treatment of diabetes, and subcutaneous injections of the official extract or of pitressin are effective in 95% of cases. It is also effective by the intranasal route, either as snuff or liquid spray. The great defect of these methods is that they require frequent repetition at short intervals. Furthermore, with large doses, that is in the region of 1 cc. or more, undesirable effects, such as pallor, transient increase in blood pressure, intestinal cramps and diarrhea may occur. These features and the distress caused by subcutaneous injections prompted the authors to investigate the possibility of a more slowly acting preparation, and a pituitary emulsion was the outcome of the investigation. Two graphs are given, which demonstrate the effectiveness and suitability of the emulsion. Two injections of 1 cc. subcutaneously each week were found to be sufficient to ensure complete control. There was no untoward secondary effects. What is more, the total dosage of pituitary extract used is considerably less than when one of the child patients was having two injections of the official extract in the twenty-four hours. The authors state that it is clearly premature at this state to predict the ultimate place in therapy of this product; but it is felt that the results in at least one important case studied merit a wider clinical trial of the emulsion. The formula of the emulsion used is as follows: Concentrated Pituitary Extract 4.0 cc., Woolfat 0.5 Gm., Beeswax 0.2 Gm., *Para*-chlor-*meta*-xylenol 0.1%, Olive Oil to 10.0 cc. Thus an emulsion made to the above formula contains 20 units per cc., *i. e.*, it is twice as strong as the B. P. extract.—S. A. TAYLOR and D. COURT. *Pharm. J.*, 143 (1939), 239. (W. B. B.)

Polyethylene Oxide—Use of, as a Vehicle in Medicinal Preparations. Polyethylene oxide of a wax-like consistency is used with active materials such as morphine, papaverine hydrochloride, caffeine and phenylethylmalonyl urea, and a compound prepared from gelatose and silver nitrate. General mention is also made of the like use of other polyalkylene oxides, polymerized to a suitable consistency, and of derivatives of the polyalkylene oxides, especially the reaction products of ethylene oxide upon organic compounds which contain hydroxy, carboxy, amino or amido groups, and among these especially those which have been obtained by the action of 10 to 20 molecular proportions of ethylene oxide upon 1 molecular proportion of the organic compound in question; especially of a compound containing at least 10 carbon atoms. According to the desired purpose there may also be used suitable adjuvants and corrigents, such as glycerol, water, small proportions of fat and hydrocarbons having a high molecular weight.—MAX BOCKMÜHL, LEONHARD MIDDENDORF and WERNER STARCK, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,149,005, Feb. 28, 1939. (A. P.-C.)

Silver Nitrate—Compound Ointment of. The author discusses the compound ointment of silver nitrate and suggests the following formula: Dissolve 1 Gm. of silver nitrate in 20 drops of distilled water, mix with 5 Gm. of ignited white bole, dry and make an ointment with 89 Gm. of Yellow Vaseline and 5 Gm. of Balsam of Peru.—L. E. STEENHUISEN. *Pharm. Weekblad*, 76 (1939), 141. (E. H. W.)

Sulfanilamide—Process for the Preparation of Aqueous Solutions of. Easily soluble quinine salts, such as quinine glutaminate, are used to facilitate solution of sulfanilamide.—CHEMISCH-PHARMAZEUTISCHE A. G. BAD HOMBERG. Belg. pat. 431,122 Dec. 31, 1938. (A. P.-C.)

Sulfanilamide—Solubility of, with Reference to Sterilization with Heat. The solubility of sulfanilamide in aqueous solutions of diethylamine is discussed as is also the increase in the solubility of sulfanilamide by the use of glycerin or alcohol. A suitable solution is described which may be made. with the Solutio Petit C. M. N. which contains 3% of sulfanilamide. This solution can be sterilized at 105° without decomposition.—E. J. E MEYER. *Pharm. Weekblad*, 76 (1939), 977. (E. H. W.)

Tablets—Disintegration of. Two main types of methods for testing the disintegration of tablets are available: (1) Those which test for mechanical resistance of the tablet against knocks and general handling and (2) those which test for the speed at which the tablet will break up into its original granules when placed in a specified liquid at a specified temperature. It is said that a tablet "should be capable of resisting a fall of several feet onto a hard surface, and on storage little or no powder should accumulate in the container." Among the type (2) methods, perhaps the best known is that where the tablet is placed carefully upon the surface of a column of water (or artificial digestion fluid) about 6 or 8 inches high. The tablet is required to disintegrate before it reaches the bottom. Another method requires a vertical glass tube carrying a wire mesh at its lower end and containing standard digestion fluid maintained at 37° C. The tablet is dropped down the tube upon the mesh; next a hog-bristle paint brush is lowered gently down to the top of the tablet and then raised again. This is repeated at regular intervals until the tablet is disintegrated. The author has designed a simple apparatus by which it is possible to determine mechanical resistance and disintegration in absolute values. The apparatus consists of a balanced beam at one end of which is a scale pan of sufficient capacity to carry about 5000 Gm. At the other end is a pivoted arm carrying a square of stainless steel from the center of which a rectangular hole has been cut. This square of steel hangs vertically and passes through a rectangular hole in a second square, placed horizontally and supported entirely by the base of the balance. The support is so designed that the horizontal "table" can be immersed in any desired liquid. Details are shown in the form of any illustration. In addition, a photograph of

the entire apparatus is included with the author's article. A table is given which compares the "average dry breaking weight" and the "average wet breaking weight" of a number of tablets; also, the table lists the "disintegration ratio" of the tablets examined for disintegration. The author puts forth the following tentative suggestions: Dry breaking weight—not less than 500 Gm.; wet breaking weight—not more than 100 Gm.; disintegration ratio—not less than 30 Gm.—C. L. M. BROWN. *Pharm. J.*, 143 (1939), 173. (W. B. B.)

Testosterone Propionate—Vehicle for. Testosterone propionate in the form of crystals had the longest effect on chick comb growth, one administration of 20 mg. continuing to act for seventy-one days. Beef tallow was the next best vehicle, a 20 mg. dose having an action like that of the crystals for seventeen days. Palmitic acid was a good, peanut oil a less satisfactory, vehicle.—J. B. HAMILTON and R. I. DORFMAN. *Endocrinology*, 24 (1939), 711; through *Brit. Med. J.*, 4101 (1939), 382F. (W. H. H.)

PHARMACEUTICAL HISTORY

Alexander Tschirch. Biographical.—OTTO ZEKERT. *Scientia Pharm.*, 10 (1939), 155–156; *cf. Deut. Apoth. Ztg.*, 54 (1940), 1190. (H. M. B.)

Apotheker Theodore Fontane. Biographical.—HERBERT MÜLLER-HESTER. *Deut. Apoth. Ztg.*, 55 (1940), 10–11. (H. M. B.)

Chevreul—M.-E. The Fiftieth Anniversary of His Death. Something of the life and work of the great French chemist Chevreul is reviewed. Attention is directed to his work on soaps and candles, his book on organic analysis with references to the section on pharmacy. He did extensive research on dyes. Observance of his centenary is described.—MARY ELVIRA WEEKS and LYLE O. AMBERG. *Jour. A. Ph. A.*, 29 (1940), 89. (Z. M. C.)

German Apothecaries in Livonia and Esthonia—Foundations of the. Historical.—WALTHER ZIMMERMANN. *Deut. Apoth. Ztg.*, 55 (1940), 30–31. (H. M. B.)

Pharmacy—Seven Hundred Years of. A historical discussion of the beginning of pharmacy in Germany.—ALBERT SCHMIERER. *Wein. Pharm. Wochschr.*, 73 (1940), 59–60. (H. M. B.)

Soaps from Carbon. Fatty Acids, Fatty Alcohols and Wax Esters from Hydrocarbons. The history of 80 years of development, with 62 references.—WALTER MEYER. *Riechstoff Ind. Kosmetik*, 14 (1939), 191–195. (H. M. B.)

Stas—Jean Servais. Review of his life (1813–1891) and work.—J. TIMMERMANS. *J. Chem. Educ.*, 15 (1938), 353–357. (E. G. V.)

PHARMACEUTICAL EDUCATION

Chemical Terminology—Latin and Greek Roots in. The source, meaning and example of about 250 of the roots most frequently used are incorporated.—G. R. BEEZER. *J. Chem. Educ.*, 17 (1940), 63–66. (E. G. V.)

Laboratory Equipment. A group of papers indicating the lines along which research proceeds in the effort to improve instruments. The papers include monochromators and auxiliary apparatus, coördination between instrument maker and research, spectrograph design and its problems, the laboratory supply house, analytical and microbalances, laboratory apparatus, its evolution and development, research in instrumentation, research on optical instruments, and the testing of chemical balances.—*Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 563–582. (E. G. V.)

Pharmaceutical Education — Advancement of. The question of pharmaceutical education is thoroughly discussed taking into consideration the historical background and looking ahead toward what the next step forward should be.—FREDERICK J. WULLING. *Jour. A. Ph. A.*, 28 (1939), 239. (Z. M. C.)

Society of German Scientists and Physicians in Stuttgart—Papers of the 95th Meeting of the. Abstracts of the papers presented at the meeting.—*Scientia Pharm.*, 9 (1938), 115. (M. F. W. D.)

PHARMACEUTICAL LEGISLATION

Drugs Added to Schedule, South Africa. Sulfanilamide and its derivatives, dinitrophenols and fish berries have been listed as dangerous drugs, and croton oil has been added to Division II of the schedule, under a motion put by the Minister of Public Health and agreed by the House of Representatives recently.—ANON. *Chemist and Druggist*, 132 (1940), 367. (A. C. DeD.)

Drugs Taken under the Adulteration Acts—Review of Analyses of. The author briefly discusses the following topics connected with the analyses of drugs: Adulteration, substitution, impurities, decomposition, excess strength, incorrect weight, manufacture, quality, misunderstanding, false labels, variety. It is stated that the percentage of adulteration of drugs is higher than that of foods, particularly as the number of different articles is much larger. A statistical table is given to show that the percentage of drug offenses in England and Wales indicates a notable improvement. Where standards are concerned, it is brought out that a superseded Pharmacopœia may still be a presumptive standard for drugs not included in a later issue. The question as to whether the British Pharmacopœia should be an absolute standard is discussed, and the author feels that to make the Pharmacopœia an absolute standard would be unsatisfactory, because time may show that a limit is too stringent, or on the other hand may show that a limit is not stringent enough. The question of the authority of the B. P. C. has also been raised. There has been a satisfactory improvement in the dispensing of prescriptions in England and Wales during the last twelve years. The average of the first four years (1926–1929) was 19.8% condemned. In the second period the proportion fell to 12.0%, and in the last period to 4.5%. —J. F. LIVERSEEGE. *Pharm. J.*, 143 (1939), 169. (W. B. B.)

Helpful Drug Regulations. The surest way to safeguard the public interest and to insure that needed remedies will be available when needed is for states to pass new laws patterned after the Federal Act.—ANON. *Ind. Eng. Chem.*, 32 (1940), 292. (E. G. V.)

Proprietaries Registered in Canada. In the year ended March 31, 1939, the number of new proprietary medicinal preparations registered was 518. The total number of proprietaries for which licences were issued was 5409.—ANON. *Chemist and Druggist*, 132 (1940), 367. (A. C. DeD.)

Tasmanian Pharmacy Act Amended. By an amendment to the Pharmacy Act which passed through the legislature before the Christmas, 1939 adjournment, further protection is given to the pharmaceutical profession against operations of large companies and combines. Introducing the Bill on December 6, the Premier said the amendment had been brought in at the request of the Pharmacy Board and was designed to assist in preserving the personal nature of a chemist's business. This he declared to be a matter vitally important for the protection of the public. The Bill also provided for raising the standard of the entrance examination,

recognition of apprenticeship served in a pharmacy outside Tasmania, increased penalties for unregistered individuals or companies carrying on the business of a chemist and druggist, prohibition of the use of automatic drug-vending machines and of itinerant hawking of medicines.—ANON. *Chemist and Druggist*, 132 (1940), 117. (A. C. DeD.)

PHARMACEUTICAL ECONOMICS

Chemical Industry Moves Ahead in 1939. A chemical review of 1939, covering effects of the war, industrial developments, new products, the vitamins, new research facilities, etc.—ANON. *Ind. Eng. Chem.*, 32 (1940), 3–8. (E. G. V.)

Chemistry—Women in. A group of papers contributed to a symposium on training and opportunities for women. Among the papers are those dealing with women in industry, in merchandise control, as patent attorneys, etc.—*J. Chem. Educ.*, 16 (1939), 574–594. (E. G. V.)

Export—Some Technical Aspects of. Certain specific products that, if given a suitable opportunity, should find a profitable export market are discussed by the author.—S. P. JANNAWAY. *Perfumer Essent. Oil Record*, 31 (1940), 115. (A. C. DeD.)

Hospital Pharmacy—Modern. A brief account of the pharmaceutical department of Westminster Hospital, London, by the chief pharmacist.—F. G. HOBART. *Pharm. J.*, 143 (1939), 327. (W. B. B.)

Palm Oil Industry. The economic prosperity of Southern Nigeria depends on the native exploitation of the indigenous oil palm forests, and this industry is now jeopardized by the creation in Sumatra of a European-managed industry based on plantations and oil mills. Native methods waste half the oil content of the palm fruit and produce an oil of poor and irregular quality. European methods avoid waste and produce oil of a constant and high quality, but the introduction of such methods into Nigeria has hitherto been impracticable owing to the Government's policy. If the Nigerian industry is to survive, some revision of this policy is essential, because (1) the price offered to the native for his oil is already depressed as a result of the eastern competition, and some buyers of oil refused to accept the Nigerian oil because of its quality; (2) the success of the native cacao farmer cannot be used as an argument in favor of the continued success of the native palm oil product; (3) it has proved impracticable to persuade natives to sell palm fruit to European mills; and (4) without an income from the oil palm industry, the native might survive, but could not be prosperous.—T. M. KNOX. *Pharm. J.*, 143 (1939), 288. (W. B. B.)

Production—Some Aspects of. The author refers to the installation, uses and maintenance of conveyors, dryers, filters, cartoning machines and air-conditioning equipment. He also explains factors such as overhaul and inspection of plant, economics effected by rationalization and the choice of machines for special purposes.—S. P. JANNAWAY. *Perfumer Essent. Oil Record*, 31 (1940), 45. (A. C. DeD.)

World Medicinal Exports, 1938. A recently published German study ("Die Chemische Industrie," August 26, 1939) suggests that world exports of medicinal products declined somewhat in 1938, and that Switzerland was the only important exporting country that increased its exports of such products during the year. The analysis reveals also that Germany had been supplying 40% of the world's demand for medicinal and pharmaceutical preparations.—ANON. *Chemist and Druggist*, 132 (1940), 152. (A. C. DeD.)

MISCELLANEOUS

Ampul Blowing and Filling. A description of the blowing of ampuls from glass tubing to hold 5 cc. of injection, and the preparation of the injection solution, filling, sealing, sterilizing and testing the sterility.—W. GOLDBERG. *Pharm. J.*, 143 (1939), 285. (W. B. B.)

Cosmetic and Dermatological Products. A theoretical discussion of the fabrication of these products including the use of newer agents in the manufacture of emulsions.—R. M. GATTEFOSSÉ. *Riechstoff Ind. Kosmetik*, 14 (1939), 196–199. (H. M. B.)

Cosmetic Technology—Developments and Tendencies in. Review.—S. REDGROVE. *Perfumer Essent. Oil Record*, Annual Special Number, (1939), 15. (A. C. DeD.)

Disinfectant. The product consists of an aqueous solution of alkaline substances, colloidal silver and an essential oil.—H. VAN TUYN. Belg. pat. 430,746, Nov. 30, 1938. (A. P.-C.)

Earth Soaps—Alkaline. A discussion of manufacture of soaps using calcium, barium, strontium or magnesium.—P. I. SMITH. *Am. Perfumer*, 39 (1939), No. 4, 43–4. (G. W. F.)

Hair Creams and Cream Shampoos. A discussion of the use and characters of hair creams. An oil-in-water emulsion using cetyl and stearyl alcohols with vegetable and/or animal fixed oils emulsified with about 10% sulfated or phosphated alcohols. The fixed oils recommended are sperm or avocado oils; the latter discolors the cream. Adysic acid is employed to give an acid reaction. The addition of 25 to 60% of sodium lauryl sulfate makes a cream shampoo.—H. S. REDGROVE. *Am. Perfumer*, 40 (1940), No. 2, 29–30. (G. W. F.)

Hair—Permanent Waving of. The hair is treated with a sulfur-removing waving agent such as a 5% aqueous ammonium sulfite solution at a temperature below about 50° C. for a sufficient time (which may be about 3 to 6 hours) to give the hair a permanent set, and is then treated with an oxidizing agent such as hydrogen peroxide.—JAMES C. BROWN, assignor to ERNEST FREDERICS. U. S. pat. 2,155,178, April 18, 1939. (A. P.-C.)

Insecticide. "Commercially pure" rotenone is dissolved in chloroform liniment in about the proportions of 1 Gm. of rotenone to 40 cc. of the liniment. The latter is composed of about 30% of chloroform and about 70% of comphor soap liniment (the latter comprising hard soap, camphor oil, oil of rosemary, alcohol and distilled water).—SISTO E. MARSICO. U. S. pat. 2,158,241, May 16, 1939. (A. P.-C.)

Insecticide. Naphthalene and paradichlorobenzene are dissolved in a common solvent.—CORPORATE INDUSTRIES LIMITED. Belg. pat. 430,456, Dec. 31, 1938. (A. P.-C.)

Insecticide—New. The product consists of 100 Gm. of oil of spikenard, 40 Gm. of lavender and 30 Gm. of stramonium, per liter of naphtha.—J. VERBIST and J. WILLEMS. Belg. pat. 430,143, Oct. 31, 1938. (A. P.-C.)

Lanolin in Soap Making. Lanolin has two important characteristics—freedom from rancidity and its emollient effect. It is recommended for shaving creams and may be used in cold-made soaps or with superfatting agents.—P. I. SMITH. *Am. Perfumer*, 39 (1939), No. 1, 35–36. (G. W. F.)

Nicotine Naphthenates—Insecticidal Oil Sprays Containing. A slight excess of naphthenic acid, over the amount theoretically required for the chemical combination of naphthenic acid and nicotine, is used for increasing the solubility of nicotine naphthenate in white oil sprays, etc., which may

also contain an aluminum soap, etc.—DANIEL G. LOETSCHER, assignor to STANDARD OIL CO. OF INDIANA. U. S. pat. 2,155,946, April 25, 1939. (A. P.-C.)

Odoriferous Substances—New. It is known that the hydrocyclic ketones that have an aliphatic radical of high molecular weight in *ortho*-position to the ketone group may be used as odoriferous substances. These are produced, for example, by condensing aliphatic aldehydes with the cyclic ketones that have at least one unsubstituted methylene group in α-position to the ketone group. By hydrogenation of the double bond the condensation products thus obtained, are, if required, transformed into hydroaromatic compounds alkylated in α-position to the ketone group. The present invention is based on the observation that hydroaromatic ketones having the ketone group and the side chain in *para*-position and not in *ortho*-position to each other are excellent odoriferous substances of widely different scents. For the manufacture of these bodies there are used as primary substances 1:4-alkyl-hydroxybenzenes that contain at least 6 carbon atoms in the alkyl radical. These starting materials are obtainable by various known processes, *e. g.*, by the addition of an olefine hydrocarbon having at least 6 carbon atoms, the corresponding alcohol or halogen compound, to 1-hydroxybenzene or an alkyl derivative thereof, which still contains a free *para*-position to the hydroxyl group, while simultaneously using suitable condensing agents, for instance, sulfuric acid, phosphoric acid, aluminum chloride, boron fluoride, active earth, etc. These hydroxybenzenes alkyl-substituted in *para*-position are first treated with hydrogen in the presence of an active catalyst while applying pressure. There is obtained a very good yield if the corresponding *para*-alkylcyclohexanol, from which, the 1-oxo-4-alkylcyclohexane is produced by oxidation, *e. g.*, by chromic acid or by dehydration by copper. The products are colorless compounds of strong and different odors. The 1-oxo-4-heptylcyclohexane boiling at 118–120° C. under 5 mm. pressure, has a fine jasmine-like odor resembling that of lily of the valley. It is excellently suited for the manufacture of odoriferous substances.—Specification No. 3632/1939, I. G. FARBENINDUSTRIE A. G., OF FRANKFORT A MAIN. *Perfumer Essent. Oil Record*, 30 (1939), 317. (A. C. DeD.)

Pear Flavor. Synthetic pear flavor may contain 40–50% iso-amyl acetate, ethyl acetate (about 12%), butyl and isobutyl acetate and possibly ethyl and iso-amyl butyrate, oil of lemon, bergamot (up to 5%), petitgrain (up to 1%) and a trace of oil of clove or eugenol, with vanillin (2%) as a fixative. A vinous note may be given by inclusion of cognac oil or ethyl œnanthate. Quince flavor is also briefly discussed.—H. S. REDGROVE. *Am. Perfumer*, 39 (1939), No. 5, 35–37. (G. W. F.)

Perfumes—Manufacture of. A general discussion including raw material solutions, in which case aging often changes the odor and prevents deterioration of such substances as aldehydes, animal products, wax-containing plant products, etc. The concentration of the solution varies; the following standards, using 95% alcohol, are recommended: higher fatty aldehydes, cuminic aldehyde, violet leaf oil, œnanthic ether, 1%; animal drugs, absolutes, Bulgarian otto of rose and crystallizable odoriferous substances, 5%; resins and resinoids, 25%; other perfume substances, 10%. Exceptions are high terpene essential oils (50%) and oils for soap (10%). The finished perfume should always contain a little water to reduce the pungent odor of the alcohol. Refrigeration followed by filtration prevents turbidity.—PAUL JELLINEK. *Am. Perfumer*, 39 (1939), No. 5, 27–29. (G. W. F.)

Powder Creams. The author describes a method of preliminary trituration of the powder with glycerin whereby lumps are eliminated from the finished product, the powder easily wetted, and a smooth mass obtained.—ANON. *Indian and Eastern Chemist*, 20 (1939), 224. (A. C. DeD.)

Respirators—Efficiency of Civilian. A description of the type respirators used by the civilian population in Great Britian. The author has made a study of the life of the average respirator, and the factors which influence the length of service of such a device. A drawing is given to demonstrate the working features of a respirator.—W. COOPER. *Pharm. J.*, 143 (1939), 298. (W. B. B.)

Skin Protectives. The causes of occupational dermatoses, the classes and properties of these products are discussed. Six formulæ and sixteen references are given.—M. A. LESSER. *Drug and Cosmetic Ind.*, 46 (1940), 284–286, 323. (H. M. B.)

Soap—Casein and Zein in. A discussion of the use of casein and zein as fillers in soaps.—P. I. SMITH. *Am. Perfumer*, 38 (1939), No. 5, 39–40. (G. W. F.)

Soap Chips and Fats—Storing of. Discoloration may be caused by metals and oxides arising from corrosion of storage tanks. Reheating induces rancidity in coconut oil. Chlorinated rubber is recommended for lining tanks. Soap chips should be stored in air-tight bins or hoppers.—P. I. SMITH. *Am. Perfumer*, 38 (1939), No. 6, 39–40. (G. W. F.)

Soap Rancidity—Control of. A review and discussion including the point of attack, induction period, carotene and other inhibitors, additives, salts and other preservatives.—P. I. SMITH. *Am. Perfumer*, 40 (1940), No. 3, 59–61. (G. W. F.)

Soap—Sulfite Cellulose Lyes for. Lignin sulfonate is difficult to use in soaps because of the tendency of the soap to discolor. It also may discolor the wrapper or container. It is of no value in increasing detergency and should be regarded as a filler of rather doubtful potentialities.—P. I. SMITH. *Am. Perfumer*, 39 (1939), No. 6, 37–38. (G. W. F.)

Soaps—Preservatives for. A discussion of spoilage of soap and a review of antioxidants.—JOSEPH AUGUSTIN. *Am. Perfumer*, 40 (1940), No. 4, 53–55. (G. W. F.)

Sulfur and Metal Sulfides—Aqueous Solutions of. Stable solutions of sulfur or sulfides of arsenic, antimony, or selenium, suitable for combating parasites, etc., are prepared with use of water, benzylamine or a hydrogenated cyclic amine such as cyclohexylamine, and a solution promoter from the group consisting of cyclohexylamine-olein soaps, alkali salts of oleic acid, fatty alcohol sulfonates, Turkey-red oil and triethanolamine.—PAUL NITSCHE. U. S. pat. 2,140,249, Feb. 28, 1939. (A. P.-C.)

Sun Tan Products. A discussion of methods of testing, formulation and marketing of sun tan preparations.—M. G. DENAVARRE. *Am. Perfumer*, 38 (1939), No. 6, 28–29. (G. W. F.)

Toilet Soaps. A brief indication of the source and manufacture of raw materials for the manufacture of toilet soaps.—L. M. LABAUNE. *Rev. marques parfum. France*, 16 (1938), 146–147; through *Chem. Abstr.*, 33 (1939), 3620. (E. G. V.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Adrenaline—Action of Inactivated, on the Chromatophores of Scardinus Erythrophthalmus.

Injecting into *Scardinus erythrophthalmus* various solutions of adrenaline inactivated by formalin, the author obtained on the animal's chromatophores a contrary effect to that produced by equal doses of non-inactivated adrenaline.—B. UGGERI. *Biochim. terap. sper.*, 26 (1939), 3. (A. C. DeD.)

Adrenaline—Vasomotor Responses to, and Carotid Sinus. The authors' studies on the vasomotor responses of normal and skinned limbs, by using the three manometers method of Nolf or by a strohmuhr, show that vasoconstriction and vasodilatation produced by carotid sinus reflexes, direct sympathetic stimulation and the direct injection of varying doses of adrenaline occur equally well in the normal and in the skinned limb when proper measures are taken to keep the latter warm and moist. These facts thus show that blood vessels of skeletal muscles may also react to vasomotor impulses and adrenaline injections by vasoconstriction and vasodilatation.—K. S. GRIMSON and T. C. R. SHEN. *Arch. intern. pharmacodynamie*, 63 (1939), 95. (W. H. H.)

Aloe—Cathartic Action of. A comparative study of Cape, Socotrine and Curacao aloes, using the time of evacuation of the intestinal tract of *Daphnia magna* as a criterion is reported. Cape aloe was found to be the most active in spite of its recorded lower aloin content. Water-soluble, non-resinous, aloin-free fractions of Curacao and Socotrine aloe, as well as resinous residues possess definite cathartic activity with the former fractions closely paralleling purified aloin in activity and exceeding that of Curacao and Socotrine aloes. Least activity is observed with resinous fractions approaching Curacao and Socotrine aloe in activity.—ELMER H. WIRTH, FRANK T. MAHER and VICTOR LINDBLADE. *Bull. Natl. Formulary Committee*, 8 (1939), 54–60. (H. M. B.)

Amino Acids (Hydrolyzed Casein)—Serum Albumin Regeneration Following Intravenous, in Hypoproteinemia Produced by Severe Hemorrhage. The intravenous injection of a mixture of amino acids, obtained by enzymic hydrolysis of casein, was followed in a few hours by a significant increase in the serum albumin concentration of fasting dogs rendered hypoproteinemic by severe hemorrhage. Since the serum globulin concentration and the relative red cell volume both decreased, it is inferred that the increase in serum albumin concentration was due to a regeneration.—ROBERT ELMAN. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 14. (A. E. M.)

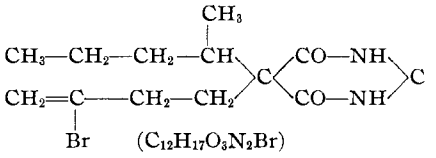
Analeptics—Comparison of. A comparative study was made of the action of cardiazol (pentamethylene-tetrazol), coramine (pyridine-β-carboxylic acid diethylamide) and carditone (sodium camphosulfonate) on the blood pressure and respiration of dogs under light paraldehyde anesthesia. The results show that when the respiratory and circulatory mechanism is only slightly depressed, as in ordinary anesthesia, carditone is the best circulatory stimulant of the three; cardiazol is relatively depressant to the blood pressure, whereas coramine is in between these two. As respiratory stimulants the results show that when given in amounts producing little changes in blood pressure, coramine is less effective than cardiazol, but more effective than carditone. These results also suggest that cardiazol should be given in cases of pure respiratory failures without low blood pressure, whereas carditone should be given in cases of pure circulatory failure as it has the additional advantage in not depressing the heart. Coramine is considered to be the least valuable as an analeptic. In conclusion, the author indicates that it is possible that further changes in the chemical structure of these synthetic drugs might result in derivatives having more favorable therapeutic activity.—H. K. SINHA. *Indian J. Pharm.*, 2 (1940), 114–116. (N. L.)

Anesthetics—Local. Compounds of the general formula $ZCH{:}CRCOOANXY$ (where X represents alkyl, Y represents alkyl or aralkyl, A represents alkylene, R represents alkyl or phenyl and Z represents alkyl, phenyl, halophenyl or dialkylaminophenyl) and their salts have local anesthetic properties, and may be prepared by causing the appropriate acyl chloride to react with the appropriate alcohol or by causing the sodium salt of the acid to react with the alkyl chloride. Details are given of the preparation of a number of such compounds.—WM. A. LOTT, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,158,239, May 16, 1939. (A. P.-C.)

Anhydro-oxy-progesterone. The biological activity of anhydro-oxy-progesterone when given by mouth has been further tested by Emmens and Parkes, who find that it has metrotrophic, androgenic and œstrogenic properties. It causes cornification of the vaginal epithelium of the ovariectomized rat or mouse and progestational proliferation of the endometrium to a somewhat less extent than when given by injection, but is equally effective in producing an increase in the weight of the uterus.—C. W. EMMENS and A. S. PARKES. *Nature*, 143 (1939), 1064; through *Brit. Med. J.*, 4103 (1939), 476B. (W. H. H.)

Anterior Pituitary Gland—Relation of, to Carbohydrate Metabolism. Evidence is given of the significance of the anterior pituitary in the control of carbohydrate metabolism in general, and in particular, in the regulation of insulin sensitivity. Many of the effects on carbohydrate metabolism of hypophysectomy and of the administration of anterior pituitary extracts are intimately related. They are here discussed under separate headings.—F. G. YOUNG. *Brit. Med. J.*, 4102 (1939), 393. (W. H. H.)

Barbiturates—Studies on. XXIV. Pharmacology of Secondary Amyl-Beta-Bromallyl Barbituric Acid. The pharmacological action and the toxicity of this relatively new barbiturate have been studied. It is known as "Sigmodel" commercially and has the following formula:



($C_{12}H_{17}O_3N_2Br$)

Some physical and chemical properties are given. Experimental work is reported and discussed at some length. The 50% fatal dose of sigmodal sodium for rabbits is 40 mg. (intravenous) and 90 mg. (rectal) and for dogs about 35 mg. (intravenous). It is a depressant of the central nervous system producing deep sleep; in the dog it produces surgical anesthesia. The onset of action after intravenous injection is immediate in all animals and occurs in a few minutes after rectal administration to rabbits. The rate of essential elimination is 37 to 47% of the average fatal dose (15 to 19 mg.) per hour. Given intravenously it is a circulatory and respiratory depressant similar to other short-acting barbiturates. Even in fatal doses it does not abolish cardiac slowing from faradic stimulation of the vagus. It has definite anticonvulsant properties and a central stimulant like metrazol antagonizes its depressant effects. Large doses of antipyrine do not deepen sigmodal sodium narcosis or alter the recovery time. It may be estimated in body fluids by the cobalt-color tests. About one-fifth of the dose of the drug (or its end products) is excreted in the urine within 48 hours after administration.—LLOYD W. HAZLETON, THEODORE KOPPANYI and CHARLES R. LINEGAR. *Jour. A. Ph. A.*, 29 (1940), 49. (Z. M. C.)

Cardiazol—A Dependable Stimulant. The solubility of this circulatory and respiratory stimulant in lipoids and water gives it a prompt action. It may be administered in more ways then camphor or strychnine and moreover has an important excitant effect on the vasomotor and respiratory centers. Its use is followed by an increased volume of blood in circulation and a deepening and slowing of respiration. Circulatory disturbances, collapse, poisoning and the dangers of anesthesia are listed among the conditions in which cardiazol is indicated. —ANON. *Indian Med. Gaz.*, 74 (1939), 589. (W. T. S.)

Deriphylline and Alkaline Reserve. The intravenous injection of 10 to 20 mg. of deriphylline (per Kg.) augments in the majority of cases the alkaline reserve of the normal rabbit and in different states of acidosis and alkalosis (normal, disease, intoxications). This substance does not succeed in combating acidosis provoked by ammonium chloride and tends sometimes to accentuate the same. The intravenous injection of oxyamine (diethanolamine) in doses of 9.5, 14 and 19 mg. per Kg. augments the alkaline reserve of normal rabbits in a number of cases. One does not always obtain convulsive movements from the same doses. The intravenous injection of theophylline in doses of 6, 9, 12 and 20 mg. per Kg. sometimes augments the alkaline reserve in normal rabbits, sometimes convulsive movements appear with a fall in alkaline reserve. Contrary to the past point of view concerning the excitation of the respiratory center, the favorable effect of the two constituents seems to be the same, that it acts separately or together. It does not appear to have a reënforcing action.—L. CHARON. *Arch. intern. pharmacodynamie*, 63 (1939), 120. (W. H. H.)

Digitalis Assay by the Cat Method of Hatcher and Brody—Further Observations on the Influence of the Anesthetic on the Results of. It has been established that the cat unit for certain preparations of digitalis is higher when a non-volatile anesthetic, dial-urethane solution, is substituted for ether in the Hatcher-Brody method. Such substitution is of practical importance but reasons for smaller doses when cats are etherized need to be found. Study of the literature showed the desirability of experiments to determine whether substitution of chlorbutanol for ether anesthesia affects the size of the cat unit. Experimental work is described in detail. The conclusion was reached that the cat unit for the digitalis preparations examined is, on the average, considerably higher if chlorbutanol is substituted for ether in making the assay by the cat method of Hatcher and Brody. The unit determined under chlorbutanol anesthesia is practically identical with that obtained with dial-urethane anesthesia. Profound etherization prior to administration of dial-urethane for anesthesia does not lead to reduction of the cat unit to any marked extent if a nonvolatile anesthetic, dial-urethane, is subsequently given in dose sufficient to prevent struggling.—CHARLES C. HASKELL. *Jour. A. Ph. A.*, 29 (1940), 56. (Z. M. C.)

Drugs—Cumulation of. A definition of cumulation is given. As a result of this definition, substances showing cumulative action are divided into three groups: those showing chemical cumulation in which the cumulation is the direct result of the accumulation of the cumulating substance in the body; organic cumulation, in which the action of the substance producing cumulation persists long after the substance itself has been eliminated from the body; and mixed cumulation, a combination of the above two. Examples are given of these groups. In the first group are included boric acid, germanine, sulfonal and barbituric acid derivatives; in the second group, poison gases (phosgene) and chloroform; in the third group, carbon tetrachloride, phosphorus, methyl alcohol, diethylene glycol and the higher alcohols. The results of an experimental investigation into cumulation as manifested by substances showing organic chemical cumulation (barbital and chloroform) will be communicated in a subsequent article.—H. L. WOLFF. *Arch. inter. pharmacodynamie*, 62 (1939), 427. (W. H. H.)

Ephedrine and Carbon Dioxide—Diuretic Action of. In weak doses ephedrine, and likewise carbon dioxide, are capable of removing the anuria produced by Salyrgan; this reëstablished the idea that diuresis is dependent upon a return to normal volume of the kidney, originally diminished by Salyrgan.—L. DAUTREBANDE, E. PHILIPPOT, F. NOGAREDE and R. CHARLIER. *Arch. intern. pharmacodynamie*, 62 (1939), 445. (W. H. H.)

Epinephrine Secretion—Does Exclusion of Carotid Sinus Augment? The common carotid arteries were clamped in the dogs, whose epinephrine secretion was measured by means of the method of Satake and others. No anesthesia was used; the dog was not fastened. The observation extended for 1–2.5 hours after clamping. The clamping caused blood pressure elevation, but did not bring about any alteration in the epinephrine output rate from the suprarenals nor any change in the blood sugar concentration.—M. WADA, T. HIRANO and Y. TANEITI. *Tôhoku J. Exp. Med.*, 37 (1939), 335. (A. C. DeD.)

Erythrophleine—Action of, upon Isolated Intestine and Uterus. Like the digitalis glycosides, erythrophleine possesses a motor action upon the small and large isolated rabbit intestine. Similar to the pharmacologic group of digitalis glycosides, erythrophleine excites isolated rabbit uterus and abolishes the motor action of adrenaline upon this organ. The mechanism of this abolition differs from that produced by substances which produce the so-called adrenaline reversal.—E. ROTHLIN and RAYMOND-HAMET. *Arch. intern. pharmacodynamie*, 63 (1939), 10. (W. H. H.)

Eucalyptus Oil—Pharmacology of. Observers of koala, which feeds exclusively on eucalyptus, have commented on the animal's careful selection of the temperature. When it is hot, koalas prefer food-containing cineol, and when it is cold they prefer food containing phellandrene. An investigation of the pharmacology of these substances was undertaken. Rats have been found especially suitable for the study of the action of antipyretics and were therefore used in these tests. The terpenes were given in emulsions by mouth to groups of five rats at a time in doses as large as one-tenth of the average lethal dose. Neither drug had any significant effect on the average temperature of groups of norma rats, or of rats with artificial fever. These results lend no support to the theory, but it is possible that experiments on koalas would be more enlightening. When given by the mouth to decerebrate cats, these terpenes produced effects like other essential oils—changes of blood pressure, a rapid pulse and excitation followed by depression of the knee jerk and respiration, which failed altogether.—G. BROWNLEE. *Perfumery Essent. Oil Record*, 31 (1940), 135. (A. C. DeD.)

F 933 (Piperidomethyl-3-Benzodioxane)—Action of, on Fibrillation of the Heart. Piperidomethyl-3-benzodioxane (F 933) in doses of 5 mg. per Kg. raises the resistance of the heart in cats and rabbits against electrical fibrillation and its after effect. No action of these doses could be stated on refractory period and conduction time. Simultaneous injection of F 933 and adrenaline or $BaCl_2$ prevent all heterotopic rhythms caused by the latter two

substances.—K. VAN DONGEN. *Arch. intern. pharmacodynamie*, 63 (1939), 88. (W. H. H.)

Gastric Secretion—Effect of Urine from Gastrectomized and Duodenectomized Dogs on. An extract can be prepared from the urine of normal dogs, which inhibits gastric secretion. The inhibitory principle is still present in the urine after removal of either the stomach or duodenum.—M. H. F. FRIEDMAN, H. C. SALTZSTEIN and A. A. FARBMAN. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 181. (A. E. M.)

Gastric Secretion—Effects of Atropine and Fat on, Stimulated by Alcohol. In dogs with Pavlov pouches the gastric secretory response to dilute alcohol is resistant to the inhibitory effect of atropine or fat.—JOHN S. GRAY and WILLIAM H. BACHRACH. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 36. (A. E. M.)

Glucose Absorption in a Vella Intestinal Segment Before and After the Elimination of the Pancreas. After the pancreas was eliminated the authors noted a great diminution of the glucose absorption in a Vella's intestinal segment.—A. SERRATI and F. PESCETTO. *Biochim. terap. sper.*, 26 (1939), 19. (A. C. DeD.)

Gonadotropic Hormones—Are They Destroyed while They Exert Their Action on the Ovary? In hypophysectomized and unilaterally ovariectomized rats, a certain dose of the gonadotropic hormones causes the same increase in the weight of the single ovary as the same dose produces in the hypophysectomized animal possessing both gonads. It is concluded that no destruction of the gonadotropic hormone takes place while it exerts its action on the ovary.—HANS SELYE. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 404. (A. E. M.)

Heart—Products Having an Action on the. Compounds of the general formula $3,4\text{-}(HO)_2C_6H_3CH(OH)CH(CH_3)NHX$ (where X stands for an aliphatic hydrocarbon radical with at least two carbon atoms or for a cycloaliphatic hydrocarbon radical) have an action on the heart analogous to that of 3,4-dihydroxyphenylmethylaminoethanol, but scarcely affect the blood pressure. Methods of preparation of these compounds are described.—MAX BOCKMUHL, GUSTAV EHRHART and LEONHARD STEIN, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,151,459, March 21, 1939. (A. P.-C.)

***p*-Hydroxyaminobenzenesulfonamide and Sulfanilamide—Comparison of Certain Pharmacological and Antibacterial Properties of.** *p*-Hydroxyaminobenzenesulfonamide, when injected into dogs, appears to be completely converted into sulfanilamide within 5 minutes. *In vitro*, it is no more than ten times as active as sulfanilamide.—A. CALVIN BRATTON, H. J. WHITE and E. K. MARSHALL, JR. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 847. (A. E. M.)

Hypnotics and Soporifics. Various details are given for the production of 4,4-dimethyl-1-bromopentane and other compounds of the general formula $R_3CCHYCH_2X$, in which R indicates an alkyl, Y is hydrogen or a halogen and X is a halogen, which combine with barbituric acid and its derivatives to form substituted barbituric acids of high hypnotic and soporific power, and combine with substances such as malonic or other esters and their derivatives forming bactericidal products of probable efficiency in the treatment of leprosy.—FRANK C. WHITMORE and AUGUST H. HOMEYER, assignors to MALLINCKRODT CHEMICAL WORKS. U. S. pat. 2,151,252, March 21, 1939. (A. P.-C.)

Ibogaine—Action of. Upon the isolated small intestine of the rabbit and the isolated large intestine of the guinea pig, ibogaine produces an inhibitory action. Ibogaine diminishes the intestinal inhibitory power of adrenaline but does not modify in marked fashion the intestinal stimulating effect of acetylcholine. Ergotamine inverts the intestinal inhibitory action of ibogaine. Upon the isolated vesicle of the guinea pig, ibogaine, which has an extremely weak direct action inhibits, almost totally, the motor effects of adrenaline as well as acetylcholine. Ibogaine stimulates the isolated guinea pig uterus and does not modify the inhibitory action of which adrenaline is endowed with regard to this organ. By its effect upon the isolated organs, ibogaine inhibits four main types of poisons to the vegetative system: adrenaline, acetylcholine, yohimbine.—RAYMOND-HAMET and E. ROTHLIN. *Arch. intern. pharmacodynamie*, 63 (1939), 27. (W. H. H.)

Insulin—Decrease in Blood Sugar Level in Rabbits During Various Months of the Year. The decrease in the blood sugar level in Chinchilla rabbits caused by the injection of insulin shows seasonal variation. The sensitiveness is greatest from June to October with a maximum in August and September and smallest from November until May with a minimum in February. These variations do not coincide with those of temperature and atmospheric pressure. A certain relation with the percentage of moisture in the air, however, exists, this percentage being minimal in March and December and maximal in September. The most favorable dosage of standardized insulin in gaging-experiments is most probably lower from June until October than from December until May. However no rules can be given; each investigator must determine this dosage on his own material.—R. W. SPANHOFF. *Pharm. Weekblad*, 76 (1939), 754. (E. H. W.)

Lactation—Hormonal Inhibition of. The effectiveness of estrogens in inhibiting lactation in the rat can be increased through simultaneous administration of a gonadotropic principle from pregnant women's urine.—R. P. REECE, J. W. BARTLETT, I. L. HATHWAY and H. P. DAVIS. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 183. (A. E. M.)

Magnesium—Action of, on the Heart. Magnesium salts exert in man and mammals a negative chronotropic and dromotropic action, prevalently by way of the vagus. They have a direct action on the myocardium at high dosage leading occasionally to complete heart block. Magnesium is antagonistic to such toxic and pathological conditions by which heterotropic automatic centers enter into function, in which case it acts as a regulator of the rhythm. It may accentuate temporarily the electrocardiographic expressions of existing myocardial lesions of toxic vascular origin.—R. AGNOLI and D. BUSSA. *Arch. sci. med.*, 66 (1938), 109–124; through *Chem. Abstr.*, 33 (1939), 2219. (F. J. S.)

Melanophore—Action of Light and Drugs upon. In the absence of light the darkening effect of the examined drugs upon the skin of pale frogs still occurs. Total darkness does not inhibit the increased melanophore hormone secretion once induced by injecting the examined drugs in the light. Prolonged continuous light does not influence the stimulant action of the examined drugs upon the secretion of the hypophyseal melanophore hormone.—T. C. R. SHEN. *Arch. intern. Pharmacodynamie*, 63 (1939), 107. (W. H. H.)

Menthol and Isomers—Comparative Pharmacology of. *l*-Menthol, *d*-neo menthol and *d*-iso menthol were studied individually and in combination and compared with ordinary pharmacopœial camphor by both phytopharmacological and zoöpharmacological methods. In agreement with findings made the author in previous pharmacological studies on stereoisomers, the levo-rotatory menthol was found to be more active physiologically than the dextro-rotatory variety. The effects of the individual isomers as well as of the "liquid"

menthol, a preparation consisting of equal parts by volume of the three isomers, were studied in detail on circulation, respiration, kidney and liver function, nervous system and various isolated living tissues of different laboratory animals. All the individual menthols and also the liquid menthol were found to exert a more or less local anesthesia, the most potent in that respect being the ordinary levorotatory variety and liquid menthol. Camphor, which is chemically closely related to menthol, differs from menthol in not being readily absorbed through the integument, in not being locally anesthetic and in producing violent epileptiform convulsions when injected into animals. When compared with ordinary levo-rotatory menthol, it was found that liquid menthol, though of approximately the same toxicity, has a greater penetrability and exerts more local anesthesia. These findings warrant further studies of a clinical therapeutic nature of liquid menthol as a possible substitute for the ordinary solid or levo-rotatory variety.—D. I. MACHT. *Arch. intern. pharmacodynamie*, 63 (1939), 43. (W. H. H.)

Methyltestosterone—Inactivation of, in Castrate Male Rats. Methyltestosterone, like testosterone propionate, does not exert its specific effect on the genital organs of castrate male rats when implanted in pellet form into the spleen. When placed in the transplanted spleen with splenic vessels ligated, the effect returns. As both androgens appear to be destroyed in the liver, it is suggested that the difference in the specific effects of the two substances when administered orally may be due to different routes of absorption from the intestinal tract (*e. g., via* the lymphatics), rather than different sites of inactivation.—GERSON R. BISKIND. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 259. (A. E. M.)

Morphine Salts—Comparative Activities of Various. A comparison of the local actions of alkaloid salts with their effect after intravenous injection in the rabbit leads to the conclusion that phenylpropionate penetrates more easily into the cells and is also more rapidly eliminated in the urine than is the case with citrate. Consequently, phenylpropionate acts more quickly but for a shorter time than citrate. The hydrochloride is in an intermediate position.—J. RÉGNIER and SUZANNE LAMBIN. *Bull. sci. pharmacol.*, 45 (1938), 241–252; through *Chimie & Industrie*, 41 (1939), 727. (A. P.-C.)

Narcotics and Tissue Respiration. Narcotics, contrary to early conclusions, have specific effects on oxidizing systems. At low concentrations they greatly inhibit the oxidation by brain tissue of glucose, lactate and pyruvate, but not that of succinate or α-glycerophosphate. Cytochrome oxidase is unaffected. Their inhibitive effects on brain respiration in presence of glucose are definite at narcotizing concentrations, the inhibitions being more marked using brain cortex slices than when using minced brain. At relatively high concentrations they compete with lactite for its dehydrogenase according to mass action laws, as shown by the methylene blue technic. At the low concentrations which markedly inhibit brain tissue respiration, there is little or no inhibitive effect on the known dehydrogenases under anaerobic conditions. Thus pyruvic dehydrogenase is unaffected by relatively low concentrations of narcotics. Narcotic inhibitions aerobically are steady and reversible (at normal or high potassium ion concentrations). They are dependent on the concentration of narcotic and not on the concentration of substrate to which the tissue under examination is exposed. Narcotics at low concentrations particularly affect the pyruvic acid oxidizing systems in brain, kidney or diaphragm. It is suggested that there is a factor or dehydrogenase (possibly analogous to diaphorase) highly sensitive to narcotics which acts as a hydrogen carrier in tissue respiration between pyruvic dehydrogenase and cytochrome oxidase.—J. H. QUASTEL. *Pharm. J.*, 143 (1939), 288. (W. B. B.)

N. F. Botanical Monographs—New Color Names for the. A complete list of color names for the N. F. vegetable drugs as proposed by the special committee on color names of botanical monographs is offered.—*Bull. Natl. Formulary Committee*, 8 (1940), 209–221. (H. M. B.)

Nicamide—A Respiratory and Circulatory Stimulant. This drug, the diethylamide of nicotinic acid, is available in a 25% solution for oral administration and in ampuls for hypodermic use. Since nicamide increases the depth and frequency of respiration and the force of cardiac contraction its use is indicated in all conditions associated with shock and depression of the vital centers.—ANON. *Indian Med. Gaz.*, 74 (1939), 590. (W. T. S.)

Pancreatic Hormone Preparations Lowering Blood Sugar—Process for the Preparation of. The hormone in aqueous medium, at a p_H of 6.5 to 9, is made to react with a water-insoluble organic base of high molecular weight.—I. G. FARBENINDUSTRIE A. G. Belg. pat. 430,582, Nov. 30, 1938. (A. P.-C.)

Pharmacy and Pharmacology. Passages from the presidential address delivered to the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, Great Britain. Modern advances in pharmacology are touched upon. It is said that "the bottle of medicine has, as a result of pharmacological research and increased knowledge, been largely supplanted by the use of pure chemical compounds and active principles of known therapeutic activity." Pharmacy is playing its part in coöperating with medicine and pharmacology by assisting in the therapeutic application of remedies which require special training and skill in their preparation.—W. WILLCOX. *Pharm. J.*, 143 (1939), 379. (W. B. B.)

Posterior Pituitary Extract—Concentration Capacity of the Kidney by Injection of. In dogs, placed under conditions similar to those employed clinically for revealing the concentration capacity of the kidney, that is, under restriction of food and water, the administration of posterior pituitary extract results in the formation of a more concentrated urine than follows the restriction alone.—WILLIAM G. PAINE and ERWIN E. NELSON. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 729. (A. E. M.)

Potassium—Action of, upon the Carotid Sinus. Potassium in a dose of 1 cc. of a 1% solution of potassium chloride in the carotid sinus of the dog produced a lowering of blood pressure and a restraining action upon respiration. The heart action (bradycardia) is not alone responsible for the hypotension produced; the blood pressure lowering should be ascribed more so to vasodilation. The reflected reaction from the carotid sinus is discharged over the sinus nerve. The point of attack of the potassium is the chemoreceptors in the glomus carotid. The principal site of this reaction is discussed.—W. T. HAÜSS and T. C. R. SHEN. *Arch. intern. pharmacodynamie*, 62 (1939), 411. (W. H. H.)

Pressor Substance Produced by Anærobic Autolysis of Renal Cortex. Anaerobic autolysis of renal cortex or cell free cortical extract of the dog produces a powerful heat stable pressor substance that passes through a collodion membrane. This substance is not obtained from renal medulla. Oxygen inhibits the formation of the pressor substance. The pressor action is manifest immediately after intravenous administration and is greater and more sustained in hypertensive than in normal dogs. The pressor substance is produced just as well in a substrate-free medium as in plasma.—JOSEPH VICTOR, ALFRED

STEINER and DAVID M. WEEKS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 767. (A. E. M.)

Procaine—Protecting Action of, against Ventricular Fibrillation Induced by Epinephrine During Cyclopropane Anesthesia. When procaine is administered to cyclopropanized dogs the incidence of ventricular fibrillation following epinephrine administration is reduced.—CHARLES L. BURSTEIN and BRUNO A. MARANGONI. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 210. (A. E. M.)

Strophanthin, Acetylcholine and Vagal Stimulation. It was found that the electrocardiographic changes which follow vagal stimulation (by pressure on the carotid sinus or on the eyeball) in man can also be brought about by the intravenous injection of acetylcholine and of strophanthin. It is concluded that acetylcholine is the substance liberated by vagus activity, and that strophanthin increases the sensitivity of the heart muscle to normal vagus action.—N. A. NIELSEN and M. TRIER. *Amer. Heart J.*, 17 (1939), 515; through *Brit. Med. J.*, 4103 (1939), 476C. (W. H. H.)

Sulfur—Pharmacology of. I. II. In rabbits, injections of sulfur in gum arabic produced a transitory hypothermia. Precipitated sulfur dissolved in olive oil caused an immediate transitory hypothermia followed by a more lasting hyperthermia.—S. GAJATTO. *Arch. farmacol. sper.*, 66 (1938), 97–118, 129–144; through *Chimie & Industrie*, 42 (1939), 101. (A. P.-C.)

Thyrotrophic Hormone—Influence of, on the Thyroid Involution in the Guinea Pig. The authors have made a study to ascertain what factors, if any, may influence the rate of development of a refractory state of the thyroid in immature guinea pigs when these animals are given a thyrotropic hormone under varying conditions. The hormone administered was from a single batch and the factors considered were: (*a*) heating the hormone solution, (*b*) reducing the daily dose of hormone and (*c*) simultaneous administration of small doses of potassium iodide. The source of the hormone used and a description of the animals employed for the study were given along with the details of the experimental procedure. The results of the effects of the above factors are tabulated. These suggested that various factors may play a part in the processes concerned with thyroid involution when the guinea pig receives prolonged injection of a purified thyrotrophic preparation. The rate of regression of the structural features of the thyroid gland depends upon the dose of the hormone. With large doses, activity still characterized the gland after a period of sixty days, while with smaller doses or heated solutions of larger ones, involution had, by sixty days, proceeded toward completion. Potassium iodide modified the features associated with the larger doses. The concentration of ascorbic acid in the adrenal glands of the animal receiving the hormone were higher than that of controls. Anti-thyrotrophic substances could not be detected in the blood of the hormone-treated animals but under comparable conditions such substances were found in the blood of the rabbit and monkey.—VICTOR MARTIN TRIKOJUS and WILLIAM JOSEPH ELLIS. *Australian J. Exptl. Biol. Med. Sci.*, 17 (1939), 441–455. (W. T. S.)

U. S. P. XI Digitalis Standard. There has been growing confusion with regard to the strength of U. S. P. XI preparations in terms of the U. S. P. X Standard. Report is made of a series of parallel runs extending over a two-year period. Details of the experimental work are given as well as extensive comparative tables. Results of the work show that the U. S. P. XI Digitalis Standard averages about 50 to 60% stronger than the U. S. P. X Standard.—ORLO F. SWOAP and MARVIN L. PABST. *Jour. A. Ph. A.*, 29 (1940), 59. (Z. M. C.)

Vasomotor Reflexes in the Sympathectomized Cat. After total bilateral extirpation of the sympathetic ganglionic chains, the decerebrated cat retains vasoconstrictor and vasodilator reflexes of carotid sinus origin, characterized, respectively, by a raising and lowering of the general blood pressure. These reactions are easily demonstrable in all cats where the general state is good and the blood pressure is sufficiently high at the beginning of the experiment. Electrical stimulation of the central end of the sciatic does not produce any modification of the general arterial pressure when the intensity of the stimulus is such that it does not produce muscular action of the animal. Stimulation of the central end of the vagal-depressor nerve produces a fall in blood pressure in the sympathectomized cat. The previous stimuli do not have any effect upon the blood pressure of the sympathectomized dog. Asphyxia or inhalation of carbon dioxide produces an instantaneous fall in blood pressure in both the sympathectomized cat and dog. The results demonstrate that in the sympathectomized cat, the nervous mechanism persists and is capable of vasoconstriction as well as vasodilation. This mechanism is absent in the sympathectomized dog. The existence of a vasodilator system exercising its action by way of the posterior roots, functioning as efferent fibers transmitting centrifugal influx, is not demonstrated.—Z. M. BACQ, F. BREMER, L. BROUHA, and C. HEYMANS. *Arch. intern. pharmacodynamie*, 62 (1939), 460. (W. H. H.)

TOXICOLOGY

Acriflavine—Idiosyncrasy to. A return of the patient previously reported to have an idiosyncrasy to acriflavine permitted further studies upon this case. A blood transfusion was made from this patient to another patient and tests with acriflavine were made upon the latter patient but no response was obtained. Other related compounds were investigated upon the skin of the patient having the idiosyncrasy, and the intensity of reaction for the drugs may be placed in the following order: acriflavine, atebrin, gonacrine, fluorescein, eosin, safranin, acridine hydrochloride and rivanol.—W. A. YOUNG. *Lancet*, 237 (1939), 369. (W. H. H.)

Aniline—Acute Poisoning by Ingestion of. One case is reported.—R. HAZARD, H. MASCHAS and R. JEQUIER. *Ann. méd.*, 43 (1938), 187–194; through *Chem. Abstr.*, 33 (1939), 2218. (F. J. S.)

Arsenic—Colorimetric Determination of, in Toxicology. The method of Gaudy and Antola was applied to the determination of arsenic in viscera. The method consists essentially in destroying organic matter by Denigès' sulfonitric method, reducing the arsenic acid formed to the trivalent state by means of hydrazine sulfate, precipitating the arsenic by hydrogen sulfide in presence of gelatin as protective colloid, and determining the resultant sol colorimetrically. Before forming the arsenious sulfide sol, the arsenic should be distilled as chloride.—F. GAUDY. *Bull. soc. chim. biol.*, 20 (1938), 1102–1107; through *Chimie & Industrie*, 41 (1939), 1074. (A. P.-C.)

Ascorbic Acid—Antitoxic Action of. Small amounts of potassium cyanide prevent oxidation of ascorbic acid by air; the protective action decreases progressively with increase in the potassium cyanide concentration and is finally reversed into an acceleration of the oxidation of ascorbic acid which combines with the potassium cyanide (as it does with phenol).—J. LEIBOWITZ and K. GUGGENHEIM. *Z. Vitaminforsch.*, 8 (1938), 8–24; through *Chimie & Industrie*, 41 (1939), 1148. (A. P.-C.)

Blood Disorders Due to Industrial Chemicals. The reactions of the principal industrial chemicals with the various constituents of the blood are reviewed.—E. W. BAADER. *Arch. Gewerbepath.*, 7 (1937), 597–606; through *Chem. Abstr.*, 33 (1939), 2243. (F. J. S.)

Calcium Arsenate. Calcium arsenate, suitable for use as an insecticide, is obtained by heating to about 600° to 800° C. a mixture of calcium nitrate, arsenious acid, and quicklime, slaked lime, calcium carbonate or other suitable calcium compound.—AXEL R. LINDBLAD and ANDERS G. P. PALEN, assignors to BOLIDENS GRUVAKTIEBOLAG. U. S. pat. 2,156,595, May 2, 1939. (A. P.-C.)

Digitalis-Calcium Medication—Dangers of the Association of. Since two cases of death have been reported after the administration of 10 cc. of calcium gluconate to digitalized subjects the author has studied experimentally the sensibility of digitalized animals to calcium. The minimal dose of calcium gluconate necessary to produce death in digitalized cats represents 60% of the quantity necessary to produce death in normal cats. Digitalis- + calcium exercises an additive action, therefore extreme care must be exercised in the administration of these associated medicaments.—VAN HEERSWYNGHELS. *Les Journees Belges de Cardiologie* (May 29, 1939); through *Presse méd.*, 72 (1939), 1341. (W. H. H.)

Fluoride Toxicity. A Public Health Problem. A review with 12 references.—E. S. LAIN. *Southwest Water Works J.*, 20 (1939), No. 11, 23–24; through *Chem. Abstr.*, 33 (1939), 3503. (F. J. S.)

Gases—Physiotoxicology of Poison. The gases are classified and tabulated according to their toxicity. Symptoms produced by the gases of the different classes are given.—L. HERLANT. *J. pharm. Belg.*, 21 (1939), 815–24. (S. W. G.)

Glucose in Acute Poisoning with Mercuric Chloride. Glucose is no antidote. The value of injections of a 25% solution consists in the diuretic action.—M. SAVARESE-SERRA. *Gazz. ospedali clin.*, 69 (1938), 723–729; through *Chem. Abstr.*, 33 (1939), 2219. (F. J. S.)

Insulin—Tolerance to and Toxicity of. Excessive dosage increases the duration of insulin effect but causes only slight increase in intensity of the effect. The dosage tolerated without intoxication is probably more than 15 units per Kg. for man, 35–40 units for the rabbit and 2000–4000 units for the rat. Animals do not succumb to insulin hypoglucemia while eating up to the capacity of a normal, hungry individual of the species. In man, there is a wide variation in tolerance to insulin; average persons may tolerate large doses, while doses of a few units may be toxic to predisposed persons.—F. A. ALLEN. *New Engl. J. Med.*, 219 (1938); 77–83; through *Chem. Abstr.*, 33 (1939), 2218. (F. J. S.)

Methane from Carbon Monoxide and Hydrogen—Catalytic Formation of. VI. Poisoning by Carbon Deposition. It has been shown that the reaction $2CO = C + CO_2$ is catalyzed by both nickel and nickel carbide. The reaction $CO + 3H_2 = CH_4 + H_2O$ is accelerated by nickel. Poisoning in both cases is mainly due to the deposited carbon adsorbed on the surface. In the latter case the carbon deposition is due to the reaction $CO + H_2 = C + H_2O$ as well.—K. M. CHAKRAVARTY. *J. Indian Chem. Soc.*, 16 (1939), 663. (F. J. S.)

Mononitrobenzene—Acute Toxicity of, in Mice. The minimal lethal dose was about 0.01 cc. or 0.0004 cc. per Gm. of body weight. The pathological findings are described.—MICHAEL B. SHIMKON. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 844. (A. E. M.)

Passive Defense—Pharmaceutical Part in. A discussion of the procedures and apparatus required for the detection and identification of toxic gases.—L. MARICQ. *J. pharm. Belg.*, 21 (1939), 749–55. (S. W. G.)

Pentothal Sodium and Picrotoxin. In spite of the varied and extensive uses to which pentothal sodium has been applied in clinical medicine very little experimental work has appeared regarding its toxicity. This report deals with problems of toxicity and treatment in pentothal intoxication. The intraperitoneal route of administration has been chosen because it best insures constancy of absorption and utilization at the same time avoiding the danger of sudden respiratory arrest. Administered intraperitoneally in single doses to fresh rabbits, the toxicity expressed as percentage of fatalities with *X* mg. of pentothal sodium per Kg. of rabbit in the various dosage groups were: 50—0%; 60—33.3%; 70—16.6%; 80—62.5%; 90—83.3%; 100—83.3%; 110—83.3%; 120—100%; 130—100%. The M. L. D. was found to be approximately 80 mg. per Kg. Picrotoxin is highly efficient as an antidote in pentothal sodium intoxication yielding 100% recoveries from 2 and 2.5 times the M. L. D. Picrotoxin is equally as effective against pentothal sodium intravenously administered provided that the stimulant can overcome the cardiorespiratory difficulty sufficiently to be carried to the respiratory center. In the event of respiratory arrest before picrotoxin has been able to reach the center, a few whiffs of atmospheric air may serve to reëstablish respiration.—A. H. MALONEY. *Arch. intern. pharmacodynamie*, 63 (1939), 18. (W. H. H.)

Poison Gas Injuries to the Eyes. The eye symptoms produced by lacrimators are outstanding—they consist of a stinging in the eyes, immediate and profuse lacrimation and spasm of the eyelids, sometimes so severe that the victim is unable to open his eyes at all. These symptoms, though alarming, are transient, and within a few hours the whole condition subsides. Where there has been a direct splash with liquid gas, intense lacrimation sets in within a few minutes; within half an hour there is great injection of the conjunctiva and within an hour progressive chemosis. Infiltrating ulceration involving the cornea, conjunctiva and lids develops. The corneal lesion is similar to that of any severe caustic burn. In the treatment, it is held that oily drops are harmful because they absorb the gas and thus keep it pent up in the eye; ointments are condemned for the same reason and because they impede the flow of tears by gluing the lids together. It is suggested that irrigation for ten minutes be used, two or three times a day, with a hypertonic lotion such as saturated solution of sodium sulfate 800 Gm., with glucose. The pain that patients experience has led to the suggestion that cocaine drops should be instilled, but most authorities agree that cocaine should be avoided owing to its devitalizing effect on the corneal epithelium. Where pain is severe, atropine is generally indicated.—ANON. *Pharm. J.*, 143 (1939), 380. (W. B. B.)

Poisons and Medicines Native to West Africa. R. has made a comprehensive report on the native poisons and native medicines of Tanganyika, West Africa. The report is opened with a reminder of the importance of arrow poisons to the natives. Medicine as practiced by the native doctors is a mixture of witchcraft and the employment of many botanical drugs. *Padalium murex* and *Randia vestita* used in gonorrhea and *Cassia* species used in blackwater fever have been shown to have no specific action. Several plants of the *Mysinaceæ* used as vermifuges yield embelic acid which is known to be effective. Two other native plants widely used in malaria were

shown to be worthless in treating this disease. The main poisonous materials may be classified as: (1) deliriants, (2) ordeal drugs, (3) fish poisons and (4) homicidal and arrow poisons. Of the deliriants: alcohol, species of *Datura* and the Mexican poppy are effective while the indigenous hemp is apparently not so potent. The bark of the red water tree *Erythrophlœum guineense*, commonly used in ordeal trials, has received attention from chemist but doubt still surrounds its active principle. Species of *Euphorbia, Phytolacca* and *Cucumis* are used as fish or homicidal poisons. These plants, their methods of use and symptoms of poisoning are described. The *Tetroden* fish yields a toxic roe and the *Mylabris* beetle a principle with all the properties of cantharidin. A picture of a crude African alcohol still is included.—W. D. RAYMOND. *T. Trop. Med. Hyg.*, 42 (1939), 295–303. (W. T. S.)

Potassium Iodide—Acute Iodide Eruption Following the Ingestion of a Small Amount of.—I. M. WARTZKI. *Med. J. Australia*, 11 (1938), 738–740; through *Chem. Abstr.*, 33 (1939), 2216. (F. J. S.)

Preliminary Research on the Possibility to Neutralize Yprite in the Respiratory Apparatus by Intratracheal Injections. The author proposes to neutralize Yprite's toxic action in the respiratory apparatus by intratracheal injections of $NaMnO_4$, $NaHCO_3$ and Rivanol. In these preliminary researches he deals with the doses which could be eventually employed and the method of introduction into the respiratory apparatus; he states that $NaHCO_3$ is the less harmful and can be employed in considerable doses and concentrations (2–4%); $NaMnO_4$ is not entirely without irritating action; it could, however, be used in the doses of 2 cc. per Kg. at the concentration of 1%; Rivanol in the same doses as $NaMnO_4$ shows greater harmfulness.—M. CHRISTIANI. *Biochim. terap. sper.*, 26 (1939), 465. (A. C. DED.)

Pyrethrum Insecticides—Testing of. Among the most popular methods of testing pyrethrum, the general principles are more or less the same. They are (1) to spray a definite amount of insecticide of a known concentration, at a controlled pressure, with the assumption that each insect will receive an amount proportional to its size; (2) the time of knockdown, that is, the period of time for the insects to become paralyzed, is recorded; (3) the insects are set aside for a definite period of time in order to ascertain the number of "recoveries." As the relation between concentration and probability of death is difficult to ascertain when the percentage kill is very high or low, it is necessary to arrange the concentration of the spray fluid so that the mortality lies between 40 and 60%. In an attempt to standardize household insecticides in America, the National Association of Insecticide and Disinfectant Manufacturers adopted the Peet and Grady Test as an official method. However, although one laboratory could reproduce results that were fairly accurate, the same samples gave different results in the hands of other laboratories. Profiting by the experience gained from coöperative tests carried out over a period of four years, the old standard was dropped and an "Official Control Insecticide" adopted as the standard against which household insecticides could be tested. The tests conducted in accordance with the Peet and Grady method had to show an average kill for the O. C. I. between 30 and 70%. Ten tests of the O. C. I. and of not more than two "unknowns" had to be conducted in series with the same number of flies in the same brood, testing the same number of series in any one day. The standard error of the mean difference between the average kills of the O. C. I. and the "unknowns" had to be less than 3. Where it was greater, additional paired tests had to be carried out to bring the standard error of the mean difference below 3. A table is given which shows how the standard error of the mean difference can be calculated. Although it is recognized that flies are the most convenient type of test insects for comparing household insecticides, it is often necessary to use other insects in evaluating other insecticides. For instance, in some work on moths infesting foodstuffs it was found necessary to carry out experiments on both moths and larvæ in order to ascertain the minimum dose of pyrethrins to produce a kill.—W. E. EDMONTON. *Pharm. J.*, 143 (1939), 289. (W. B. B.)

Quinine Poisoning. Typical quinine poisoning of a malaria patient resulted in complete blindness.—O. EICHLER. *Samml. Vergiftungsfällen*, 8 (1937), Abt. B., 7–12; through *Chem. Abstr.*, 33 (1939), 2220. (F. J. S.)

Saturnism—New Methods of Detecting. The present problem as regards saturnism consists in detecting the intoxication before it enters into the clinical stage, at a time where the patient still seems to be in nearly perfect health. This can be effected by determination of coproporphyrin in urine, where it normally exists to the extent of 0.1 mg. per 24 hours and can increase to 1 to 3 mg. in cases of recent, clinically proven saturnism. On the other hand, abnormal coproporphyrin contents appear very early even when the patient shows no clinical signs of the intoxication. Detection of lead in the system can also give useful indications, provided an at least approximate quantitative determination is carried out. Analysis of the blood is most suitable, as its lead content is fairly constant, while it is liable to wide variations in the urine and feces. The best method is Gerlach's so-called spectrographic homologous pair of lines method. By this method it was possible to detect 200 to 250γ per 100 cc. in intoxicated patients, whereas the normal figures vary from 20 to 70.—E. C. VIGLIANI. *Arch. Malad. Profess.*, 1 (1938), 185–199; through *Chimie & Industrie*, 41 (1939), 680. (A. P.-C.)

Silica—Free and Combined, in Silicotic Lungs. Free silica varies widely both in actual concentration and in per cent of total silica. Concentrations range from 0.086 to 1.296% of the dry lung. As part of the total silica, the free silica ranges from 3.25 to 91%. The variations are not out of harmony with the fact that different persons are subjected to breathing siliceous dust of greatly varying compositions in silica and silicates.—GUY E. YOUNGBURG and MAMIE V. YOUNGBURG. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 146. (A. E. M.)

Silicosis and Asbestosis—Appearance and Prevention of. A review.—E. C. VIGLIANI. *Rass. med. applicata lavoro ind.*, 9 (1938), 387–394; through *Chem. Abstr.*, 33 (1939), 2244. (F. J. S.)

Snake Venoms. IV. Highly purified neurotoxins of cobra venoms are not weakened with appreciable velocity by cysteine (prepared in not unusually high concentrations); a very large excess (40 to 80 parts by weight) of cysteine acting on the purified (ultrafiltered and dialyzed) neurotoxin produces in a short time a slight (up to about 25%) irreversible decrease in activity. This effect ceases within 1 hour; longer standing or renewed addition of cysteine produces no further decrease in toxicity. The test animals die from paralysis of the respiration. It may be concluded that the purified neurotoxin still contains about 25% of a component of not yet clearly defined physiological activity which is inactivated by cysteine. The neurotoxin which paralyzes respiration is itself stable to reduction by cysteine and is also unaltered by electrolytic reduction.—F. MICHEEL and H. SCHMITZ. *Ber.*, 71 (1938), 703–705; through *Chimie & Industrie*, 41 (1939), 519. (A. P.-C.)