VOL. VI, No. 1 JANUARY 1940

PHARMACEUTICAL ABSTRACTS

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

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

ABSTRACTORS

CONTENTS

CHEMISTRY

BIOCHEMISTRY (*Continued*)

Parathyroid Inanition and Syndrome of Lobstein. Report of a case presenting symptoms of parathyroidism of Pende with those of syndrome of Lobstein, with endocrine factor as prime cause, presumably hypoparathyroidism.—BLANCO R. PIAGGIO and C. ARTAGAVEYTIA. *Arch Urug. Med. Cirug. Espec.*, July 1936; through *Rev. sud-americana endocrinol. inmunol. químioterap.*, 21 (1938), 51. (G. S. G.)

Δ^4-Pregnene-20,21-diol-3-one—Synthesis of. As starting material, served the recently described Δ^5 - 3 - hydroxy - 21 - acetoxy - pregnene - 20 - one (*Helv. Chim. Acta*, 21 (1937), 1164) which upon heating with aluminum isopropylate in isopropyl alcohol yielded Δ^5-pregnene-3,20,21-triols, whereupon the acetyl groups were simultaneously almost completely saponified. The isomeric mixture was converted into the acetone compounds by treatment with anhydrous acetone and cupric sulfate and oxidized by tertiary aluminum butylate to the ketones which were separated chromatographically and hydrolyzed with acetic acid the principal amount, α-Δ^4-pregnene-20,21-diol-3-one, was obtained in colorless leaflets, m. p. 126°, $[\alpha]_D^{20} = +91.5° \pm 1°$ (c = 2.25 in acetone). A small amount of the β-form was obtained in the form of colorless long flat plates, m. p. 132°, $[\alpha]_D^{20} = +70.5° \pm 1.5°$ (c = 1.7 in acetone). The α-form was inactive in the Everse-deFremery Test on rats in a dosage of 2 mg. per day. Administered subcutaneously dissolved in oil, it was at least three times less than corticosterone and desoxy-corticosterone.—MARGUERITE STEIGER and T. REICHSTEIN. *Helv. Chim. Acta*, 21 (1938), 171. (G. W. H.)

Proteins—Degradation and Hydrolysis of, by Pepsin and Trypsin. Viscosity measurement and amino nitrogen determinations on gelatin subjected to the action of pepsin and trypsin make it appear likely that these preparations contain an additional enzyme capable of degrading proteins without touching the polypeptide linkages.—M. S. REZNICHENKO and A. I. POPTSOVA. *Biokhimiya*, 3 (1938), 621–627; through *Chem. Abstr.*, 33 (1939), 2917. (F. J. S.)

Proteins of Cicer Arietinum (Bengal Gram) and Cajanus Indicus (Arhar)—Biological Value of, by the Balance Sheet and Growth Methods. The biological value of proteins of *Cicer arietinum* (Bengal Gram) and *Cajanus indicus* (Arhar) was determined by the balance sheet method and by the growth of young rats. In the balance sheet experiments, *Cicer arietinum* has a higher biological value than the value of *Cajanus indicus*. In the growth method, the growth of rat per Gm. of protein intake produced by *Cicer arietinum* at 15% concentration of protein is less than the corresponding value for *Cajanus indicus*, while at lower concentration of proteins, *Cicer arietinum* produces more growth.—K. P. BASU and M. K. HALDAR. *J. Indian Chem. Soc.*, 16 (1939), 209. (F. J. S.)

Proteins of Pulses and Those of Milk—Supplement Relations between the, by the Balance Sheet and Growth Methods. Appreciable supplementary relation was found between the proteins of each of the pulses, *e. g.*, lentil (*Lens esculenta*), green gram (*Phaseolus mungo*), khesari (*Lathyrus sativa*), soya bean (*Glycine hispida*) and field pea (*Pisum sativa*) and those of milk, by the balance sheet and growth methods, at 5% level of protein intake, in the ratio, pulse proteins : milk proteins = 4:1 in the case of balance sheet method and at 10% level of intake, in the ratio, pulse proteins : milk proteins = 9:1, in the case of growth method. The condition of rats on mixed diets containing pulse and milk was better than the condition of those kept on pure pulse diets.—K. P. BASU and M. K. HALDAR. *J. Indian Chem. Soc.*, 16 (1939), 189. (F. J. S.)

Sulfapyridine—Absorption, Acetylation and Excretion of. The concentration of sulfapyridine has been determined in the body fluids of the rabbit, dog and human, following its administration in varying doses. Blood analyses show the appearance of the free substance directly after ingestion; no acetylated form is detectable until later. The per cent acetylated is roughly constant for an individual and varies widely around 50% among human subjects. No free drug can be detected in general after 24 hours after the last dose and essentially all the acetylated form is eliminated in 48 hours. Urine analyses confirm these findings.—HERBERT E. STOKINGER. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 61. (A. E. M.)

Takata Reaction in Blood Serum. The Takata reaction is a flocculation test with 0.5% mercuric chloride and 0.02% diamant fuchsin dye. It has proved useful for diagnostic purposes in liver diseases, and is therefore recommended as a routine clinical method in such cases.—J. HOREJSI. *Acta Med. Scand.*, 96 (1938), 408; through *Brit. Med. J.*, 4068 (1938), 1350C. (W. H. H.)

Testosterone Propionate—Effect of, on Glycogen Content of Human Vaginal Smears. The glycogen in the desquamated cellular elements of the vaginal epithelium of normally menstruating women can be made to disappear by administering adequate amounts of testosterone propionate. This is concomitant with the disappearance of the squamous epithelial cells and their replacement by cells from deeper layers of the mucous membrane.—U. J. SALMON, R. I. WALTER and S. H. GEIST. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 467. (A. E. M.)

Thyroid Hormone—Production and Secretion of. The follicular epithelium of the thyroid contains little iodine, but the iodine forms part of an active thyroid substance, while the colloid thyroid substance contains much iodine, which is, however, in an inactive state. The follicular epithelium contains no thyroxine. The follicular epithelium has two functions: the production of the thyroid hormone and the production of the colloid substance. Iodine, insulin, suprarenal cortex and corpus luteum hormone stimulate the production of the colloid substance and thereby inhibit the thyroid function. Thyroid preparations and hormones of the anterior lobe of the pituitary (thyreotropic hormone) stimulate the production of thyroid hormones. The blood of patients suffering from hyperthyroidism contains a substance which is not unlike the thyroid hormone.—K. TSUJI. *Mediz. Klinik*, 34 (June 10, 1938); through *Brit. Med. J.*, 4050 (1938), 436A. (W. H. H.)

Thyroid—Iodine Determination in. The author discusses the determination of iodine in powdered thyroid. Among the methods discussed are the following: *Total Iodine.*—(1) Method of the Netherlands Pharmacopœia V, carried out in a platinum crucible over a spirit flame. (2) Method of Hunter-Reith (oxidation with bromine water, *Pharm. Weekblad*, (1927), 777). (3) Method if de Jong (*Pharm. Weekblad*, (1937), 1429). *Thyroxin Iodine.*—(1) Method of the B. P. Addendum, 1936, carried out in a platinum crucible over a spirit flame (iodine diiodothyroxin). (2) Method of the Swiss Pharmacopœia. (3) Method of de Jong.—B. D. E. GAILLARD. *Pharm. Weekblad*, 75 (1938), 1217. (E. H. W.)

Tryptophan in Cerebrospinal Fluid. A positive tryptophan test is not specific either for tuberculous meningitis or for neurosyphilis. The quantitative estimation of tryptophan is, however, of diagnostic

value in neurosyphilis in so far as it indicates the extent of the destructive process The test can be carried out with small quantities of cerebrospinal fluid.—K. MEZEY and M. KRAUS. *Klin. Wochschr.*, 17 (1938); through *Brit. Med. J.*, 4055 (1938), 690A. (W. H. H.)

Tyramine—Normal and Pathologic. Tyramine is a phenylamine derived from tyrosine by a simple decarboxylation. It is analogous to the known compounds or hormones as hordenine, ephedrine, adrenaline and thyroxin. Sympathomimetically imperfect tyramine is a substance whose origin is alimentary. It is formed in the intestine by decarboxylation of tyrosine under the influence of putrefactive bacteria. From there it goes to the liver where it is normally deaminated, oxidized and sometimes sulfoconjugated. It seems possible that tyramine could easily be formed from the tyrosine of the blood, by the kidney and pancreas, after certain diseases. But, in normal conditions this source appears to be negligible. Pathologic studies have been made of the tyramine modifications in diseases of the kidney and liver. Hypertension, of renal origin, may be explained by the increase in blood tyramine. The authors have determined the tyramine in cirrhosis. They have found that tyramine is responsible for a certain number of vascular accidents in cirrhosis and its progressive augmentation is a test of gravity in chronic hepatitis. —M. LOEPER, A. LESURE and A. NETTER. *Ann. méd.*, 44 (1938), 85; through *Presse Medicale*, No. 101 (1938), 210. (W. H. H.)

Ulirone—Determination of, in Biological Fluids. Procedures for the determination of free and combined Ulerone in urine, blood and cephalorachidian fluid are given. After removal of albumin, the 1-cc. sample is treated successively with 1 cc. of *N* hydrochloric acid, 0.1 cc. of 1% sodium nitrite, 1 cc. of 0.3% ethyl-alphanaphthylamine hydrochloride. The volume is finally made up to 10 cc. with methyl alcohol and the color obtained as compared with standards prepared with known quantities of Ulirone.—HECHT. *Inst. pharmacol. Elberfeld. Dermatol. Wochenschr.*, 10 (1938), 261; through *J. pharm. Belg.*, 20 (1938), 821. (S. W. G.)

17 - Vinyl - Testosterone—Preparation of. The starting product 17-vinyl-androstene-diol was obtained in a purer condition than previously described (*Helv. Chim. Acta*, 21 (1938), 498) by partial hydrogenation of 17-ethinyl-androstene-diol with a palladium catalyst. The vinyl-diol upon dehydrogenation according to the method of Oppenauer and purification of the resulting product by adsorption on aluminum oxide and fractional elution, yielded 17-vinyl-testosterone, m. p. 140–141°. Its structure was proved by hydrogenation with Raney nickel to ethyl-androstene-diol and this was converted by the method of Oppenauer into 17-ethyl-testosterone. —L. RUZICKA, K. HOFMANN and H. F. MELDAHL. *Helv. Chim. Acta*, 21 (1938), 597 (G. W. H.)

Vitamin A Administration—Increased Efficiency in Industry Following. In the matching of porcelain which was required as one step in the manufacturing process in the Westinghouse Electric Company, 15 years of experimentation with different types of lighting, instrumental aids, etc., had failed to eliminate troublesome variations which showed up when different pieces were finally assembled. The problem was recognized as being one of biological nature, and the cause for the variations was the difference in human judgment as to degrees of whiteness. In seeking to maintain the best possible conditions to promote accuracy in this judgment, the authors were led to investigate the dark-adaptation ability of the operators by the use of the biophotometer. This instrument has come into prominence recently as an aid to the detection of minor degrees of night blindness, sometimes associated with vitamin A deficiency. Those showing deficient adaptation were given a dietary supplement, and over a period of months showed as improved dark adaptation.—O. H. SCHETTLER, R. F. BISBEE and B. H. GOODENOUGH. *J. Ind. Hyg. Toxicol.*, 21 (1939), 53; through *Abbott Abstract Service*, (1939), No. 448. (F. J. S.)

Vitamin A—Biochemistry of. After having reported the characteristics and general properties of carotenoids, particularly of those with action of vitamin A, the author discusses the constitution of β-carotene, the chemical relation between provitamins A, vitamin A and the derivatives of β-carotene with vitaminic action.—T. CESSI. *Biochim. terap. sper.*, 25 (1938), 423. (A. C. DeD.)

Vitamin A—Cyclized, Occurrence of, in Fish Liver Oils. Cyclized vitamin A, the material formed by treatment of vitamin A with hydrochloric acid in alcohol (cf. Heilbron *et al.*, *Chem. Abstr.*, 27, 523), occurs naturally in tuna and other fish liver oils. It appears to have no growth-promoting power but has considerable ultraviolet absorption at 328 mμ and gives practically the same $SbCl_3$ reaction as vitamin A. Cyclized vitamin A and "spurious A" are undoubtedly the same substance.—N. D. EMBREE. *J. Biol. Chem.*, 128 (1939), 187–98; through *Chem. Abstr.*, 33 (1939), 3969. (F. J. S.)

Vitamin A Deficiency—Effect of, on the Rate of Apposition of Dentin. The rate of apposition of dentin is selectively altered in vitamin A deficiency, while the life span of the formative cells is not affected. The rate of apposition is accelerated in the enamel-covered portion and decelerated in the cementum-covered portion. The findings indicate a delicate response of the rate of dentin apposition to vitamin A deficiency and suggest the possible use of this reaction as a biologic method of measuring the vitamin A content in foods.—I. SCHOUR, M. C. SMITH and M. M. HOFFMAN. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 447. (A. E. M.)

Vitamin A—Report on the Determination of. A brief discussion of recently published work on the subject, indicating lines along which additional work is desirable.—J. B. WILKIE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 239–243. (A. P.-C.)

Vitamin B Complexes—Biological Methods for the Assay of. Attempts were made to establish the vitamin B_1 requirements of chicks when fed Kline, Keenan, Elvehjem and Hart's ration 242A, modified by giving each chick 2 drops of halibut liver oil twice weekly. The vitamin B_1 requirement of chicks based on unit weight of feed is constant. A significant difference in the antineuritic potency was observed between 2 samples of synthetic crystalline vitamin B_1 hydrochloride. The establishment of the values for the minimum vitamin B_1 requirements of chicks will greatly simplify the calculations of the vitamin B_1 content of food materials where chicks have been used for the assays. The chick method possesses certain advantages over the rat assay method.—C. A. ELVEHJEM. *J. Assoc. Official Agr. Chem.*, 21 (1938), 622–625. (A. P.-C.)

Vitamin B—Effects of, on Insulin Hypoglucemia and Sugar Tolerance. Studies were made to determine the effect of variations in diet on the susceptibility of rats to the hypoglucemia action of insulin. Vitamin B_1 increased the response. A fraction present in autoclaved, flavin-free rice polish concentrate decreased the hypocemia effect of insulin; an excessive intake of this fraction was found to increase the sugar tolerance of the rat. Variations in the intake of other vitamin D factors did not markedly change the sugar tolerance of the rat in

feeding experiments lasting for four weeks.—J. C. BURKE and A. R. MCINTYRE. *J. Pharmacol.*, 64, No. 4, (1938) 465–477. (H. B. H.)

Vitamin B—Specificity of Fermentation Test for. A method for differentiating between the intact vitamin molecule and any possible breakdown product has recently been perfected. It is accomplished by the differential oxidation of the vitamin B in the presence of the aminopyrimidine. The technic greatly increases the specificity of the fermentation method and an investigation of the conditions necessary for its application to substances like animal tissue and excreta is under way.—A. S. SCHULTZ, L. ATKIN and C. N. FREY. *J. Am. Chem. Soc.*, 60 (1938), 3084. (E. B. S.)

Vitamin B_1—Chemical Determination of. The conditions for the reaction between vitamin B_1 and diazotized *p*-aminoacetophenone have been studied. Of substances adsorbed on permutit like the vitamin, none of those examined yielded colors extracted from aqueous solution by xylene. Standing for at least thirteen hours was found necessary for full development of the color. The alkaline reagent tends to destroy the vitamin, but neither the use of low temperatures nor of minimal quantities of reagent was a satisfactory solution for this difficulty. It was found best to make the test solution just alkaline to litmus immediately before adding the reagent. With the use of a colorimeter calibration curve, satisfactory estimations of pure vitamin B_1 in aqueous solution could be made.—D. MELNICK and H. FIELD, JR. *J. Biol. Chem.*, 127 (1939), 505; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 294. (F. J. S.)

Vitamin B_1—Reagent for. In a search for a specific reagent for vitamin B_1, a number of amines were diazotized and coupled in acid and alkaline solution. Acid conditions were unsuitable but several amines gave red colors in alkaline solutions whereas histidine gave only yellow or orange solutions. *p*-Aminoacetanilide and *p*-aminoacetophenone gave purple-red precipitates. The latter was chosen as being the more stable. The precipitate could be extracted with isobutyl alcohol or preferably toluene or xylene for colorimetric estimation. Of 22 amino acids and 46 other substances tested, only inositol gave a colored precipitate; this was greenish blue and insoluble in aromatic solvents. Various intermediates in the synthesis of the vitamin were examined. Thiazoles and an inactive isomer of the vitamin reacted slowly to form red precipitates. The absorption spectrum of the vitamin precipitate showed bands at 325 mμ and 516 mμ. As little as 0.1 microgram can be detected using the hanging drop technic.—H. J. PREBLUDA and E. V. MCCOLLUM. *J. Biol. Chem.*, 127 (1939), 495; through *Quart J. Pharm. Pharmacol.*, 12 (1939), 294. (F. J. S.)

Vitamin C Content of Human Urine and Its Determination through the 2,4-Dinitrophenylhydrazine Derivative of Dehydroascorbic Acid. Since the determination of ascorbic acid in urine by titration with 2,6-dichlorophenol indophenol in acid solution is not a specific method, it seemed important to devise a procedure based upon some other principle than oxidation-reduction. In the method described ascorbic acid is oxidized to dehydroascorbic acid by passing the urine through norite, and the dehydroascorbic acid is separated as its 2,4-dinitrophenylhydrazine derivative, an osazone in which the dinitrophenylhydrazine groups are attached to carbon atoms 2 and 3. The nitro groups are reduced by boiling the derivative in hydrochloric acid containing stannous chloride under 15 pounds pressure; a colorless compound is obtained from which dehydroascorbic acid is liberated by hydrolysis and converted into furfural. The furfural is determined colorimetrically by the aniline acetate method. The procedure has been applied widely to the determination of ascorbic acid in plant and animal tissues. A comparative study of the results by this method and by indophenol titration upon freshly voided samples of urine from 50 normal human subjects showed that the indophenol titration gave values ranging from 0 to 297% higher than the proposed method. The urine from 14 of the 50 subjects who were apparently on an adequate diet showed no vitamin C by the new method. Recoveries of ascorbic acid added to urines containing vitamin C and to urines free from the vitamin ranged from 95 to 105%; this indicates that the procedure is entirely specific for the determination of vitamin C in urine.—J. H. ROE and J. M. HALL. *J. Biol. Chem.*, 128 (1939), 329–337; through *Chem. Abstr.*, 33 (1939), 3834. (F. J. S.)

Vitamin C Deficiency—Unrecognized Prevalence of. Scurvy and allied conditions have been written about exhaustively for the past five years and it therefore seems appalling that the disease should be as prevalent as it is to-day. The fact that scurvy is actually being precipitated by diets prescribed by physicians causes the author to believe that many doctors are failing to recognize the possibility, believing that scurvy never occurs in modern times except in connection with extreme grades of poverty and malnutrition. The authors state that exactly the converse is true: Scurvy is very commonly found among the higher economic groups if the physician is alert to the possibility of finding it. Avitaminosis may be produced by a variety of causes, including a poor dietary, increased destruction of the vitamin, deficient absorption or increased elimination, as is said to occur with the injudicious use of salicylates. Scurvy may masquerade as rheumatism, erythema nodosum, lupus erythematosus, hemorrhagic nephritis and many others.—T. MCGOVERN, C. F. GANNON and I. S. WRIGHT. *Am. J. Med. Science*, 197 (1939), 310; through *Abbott Abstract Service*, (1939), No. 471. (F. J. S.)

Vitamin C in Hawthorn—Studies on. The author has shown by his studies that the vitamin C is found in the hull or shell of the haw and not in the seed. In as little as 10 minutes of cooking, the total content of vitamin C is extracted. There is found up to 1600 mg. % of vitamin C in the dried material, so that a liter of 10% decoction contains 160 mg. %. In order to satisfy the vitamin C requirement of about 50 mg./day, it is necessary to drink about $^1/_3$ of a liter of haw tea in a day. The author used haw similar to that bought by pharmacists in March and also samples which had been stored for 5 months. The determination was carried out by titration with dichlorophenolindophenol.—H. WINCKELMANN. *Hippokrates*, 9 (1938), 714; through *Scientia Pharm.*, 9 (1938), 103. (M. F. W. D.)

Vitamin C—Influence of Copper on the Oxidation of. Wieringa shows that copper acts as a catalyst in the oxidation of vitamin C in solutions. Copper can be removed by treatment with hydrogen sulfide. This method is not practical for use in biological products as it leaves an undesirable odor and taste. The investigations will be continued in an effort to find a treatment which does not have these objections.—K. WIERINGA. *Landbouwkund. Tijdschr.*, 50 (1938), 700–708; through *Chem. Abstr.*, 33 (1939), 1767. (F. J. S.)

Vitamin C—Microestimation of. The reducing properties of TiCl, are used to make a volumetric method from the gravimetric method of estimating dehydroascorbic acid. Dinitrophenylhydrazine is added to the vitamin C solution; the precipitate is filtered, dissolved in sodium carbonate solution and reprecipitated with carbon dioxide. This material

is titrated with $N/500$ $TiCl_3$, which has been made up in $2N$ hydrochloric acid, methylene blue being used as an indicator. The titration is carried out in an atmosphere of carbon dioxide. A blank should be run. One micromolecule of $TiCl_3$ corresponds to 17.1γ of the hydrazone and 5.8γ of ascorbic acid. One-tenth mg. can be measured in 10 to 100 cc. of blood. Since 32 hydrogen atoms are involved in the reaction as compared to two in the reduction of dehydroascorbic acid, the method is one of high sensitivity.—L. ESPIL and L. GENEVOIS. *Bull. soc. chim.*, 5 (1938), 1532–1535; through *Chem. Abstr.*, 33 (1939), 2935. (F. J. S.)

Vitamin D Carriers—Biological Methods for the Assay of. The revised tentative A. O. A. C. method was studied collaboratively, and the results are discussed. In general, the method appears to be satisfactory, but it would be far more acceptable if some of the inconsistencies in calcification responses could be eliminated.—W. B. GRIEM. *J. Assoc. Official Agr. Chem.*, 21 (1938), 607–614. (A. P.-C.)

Vitamin E—Nature of. This article has to do with observations made in the use of wheat germ oil in the control of spontaneous abortions in women. About 80% of the cases treated resulted in the delivery of full term, normal infants. The treatment is of no avail in women with primary sterility.—E. M. WATSON and C. S. MCARTHUR. *Am. J. Pharm.*, 109 (1937), 544. (R. R. F.)

Vitamin-Containing Delactosed Product from Whey. Pasteurized whey is fermented with a lactose-fermenting organism such as *Saccharomyces fragilis* to effect substantial elimination of lactose and simple sugars derived from the splitting of lactose without reducing the vitamin content of the original whey, thus producing a product which may be used for making a vitamin concentrate.—ROBERT P. MEYERS and SAMUEL M. WEISBERG, assignors to SEALTEST SYSTEM LABORATORIES, INC. U. S. pat. 2,128,845, Aug. 30, 1938. (A. P.-C.)

Vitamin-Like Substances—Thiazole Compounds for the Synthesis of. Vitamin B_1 chloride hydrochloride is caused to react with sodium sulfite or sulfur dioxide in aqueous solution at room temperature and at a p_H of about 5 for 48 hours, the filtrate of the product is made slightly alkaline and extracted with chloroform, the resulting extract is dried over sodium carbonate and evaporated to dryness to obtainment of the free base, 4-methyl-5-β-hydroxyethyl-thiazole, which on cautious oxidation with nitric acid yields 4-methylthiazole-5-carboxylic acid and with strong hydrochloric acid yields 4-methyl-5-β-chloroethylthiazole. An aqueous solution of the hydrochloride, with a solution of picrolonic acid in methanol, precipitates a crystalline picrolonate that melts (with decomposition) at 184° C., and a picrate of the base that melts at 162° to 163° C. By reaction with compounds such as 2-methyl-6-amino-5-bromomethyl pyrimidine or its hydrobromide, compounds of vitamin character are formed.—ROBERT R. WILLIAMS, assignor to RESEARCH CORP. U. S. pat. 2,134,015, Oct. 25, 1938. (A. P.-C.)

Vitamin Preparation—Process for Obtaining a. Halibut livers are cooked at a temperature up to 850 C., excess water is removed, the cooked liver residue is extracted with ether, the extract is dehydrated by means of anhydrous sodium sulfate and percolated through permutite, and finally the ether is removed leaving a golden yellow to amber oil having a free fatty acid content of less than 1%, a nitrogen content of less than 0.1%, containing substantial amounts of saponifiable oil, and having a vitamin A potency of not less than 32,000 U. S. P. X units per Gm. and a vitamin D potency of not less than 2000 A. D. M. A. units per Gm.—HARVEY M. MERKER, assignor to PARKE, DAVIS & Co. U. S. pat. 2,136,453, Nov. 15, 1938. (A. P.-C.)

Vitamins—Interrelation of. The possibility of antagonism between vitamins A and C has often been suggested and might be revealed by the partial inhibition of the effects of vitamin C on scurvy by the simultaneous administration of vitamin A. It is generally agreed that a balance should exist between the various vitamins. A state of equilibrium can be preserved, symptoms of hypervitaminosis being removed by administration of relatively deficient vitamins, so providing examples of beneficial antagonism. The existence of beneficial antagonism between the fat-soluble vitamins A and D on the one hand and vitamins B and C on the other having been established, the present work has been restricted to a study of the existence of possible harmful antagonistic action of vitamins A and D on vitamin C. Using guinea pigs it has been found that no such antagonistic action exists even when the doses of the fat-soluble vitamins were very large compared with the dose of vitamin C, the evidence being that a slight reinforcement of the action of vitamin C then occurred. Very large doses of cod liver oil, however, inhibited the antiscorbutic action of vitamin C. *In vitro* experiments showed that vitamins A and D had no destructive action on vitamin C during three months.—E. COLLETT and B. ERIKSEN. *Biochem. J.*, 32 (1938), 2299; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 291. (F. J. S.)

Vitamins—Report on the Determination of. Attention is drawn to some of the developments in the work on vitamins during 1937.—E. M. NELSON. *J. Assoc. Official Agr. Chem.*, 21 (1938), 236–239. (A. P.-C.)

Wheat Germ Oil—Isolation of Tocopherols from. From the unsaponifiable fraction of wheat germ oil, α-tocopherol has been isolated in a relatively good yield and was converted into the 3,5-dinitrobenzoate which crystallizes well and melts at 86–87°. Two other tocopherols, the so-called β and γ have been isolated but the difference in their melting points is so slight that they may be impure forms of neo-tocopherol.—P. KARRER and H. SALOMON. *Helv. Chim. Acta*, 21 (1938), 514. (G. W. H.)

Zinc—Determination of, in Biological Materials. The material to be analyzed is thoroughly ashed at temperatures below 450°, treated with dilute hydrochloric acid, allowed to stand several hours, filtered and the filtrate evaporated to dryness. To the residue is added 1.2 cc. of 1:1 hydrochloric acid and distilled water to 15 cc., and hydrogen sulfide is passed through the solution for 15–20 minutes. After standing eight hours the sulfides are filtered and washed thoroughly and the filtrate is evaporated to dryness. To the residue is added 0.6 cc. of glacial acetic acid and 14.4 cc. of water, and hydrogen sulfide is passed through the solution for 20 minutes. Under these conditions zinc sulfide precipitates and leaves the sulfides of iron, nickel and cobalt in solution. After 12–24 hours 0.25 Gm. of aluminum oxide or talc is added to the solution with stirring and the solution is filtered. The precipitate is washed with acetic acid, hydrogen sulfide solution and water until free of iron, cobalt and nickel. A final moistening with 2% NH_4CNS indicates the presence or absence of iron. The precipitate is treated with 2.4 cc. of $3N$ hydrochloric acid, the solution is diluted to 10 cc. and 1 cc. of 2% $K_4Fe(CN)_6$ is added. The turbidity of the solution is compared with that of standard solutions containing 0.02–0.2 mg. of zinc. The results are 10% in error at 0.02 mg. and 2.5–7.5% at 0.04–0.2 mg. of zinc.—P. V. ZIMAKOV. *J. Physiol.* (U. S. S. R.), 24 (1938), 992–995 (in French, 995); through *Chem. Abstr.*, 33 (1939), 2930. (F. J. S.)

ANALYTICAL

Acetaldehyde—Determination of. The hydroxylamine hydrochloride method was the most accurate for determinations on complex mixtures.—V. G. SCHAPOSCHNIKOV, J. I. MAKOVSKAJA, and N. A. KALINITSCHEVA. *Trudy Gosudorst Opyt Zavoda Sintet Kautschuka*, B., III (1934), 118–128; through *J. Soc. Chem. Ind.*, 11 (1938), 1264. (E. G. V.)

Acetone—Detection of, in Solution of Formaldehyde. Dilute 1 cc. of the formaldehyde solution to 10 cc. with distilled water, add 8 Gm. of ammonium sulfate, 5 drops of 5% sodium nitroprussiate solution, and 1.5 cc. of ammonia solution. Cool the mixture in a current of water and filter. The intenisty of the violet or lilac color of the filtrate is roughly proportional to the amount of acetone present. The reaction is sensitive to 1:50,000, but is not sufficiently precise to be used quantitatively.—M. COUSIN. *Annales Med. pharm. coloniales*, 34 (1936), 269; through *J. pharm. Belg.*, 20 (1938), 804. (S. W. G.)

Alcohol-Ether-Water Mixtures—Analyses of. Measurements are recorded of the temperature at which a turbidity appears on cooling mixtures of ethyl alcohol, ether and water to which known amounts of *n*-heptane have been added. By combining such measurements on unknown mixtures with measurements of density at 17.5° the composition can be calculated. Other methods of analyzing alcohol-ether-water mixtures are discussed.—S. BAYAN. *Riv. ital. Petrolio*, 15 (1937); through *J. Soc. Chem. Ind.*, 11 (1938), 1264. (E. G. V.)

Alkali—Determination of Free, in Alkaline Solutions of Silicates. Different methods are reviewed. The following procedure is recommended: Dilute 10 Gm. of the sample with a little distilled water in a calibrated 250-cc. flask, add 10 cc. of 10% barium chloride solution and a volume of neutral alcohol equal to that of the mixture. Mix and make up to 250 cc. with a mixture of equal parts of neutral alcohol and distilled water. Allow to stand, then remove 100 cc. of the supernatant liquid by decantation and determine the alkalinity of this aliquot by titrating with *N*/20 hydrochloric acid.—P. MESNARD. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 202–206. (S. W. G.)

Alkali in Colored Wax Emulsions—Determination of Free. Soaps and wax are removed from the aqueous medium by salting out with sodium chloride (in the hot if ammonium is absent), and the free alkali in the aqueous solution is determined by one of the following methods: (*a*) if carbonates are present, the liquid is acidified and the carbon dioxide determined gravimetrically (apparatus described); (*b*) in the base of hydroxides, these are converted into carbonates by the passage of carbon dioxide, and, after boiling off the excess of carbon dioxide, are determined as in (*a*); (*c*) ammonia is determined by distillation and titration, and borates through conversion into methyl borate.—K. S. NITSCHE. *Ole, Fette, Wachse*, No. 6, 3 (1938), 1–3; through *J. Soc. Chem. Ind.*, 57 (1938), 1448. (E. G. V.)

Aloin—Action of Alkaline Hypobromite on. The decomposition of barbaloin by means of alklaine hypobromite was investigated by Leger, who claimed that carbon tetrabromide and oxalic acid were produced. No confirmation of this reaction has been found in the literature and it was considered advisable to re-investigate the matter. The official reagent solution of caustic soda was diluted with two to three volumes of recently boiled and cooled water and cooled to about 0° C. To 250 cc. of the cooled dilution were added, gradually and with shaking after each addition, 20 Gm. (6 cc.) of bromine. The reagent so prepared was about 1.5*N* with respect to alkali and 0.5*M* to added bromine. Five grams of the sample of aloin under investigation were dissolved in about 25 cc. of the cold (3°–5° C.) simple alkaline solution and added quickly to a 250-cc. portion of the cold reagent. The mixture was shaken vigorously for ten minutes or until the organic bromide commenced to precipitate and was then left over night in the refrigerator. The precipitate was collected on a hardened paper, or in a sintered glass filter, and washed with ice cold water until free from alkali. The filtrate and washings were reserved for the isolation of oxalic acid. The wet crude carbon tetrabromide was dissolved on the filter by the minimum amount of hot 95% alcohol. Water was added gradually until the reprecipitated bromide just redissolved on further warming, the final alcohol concentration being about 60%. The resultant hot solution was then filtered and left to crystallize. The crystals were collected, washed with cold 60% alcohol and then recrystallized from that solvent, collected, washed and dried at ordinary pressure over sulfuric acid. The isolated carbon tetrabromide melted at 92° C. and boiled at 189° C. The method of Busch was found satisfactory for the halogen determination and the results were accepted as indicating the actual bromine content. The results of the investigations show that the observations of Leger have been confirmed.—E. J. SCHORN. *Chemist and Druggist*, 130 (1939), 402. (A. C. DeD.)

Amino Groups—Determination of the, in Amino Acids. Retention of the Capacity to React with Nitrous Acid After Formolation. After reaction with formaldehyde, glycine yields the same quantity of nitrogen when treated with nitrous acid as the original glycine. Presumably the methyleneimino group is dissociated by the acid.—W. L. DULIÈRE. *Compt. rend. soc. biol.* 126 (1937), 441–442; through *Chimie & Industrie*, 40 (1938), 242. (A. P.-C.)

Aminopyrine and Phenobarbital—Determination of, in Mixtures. As a result of the study of the conditions affecting the separation of aminopyrine from phenobarbital, the following method was evolved for the determination of the two compounds in presence of each other: weigh sufficient powdered sample to yield 0.2 to 0.5 Gm. of aminopyrine and 0.05 to 0.3 Gm. of phenobarbital, place in a separatory funnel, agitate with 10 to 20 cc. of normal sodium hydroxide, extract with 30, 20, 20, 20 and 10 cc. of chloroform (which should remove the aminopyrine completely), wash the chloroform extract with 10 cc. of water adding the washings to the aqueous layer, filter the chloroform into a tared beaker, evaporate on the steam bath, dry 2 hours at 80° C., and weigh the aminopyrine; acidify the aqueous layer with hydrochloric acid, extract the phenobarbital completely with six to eight 25-cc. portions of ether, wash the ether with 5 to 10 cc. of water acidified with hydrochloric acid, filter into a tared beaker, evaporate on the steam bath using a stream of dry air, dry 1 hour at 80° C. and weigh as phenobarbital. Empirically the results seem to be of sufficient precision to warrant the use of the method in the analysis of pharmaceutical preparations, but there is some doubt as to whether or not a clean separation of the two substances in a pure state will be effected by this method.—E. C. PAYNE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 566–571. (A. P.-C.)

Analytical Reactions—Paper as a Medium for. The use of impregnated papers, previously used for spot tests (Clarke, *Anal. Ed.*, 9 (1937), 292), is now applied to cases where the solution is so dilute that a larger volume must be taken. The solution is caused to flow through a restricted area of the paper at a controlled rate. The paper is held across the liquid stream between two tightly compressed flanges.

Reaction occurs essentially at the coated fiber surfaces and the product is retained by fixation thercon. When a color change results, direct comparison of the colored area with standards identically prepared may provide an approximation of quantity. If more precise determinations are required or the simultaneous removal of more than one ion by the paper necessitates subsequent separation, ashing or digestion of the spot then permits operations on a true micro scale. Studies are confined to the precipitation of copper or cadmium sulfide, but reactions with metals such as copper, silver, mercury, bismuth and lead, involving separation on papers impregnated with light-colored insoluble sulfides, are especially suited to this technic.—B. L. CLARKE and H. W. HERMANCE. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 591–600. (E. G. V.)

Anthracene—Microcrystalline Reactions of. The following procedure is given: Place a small amount of the sample on a glass slide, add 1 or 2 drops of acetone, allow to evaporate to dryness, then observe the residue under a microscope at 130–200X. Add, to the crystals on the slide, a drop of a 1:20 solution of bromine in chloroform. Allow the chloroform and excess bromine to evaporate, then observe the yellow needles of dibromanthracene. Both types of crystals are illustrated.—G. DENIGES. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 5–10. (S. W. G.)

Arsenic—Determination of, as Magnesium Pyroarsenate. Precise details are given of the conditions under which to precipitate magnesium ammonium arsenate, dissolving it in dilute nitric acid, reprecipitating and igniting to magnesium pyroarsenate. In determining 0.01 to 0.22 Gm. of arsenic the maximum error was 0.4 mg. The method, therefore, is accurate, but is very tedious. In many cases the same result can be obtained by a single precipitation as a result of a compensation of errors. The precipitate is practically insoluble in 10% ammonia containing 3% ammonium nitrate.—I. SARUDI. *Z. Anal. Chem.*, 110 (1937), 117–122; through *Chimie & Industrie*, 40 (1938), 33. (A. P.-C.)

Arsenic—Determination of Traces of. The results obtained with various methods of preparation of sample (perchloric acid, sulfuric-nitric acid mixture, dry ashing) varied widely and were inconclusive. Mercury determination made on Gutzeit strips impregnated with different concentrations of mercuric bromide and for different periods suggest that variation in the mercury content of the individual strips may be an important factor in the results; no way to correct for such variations is apparent. Three methods for determining arsenic were studied: (1) An iodine titration micromethod, the principle of which was first given by C. R. Smith (*U. S. Dept. Agr. Bur. Chem., Circ.* 102 (1912)); the method used is briefly described, but the exact details of procedure have not yet been worked out. Recoveries of 89 to 100% were obtained; but when certain difficulties have been straightened out, it is believed that the error should be not more than 1%. (2) A molybdenum blue method such as described by Zinzadze (*Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 227). (3) A method based on the estimation of the color of a red gold sol produced by reduction of gold chloride in presence of a protective colloid, such a gum arabic. The color is stable for about 1 hour, after which the color intensity increases, perhaps because of a further reduction of the excess ionic gold by the action of the protective colloid, or perhaps because the first reaction proceeds rapidly but changes the arsine only to arsenious oxide and a secondary reaction of arsenious to arsenic oxide proceeds slowly.—C. C. CASSIL. *J. Assoc. Official Agr. Chem.*, 21 (1938), 198–203. (A. P.-C.)

Arsenic—Semi-Microchemical Determination of, in Organic Compounds. More rapid and accurate results were obtained by the modified Winterschteiner method. To a 10 to 12 mg. sample add 0.5 cc. of hydrogen peroxide and 1 cc. of concentrated sulfuric acid, heat the solution to fuming and then boil for 3 to 4 minutes; to expel all of the hydrogen peroxide, add twice 1 drop of water and evaporate to fuming; introduce 1 drop of water, bring to boiling and transfer the residue by means of 5 cc. of 20% sulfuric acid into a glass-stoppered Erlenmeyer; introduce 5 cc. of freshly prepared 10% potassium iodide solution, allow to stand in the dark for 15 minutes; add 4 to 5 volumes of water and titrate with hundredth-normal sodium thiosulfate. Compare the results with the titration of a blank solution similarly prepared.—E. I. EISENSTADT. *Zavodskaya Lab.*, 6 (1937), 503–504; through *Chimie & Industrie*, 40 (1938), 106. (A. P.-C.)

Ascorbic Acid—New Color Reaction for. To one cc. of approximately 0.1% ascorbic acid add a little dilute acetic acid or sulfuric acid and 0.5 cc. of 3% potassium permanganate. The ascorbic acid is oxidized to a mixture of *l*-threonic acid and chromic acid. Add enough dilute hydrogen peroxide to remove the excess potassium permanganate; then test for chromic acid by the method previously desribed, *Chem. Abstr.*, 32, 4908.—M. PAGET and R. BERGER. *Compt. rend. soc. biol.*, 129 (1938), 960–961; through *Chem. Abstr.*, 33 (1939), 2553. (F. J. S.)

Aspirin and Phenolphthalein Mixtures—Analysis of. A collaborative study was made of a method (technic described in detail) consisting essentially in extracting the dry powdered material with ether, shaking out the ether with two 20-cc. portions of 4% sodium bicarbonate solution, filtering the ether, evaporating, drying at 105° C. and weighing the residual phenolphthalein; acidifying the sodium bicarbonate solution with concentrated hydrochloric acid (using methyl orange indicator) and adding 1 to 2 drops in excess, extracting with 30, 20, 20, 10 and 10 cc. of a 3:2 chloroform-ether mixture, evaporating to a small volume on the water bath, completing the evaporation spontaneously, drying in a desiccator over concentrated sulfuric acid and weighing the acetylsalicylic acid. Some discrepancies in results were noted, indicating that some changes may be necessary in the method, or perhaps only in the directions.—GEORGE M. JOHNSON. *J. Assoc. Official Agr. Chem.*, 21 (1938), 560–562. (A. P.-C.)

Barbiturates—Color Reactions of. IV. Barbiturates Having a Cyclic Polymethylenic Radical. The sulfuric acid-vanillin test as generally employed may not be used for cyclopentenylallylmalonylurea (Hypalone) or cyclohexenylethylmalonylurea (Phanodorm) because they give colors similar to those obtained in the test when treated with concentrated sulfuric acid alone. The following test is recommended: Place several mg. of the barbiturate in a tube, add 5–6 drops of a 1:20 solution of vanillin in alcohol (or several particles of vanillin and 5–6 drops of alcohol). Mix carefully to dissolve, then add 2 cc. of diluted sulfuric acid (2 volumes of acid and 1 volume of distilled water). With cyclopentenylallylmalonylurea the mixture immediately takes on a greenish yellow color which changes in a few seconds to an intense emerald green. The maximum intensity is observed after 2–3 minutes. Dilution, at this time, with 10 cc. of distilled water causes the color to change to a light emerald green. After several minutes, if at least 5 mg. of the barbiturate is present, the liquid becomes turbid, and the green substance settles leaving a yellow solution. If, instead of diluting the reaction mixture with water, it is heated in a boiling water bath, a greenish blue, then very intense blue, color change is noted. The reac-

tion is sensitive to 1 mg. With cyclohexenylethylmalonylurea the sulfuric aid-vanillin-barbiturate mixture exhibits in the cold, only a yellow tint. Heating in a boiling water bath causes the formation of a yellow-brown, then a red-brown, then an intense violet-red. The production of the last color may require heating for 4–5 minutes. Addition of 10 cc. of distilled water yields an extremely intense red-violet solution. The coloring matter settles leaving a violet-rose liquid. The precipitated coloring matter is insoluble in organic solvents. If the diluted solution is mixed with 5 cc. of chloroform a colorless aqueous layer and a cherry red chloroform layer are obtained. This is characteristic of Phanodorm. The following tests are given for cyclopentenylallylmalonylurea: (1) Place several mg. of the barbiturate in a tube, add 5–6 drops of 1:20 solution of vanillin in alcohol. Mix, then add 2 cc. of hydrochloric acid. No color is produced in the cold. Heat in boiling water; in several seconds a deep blue color develops becoming very intense after three minutes of heating. Addition of 10 cc. of distilled water yields a blue-green solution. The coloring matter is insoluble in organic solvents. This test gave negative results with all other barbiturates examined. (2) Place several mg. of the barbiturate in a tube, add 5–6 drops of a 1:10 aqueous solution of resorcin and 2 cc. of hydrochloric acid. Place the tube in boiling water and observe the very gradual development of a very intense currant red color. Addition of 20 cc. of distilled water yields an orange-red mixture. Shaking with 5 cc. of chloroform or ether yields a violet-red color. Addition of 1 cc. of ammonia solution or sodium hydroxide solution to 5 cc. of the diluted aqueous portion yields a very intense violet-red mixture having a green fluorescence. Negative results were obtained with all other malonylurea derivatives tested. (3) To several mg. of barbiturate add 5–6 drops of a 1:10 aqueous solution of resorcin and 2 cc. of diluted sulfuric acid (2 and 1). The yellowish color produced in the cold changes on heating in boiling water to yellow-orange then to orange-red. Dilution with 10 cc. of distilled water yields a currant red solution. Shaking with chloroform gives a violet-red color.—M. PESEZ. *J. pharm. chim.*, 28 (1938), 379–386. (S. W. G.)

Bauhinia Reticulata DC.—Analysis of Fruit and Leaves of. The Presence of Large Quantities of *l*-Tartaric Acid. The pericarp of the fruit of *Bauhinia reticulata* DC. contains 16% of a brown colored liquid which is soluble in acetone and has a balsam odor, 1.1% reducing sugars, 2.7% sucrose and 6% hydratopectin. The whole fruit contains 5.3% of *l*-tartaric acid, 1.4% of which is free and 3.9% in the form of *l*-potassium acid tartrate. The fruit contains about 1.3% of potassium oxide. The dry leaves contain about 0.9% of potassium oxide, 5.9% of *l*-tartaric acid, 1.5% as the free acid, 3% as the tartar and 1.4% as neutral *l*-calcium tartrate.—J. RABATE and A. GOUREVITCH. *Rev. botan. appl. agr. trop.*, 18 (1938), 604; through *Chem. Abstr.*, 33 (1939), 2176. (F. J. S.)

Belladonna Plaster—Assay of. The following method of assay is recommended. (*a*) *Spread Plaster.*—Weigh into a beaker 30 Gm. of a spread plaster cut into small pieces. Add 50 cc. of chloroform, warm and stir until the plaster dissolves and transfer the chloroform solution to a tared flask. Repeat with successive portions of 20, 20 and 10 cc. of chloroform. Dry the fabric and weigh. Remove the chloroform from the mixed solutions on a water bath until of a thick consistency. Add 20 cc. of dilute sulfuric acid and 50 cc. of water. Heat, with constant stirring, to remove the remaining chloroform and boil for two minutes. Cool immediately to laboratory temperature. Adjust the weight with water to 76 Gm. plus the weight of plaster taken. Filter and transfer to a separator, 50 cc. representing two-thirds of the weight of the plaster being assayed. Add 10 cc. of chloroform, shake well, run the chloroform layer into a second separator containing 5 cc. of *N*/10 sulfuric acid, shake well, allow to separate and reject the chloroform. Repeat with a further 10 cc. of chloroform. Transfer the acid liquid from the second separator to the first separator, make distinctly alkaline with dilute solution of ammonia, and extract the alkaloids with four successive portions of 35 cc. of chloroform. Wash the combined chloroform solutions with 5 cc. of water. Remove the chloroform and dry the residue for half an hour at 100° C. Dissolve the residue in 1 cc. of chloroform, add 10 cc. of *N*/50 sulfuric acid, remove the chloroform, cool and titrate with *N*/50 sodium hydroxide using methyl red as indicator. Each cc. of *N*/50 acid is equivalent to 0.005784 Gm. of hyoscyamine. To the amount indicated by the titration add 0.003 Gm. to correct for loss of hyoscyamine. (*b*) *Plaster Mass.*—Weigh into a tared flask 15 Gm. of plaster, dissolve in 40 cc. of chloroform, and complete the assay commencing with the words "Remove the chloroform from . . . . ." Emulsification rarely occurs, and when it does separation is rapidly obtained on standing. The method was found to be consistently accurate.—W. T. WING. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 489–495. (S. W. G.)

Boron—Determination of, in Waters, Brine and Salt. The following modification of the Cook-Wilson method (*J. Agr. Research*, 10 (1917), 594) has been found suitable for the determination of small quantities of borax in mineral waters: into each of several 150-cc. porcelain casseroles place 30 cc. of sample, 20 cc. of methanol and 5 cc. of concentrated hydrochloric acid and mix well by stirring; prepare a series of standard borax solutions in the same manner; each casserole should contain from 50 to 55 cc. of liquid; place the casseroles on the base of a 6-funnel rack; fasten one end of each turmeric paper strip (exactly 10″ by 0.5″) to the upper edge of the filter rack so that the bottom end dips exactly 0.25 inch into the center of the liquid in each casserole; let stand till maximum color develops (generally 1 hour); protect the strips from direct air currents and do not allow them to adhere to the sides of the casseroles; remove the strips from the filter rack and compare the intensity and the width of the red color zone with the standards while the strips are still moist. The presence of large quantities of sodium and potassium sulfates does not interfere with the color reaction. Sodium phosphate added to one sample did not interfere with the color reaction. A. E. MIX. *J. Assoc. Official Agr. Chem.*, 21 (1938), 358–360. (A. P.-C.)

Bromine—Diphenylcarbazone as a Mercurimetric Indicator in the Determination of. Solutions of potassium bromide or chloride were mixed with 0.1 cc. of a 1% alcoholic solution of diphenylcarbazone, treated with several drops of fifth-normal nitric acid, and titrated with decinormal mercuric nitrate in the cold. The first excess of mercury gave a violet color with diphenylcarbazone which indicator is specific for mercury ions. The best results were obtained when the solution was fifth-normal in nitric acid. The presence of copper, iron, lead, zinc and manganese did not affect the accuracy of the bromine determination if the solution were decinormal in acid. Microtitrations with five hundredth normal mercuric nitrate were satisfactory up to a concentration of 0.08 mg. of bromine per cc.; in more dilute solutions the presence of other metals and the nitric acid affected the end point and gave low results.—J. TRTILEK. *Chem. Obzor*, 12 (1937), 184–195; through *Chimie & Industrie*, 40 (1938), 235. (A. P.-C.)

Bromine—Microcrystalloscopic Identification of, in Chloroformic Solution. The following procedure is recommended: Shake a 10-cc. or 20-cc. sample (depending upon the color of the solution to be tested) of bromine solution with 1 cc. of chloroform, allow the layers to separate completely, draw off the chloroform layer into a small cylinder. To the chloroform solution add 2 droplets of a 1:100 solution of anthracene in chloroform or 0.5 mg. of powdered anthracene. If the color of the chloroform solution of bromine is a marked reddish yellow, 1 or 2 drops of the mixture obtained after addition of the anthracene may be evaporated spontaneously on a slide and the yellow needles of dibromanthracene observed under a microscope at 130–200X. If the color of the chloroform solution is faint, concentrate by evaporation, and then add the anthracene as above. Chlorine forms small, white crystalline needles with anthracene.—G. DENIGES. *Bull. trav. soc. pharm. Bordeaux,* 77 (1939), 10–12. (S. W. G.)

Calcium Gluconate—Determination of. Four methods are suggested: (1) titration with potassium permanganate in sulfuric acid solution; (2) titration of calcium in the ash with hydrochloric acid; (3) weighing calcined calcium oxide; (4) weighing calcium as calcium sulfate.—V. LUCAS. *Bol. assoc. brasil. pharm.,* 17 (1936), 10–16; through *J. Soc. Chem. Ind.,* 11 (1938), 1361. (E. G. V.)

Calcium Gluconate—Polarimetric Determination of. The proposed method consists of the determination in a polariscope of the rotatory power of a mixture composed of 10 cc. of the solution to be assayed, 0.5 cc. of concentrated acetic acid, and 4.5 cc. of saturated solution of ammonium molybdate. The concentration of calcium gluconate in Gm. per 100 cc. of solution is given by the relation $p = \frac{\alpha.100}{226.67 \times l \text{ (in dm.)}}$. When the solution to be assayed contains more than 4 Gm. of calcium gluconate per 100 cc. it should be diluted with distilled water. A solution containing 2 Gm. of calcium gluconate per 100 cc. when tested alone has a rotatory power ($l = 2$) of $+0.36°$; whereas, in the presence of uranyl acetate (Fisher-Bailey method) the deviation is $+2.01°$; in the presence of bismuth nitrate (F. De Carli method) the deviation is $+3.78°$; by the above method the rotation is $+8.98°$. The higher rotation makes the recommended method more sensitive, especially when dilute solutions are tested.—I. VINTILESCO, C. N. IONESCO and N. STANCIU. *J. pharm. chim.,* 28 (1938), 283–293. (S. W. G.)

Canada Balsam—Acidity of. The following summary is given: The figure found for the acid value of natural and dried Canada balsam depends on the solvent employed and the nature of the volumetric solution used. Determination by the British Pharmacopœia, 1932, method is only satisfactory when the amount of resin employed is of the order of 1 Gm. With larger amounts than 1 Gm., a true acid value can be obtained either by using an alcoholic alkali solution for the titration, or by increasing the alcohol used as solvent for the balsam to approximately 40 times the weight of the balsam taken. A consideration of the constituents reported indicates that a neutral Canada balsam is not capable of preparation except in small yields, and two samples bought in the open market had acid values little lower than those of ordinary dried Canada balsam. A nearly neutral resin was obtained in a yield of only about 10% by extracting the acid constituents from dried Canada balsam with alcohol.—A. I. ROBINSON and T. F. WEST. *Quart. J. Pharm. Pharmacol.,* 11 (1938), 708–713. (S. W. G.)

Carotene—Determination of. The determination of carotene involves two distinct problems: (1) isolation and separation of the carotene, and (2) measurement of the extracted carotene in solution. A collaborative study was made of the Fraps revision of the Guilbert method, of the Hughes-Peterson revision of the Guilbert method, and of the U. S. Dairy Industry method slightly revised in certain details (described in detail); and the solutions from all three methods were matched against Guilbert's dye standard, a 0.1 and a 0.036% potassium dichromate solution. The average results obtained for the three methods when the collaborators used the same standard were in very good agreement, indicating that the methods of extraction give about the same results. The variations shown are due largely to the standards (*e. g.,* inaccuracy of the conversion factor, improper application or difficulty in matching). The spectrophotometer is the most reliable means of measuring carotene in solution; but the results will differ according to the wavelength at which the absorption coefficient is determined. By making measurements at 450, 470 and 480 mμ and averaging the results, the result will be fairly constant for the same product and will probably be more nearly the true value. The principles of none of the three methods allow the determination of pure carotene. From information available, the Hughes-Peterson procedure is considered to be preferable to the other two, and should be subjected to further collaborative study.—V. E. MUNSEY. *J. Assoc. Official Agr. Chem.,* 21 (1938), 626–631. (A. P.-C.)

Chlorbutanol—Determination of. A collaborative study was made of a method (technic described in detail) consisting essentially in hydrolyzing with alcoholic potassium hydroxide for 15 minutes at 100° C. under pressure, precipitating chlorides with silver nitrate in an aliquot and weighing the silver chloride. For the determination of chlorbutanol in ampul solutions containing procaine hydrochloride, dilute to 50 cc. with water a sample equivalent to about 0.1 Gm. of chlorbutanol, distil about 25 cc., collecting the distillate in a 100-cc. pressure bottle containing 25 cc. of alcoholic potash, allow the mixture to cool, add 25 cc. of alcohol and distil a further 25 cc., then proceed with hydrolysis and determination of silver chloride as above. Collaborative study of the method gave reasonably close recoveries (98.9 to 99.4%) on chlorbutanol itself; on the ampul solution the results were consistently low and showed much wider variation. No explanation is offered for the discrepancy in results obtained on the solution, there being apparently some detail of technic requiring clarification in order to obtain consistent results in different laboratories.—F. C. SINTON. *J. Assoc. Official. Agr. Chem.,* 21 (1938), 557–560. (A. P.-C.)

Chlorometric Method of Pontius—Note on. The method of Pontius for the analysis of bleaching powder is similar to that of Houtou Labillardiere. The sample of bleaching powder is treated with sodium bicarbonate and titrated with potassium iodide solution. Free halogen or hypochlorite, but not chlorite or chlorate, will oxidize the iodide to iodate and the end point is a starch iodide blue when all hypochlorite is reduced to chloride. The assumption has previously been made that after all hypochlorite has been reduced, the reaction $IO_3^- + 5I^- + Ca^{++} + 6HCO_3^- = 6CaCO_3 + 3H_2O + 3I_2$ takes place and in this way the blue end point is obtained. Chambon prefers to think that I_2 is formed at a preliminary stage of the reduction of the hypochlorite and this free iodine is oxidized by more hypochlorite to iodate; according to this view, the blue color with starch is produced when there is no more hypochlorite left to complete the oxidation.—

M. CHAMBON. *Bull. soc. chim.*, 5 (1938), 1458–1463; through *Chem. Abstr.*, 33 (1939), 1234. (E. G. V.)

Chlorometry—Remarks on the Pontius Procedure in. The Pontuis procedure is based upon the action of free or available chlorine on potassium iodide in alkaline medium to form potassium iodate, which in turn reacts with potassium iodide in acid medium to liberate iodine. If sodium bicarbonate is used to furnish the alkaline medium, the carbon dioxide liberated will furnish sufficient acid for the second step. In the case of pure Javel water, 1 cc. is mixed with 10 cc. of water, 3 Gm. of sodium bicarbonate and a little starch indicator are added, then the mixture is titrated slowly with standard $N/10$ potassium iodide solution until a blue color persists. The mechanism of the reaction is discussed.—M. RIZARD. *J. pharm. chim.*, 28 (1938), 208–216. (S. W. G.)

Chromatographic Adsorption Analysis—Use of, in Pharmacy. The introductory remarks include a brief historical review of the method and a description of the apparatus. The fact that several physicians in various parts of Switzerland have reported obtaining poor results with extract of aspidium prepared according to the Swiss Pharmacopœia V, as compared to that of the 4th edition, led the author to apply chromatographic analysis in the hope of detecting differences which should explain these phenomena. Two samples of aspidium were converted to extracts by the methods of both the 4th and 5th revisions and a 1 to 5% ethereal solution was adsorbed on Al_2O_3 and then developed with ether. A mixed chromatograph indicates filmaron to be identical with the extract of the 5th revision. During the preparation, the active principle of aspidium does not go over into the barium hydroxide solution. The active principle is alkali-sensitive and on treatment with barium hydroxide solution is partly or completely destroyed. The full explanation for the lower activity of the extract of the 5th revision has not yet been found. The possibility that it is due to using aspidium of poor quality is slight. A possible explanation may lie in the fact that in one of the hospitals it was customary to administer the extract of the 4th revision in chloroform whereas that of the 5th is administered in capsules or in oil solution. Since it has been shown that ether loses its peroxide content on passing through a layer of Al_2O_3, chromatographs may offer a means of purifying ether. Any aldehydes or acids present in the ether are also removed. The method cannot be used for large scale purification. Fifty-nine references are given.—MARGUERITE FICHTER. *Pharm. Acta. Helv.*, 13, (1938), 123. (M. F. W. D.)

Cinchona—Thalleioquin Reaction as a Qualitative Test for. The method involving the use of bromine and ammonia was adopted for the purpose of identifying cinchona barks. Preliminary experiments showed that (*a*) too large an excess of bromine in proportion to the amount of alkaloid must be avoided and (*b*) the solution under test must be neutral. The test recommended for the identification of cinchona barks containing from 0.5 to 12.0% of anhydrous quinine, is as follows: Mix 2 Gm. of powdered bark, 1 Gm. of calcium hydroxide and 5 cc. of water to form a homogeneous paste, set aside for five minutes and then evaporate to dryness on the water bath. To the residue add 20 cc. of alcohol (95%), and warm on the water bath for five minutes, keeping the dish covered by a watch glass, stirring three times in the course of the five minutes. Filter, wash the residue with two portions of five cc. of warm alcohol, adding the washings to the main bulk of liquid. Evaporate the filtrate to dryness and take up the residue with 5 cc. of 5% v/v sulfuric acid; filter. To 3 cc. of filtrate add 10% solution of ammonia till just cloudy, boil to expel excess ammonia, cool and adjust the volume to 6 cc. with water. Take 1 cc. and add 1 cc. of a freshly prepared 20% dilution of saturated bromine water and 2 cc. of 10% solution of ammonia. An emerald green color results. Quinine in barks containing from 0.3 to 0.5% of quinine may be detected by using one-tenth of the reagents (bromine and ammonia). An experiment with a 0.1% material gave a negative result.—R. E. WAGG. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 443–449. (S. W. G.)

Cinchophen—Determination of, in Presence of Salicylates. A procedure derived from Emery's method has been developed. The cinchophen is precipitated as the addition compound $(C_{16}H_{11}NO_2)_2.HI.I_3$, and the quantity is calculated from the iodine concentration in an aliquot of the filtrate. Details of the technic are described in *J. Assoc. Official Agr. Chem.*, 21 (1938), 95. Results of a collaborative test of the method were in excellent agreement, and adoption of the method as tentative is recommended.—ALBERT I. COHEN. *J. Assoc. Official Agr. Chem.*, 21 (1938), 554–555. (A. P.-C.)

Coffee. I. Determination of Chlorogenic Acid. The coffee (2 Gm.) is freed from fat and caffeine, enclosed in a small linen bag and extracted (Soxhlet) for 1 hour. The end of the extraction is indicated by a negative Hoepfner reaction. In the extracts chlorogenic acid is precipitated by lead acetate as the lead salt. The precipitate is centrifuged and washed with water. (The solution and wash waters are used for the determination of trigonelline and sugar.) The precipitate is suspended in hot water and decomposed by hydrogen sulfide; the mixture is made up to a definite volume, filtered and an aliquot portion is used for the determination. This is effected by treatment with iodine in alkaline solution, whereby chlorogenic acid requires 10 iodine. Caffeic acid, which also requires 10 iodine, interferes but can be removed by extraction with peroxide-free ether. The change requires about 1 hour for certain completion and during this time the solutions should be kept in the dark. The solution is then acidified and the liberated iodine is titrated immediately with sodium thiosulfate; the marked color of solutions of roasted coffee does not interfere with the end point. The accuracy of the determination is not affected by a large excess of hypoiodite but with only a small excess the reaction is incomplete. Caffeic acid can be determined with sufficient accuracy as the difference between the combined chlorogenic acid and caffeic acid and the chlorogenic acid.—K. H. SLOTTA and K. NIESSER. *Ber.*, 71 (1938), (B), 1616–1622; through *J. Soc. Chem. Ind.*, 11 (1938), 1359. (E. G. V.)

Copper—Determination of Traces of. The spectrophotometric absorption curves of amyl alcohol and carbon tetrachloride extracts of the copper-carbamate compound show maximum absorption in the deep blue or near ultraviolet region, where the visual acuity is none too good. Two filters were studied in a preliminary way, with transmission in the blue and in the green, respectively, and more concordant results were obtained with the green filter, which transmits a region along a moderately sloping part of the absorption curve. With this filter satisfactory results in accordance with Beer's law were obtained with an ordinary colorimeter, when light strained through a ground glass (not through "daylight" glass, which should be avoided) is used as a source. With photoelectric methods of matching intensities both filters gave excellent results.—D. L. DRABKIN. *J. Assoc. Official Agr. Chem.*, 21 (1938), 203–204. (A. P.-C.)

Cordials and Liqueurs—Analysis of. Apricot and peach cordials were prepared in the laboratory by a

method in keeping with recipes found in a number of books. Volatile acid, esters and γ-undecalactone were determined after 3 months and again after 19 months. The results indicate that no γ-undecalactone is present naturally in either dried apricots or dried peaches.—JOHN B. WILSON. *J. Assoc. Official Agr. Chem.*, 21 (1938), 177–178. (A. P.-C.)

Corn Poppy Flower—Constituents of. The unsaponifiable portion of the flower of the corn poppy consists of an alcohol, $C_{26}H_{54}O$, mixed with paraffin hydrocarbons. The hydrocarbon $C_{27}H_{56}$ was prepared in a pure state by chromatographic methods and identified by means of X-rays. In the saponifiable portion, palmitic, stearic and oleic acids were detected. An acid of the formula $C_{20}H_{40}O_2$ also appears to be present.—L. SCHMID and W. HOSSE. *Mikrochemie*, 26 (1939), 59–66; through *Chem. Abstr.*, 33 (1939), 3839. (F. J. S.)

Cubeb—Analysis of. Further collaborative work on the same method as previously reported (*Pharm. Abs.*, 4 (1938), 214) gave results that were considered satisfactory, the variations in the results reported probably being accounted for by variation in the elapsed time between grinding the cubeb and assay of the material.—J. F. CLEVENGER. *J. Assoc. Official Agr. Chem.*, 21 (1938), 566. (A. P.-C.)

Elixir of Terpin Hydrate and Codeine—Analysis of. A method for the determination of terpin hydrate and of codeine is described in detail. It consists essentially in diluting 10 cc. of elixir with 10 cc. of water, adding 1 to 2 cc. of 10% sulfuric acid, extracting immediately with petroleum ether to remove aromatics (the petroleum ether extract is discarded), extracting completely the terpin hydrate by shaking repeatedly (7 × 20-cc. portions is usually sufficient) with alcohol-chloroform mixtures containing 7% alcohol, washing the extract with 7 to 8% sulfuric acid to remove any glycerol which may have been carried over, evaporating in a slow (to avoid condensation of moisture) current of air, and weighing at 30-minute intervals (after apparent dryness is reached) to constant weight. The acid-washed material is rendered alkaline with ammonia and codeine is determined by the official A. O. A. C. method. Some of the collaborators obtained high results for terpin hydrate, due to condensation of moisture during evaporation of the chloroform-alcohol extract, and further efforts will be made to find a more accurate and uniform method of drying the terpin hydrate. Adoption of the method as tentative is recommended.—JONAS CAROL. *J. Assoc. Official Agr. Chem.*, 21 (1938), 575–577. (A. P.-C.)

Emetine and Bismuth Iodide—Assay of, and of Emetine Hydrochloride. The following methods are proposed: Emetine and Bismuth Iodide. *Emetine.*—Dissolve, in a small beaker, about 0.5 Gm. accurately weighed, in 5 cc. of acetone and 0.5 cc. of strong hydrochloric acid by the aid of gentle heat. Transfer, using as little acetone as possible for washing the beaker, to a 300-cc. separator which already contains 5 Gm. of citric acid dissolved in 10 cc. of water. Make alkaline by the cautious addition of dilute ammonia, dilute with about 50 cc. of water and extract with chloroform until all the alkaloid is removed, as shown by testing with Mayer's reagent. Wash each chloroform extract with the same 10 cc. of water contained in a second separator. Transfer the chloroform solution to a tared flask, remove the solvent by evaporation, add 2 cc. of alcohol, evaporate, dry at 100° C. and weigh. *Bismuth.*—Dissolve about 0.5 Gm. accurately weighed, in 50 cc. of dilute nitric acid and boil vigorously until iodine vapor is no longer expelled. Add strong solution of ammonia until a slight permanent precipitate is obtained, and clear with 1 cc. of nitric acid. Heat this solution to boiling and, while stirring vigorously, add slowly from a burette 30 cc. of a 10% ammonium phosphate solution. Dilute to 400 cc. with boiling water and allow to stand for at least one hour on the water bath for the precipitate to settle. Filter through a tared asbestos-filled Gooch crucible, wash with hot 3% ammonium nitrate solution made just acid with nitric acid. Dry, ignite gently and weigh the $BiPO_4$. Factor to Bi 0.6875. *Iodine.*—The iodine is best determined by the usual Volhard method, using 0.5 Gm. of the salt and 25 cc. of $N/10$ silver nitrate. After the addition of 10 cc. of dilute nitric acid and heating on the water bath for thirty minutes, the salt is completely decomposed and the silver iodide precipitated. After the addition of ferric ammonium sulfate solution the excess silver nitrate is titrated with $N/10$ potassium thiocyanate solution. Emetine Hydrochloride, B. P. *Emetine.*—Dissolve 0.5 Gm. in 50 cc. of water, add 10 cc. of 20% solution of sodium hydroxide and shake with separate quantities of chloroform until all the alkaloid is removed. Wash each chloroform extract in succession with the same two quantities of 10 cc. of water, transfer the chloroform solutions to a tared flask, evaporate the solvent, add 2 cc. of alcohol, evaporate, dry at 100° C. and weigh. *Cephæline.*—Acidify the aqueous liquids from the assay for emetine with dilute hydrochloric acid, make just alkaline with ammonia, extract with chloroform and proceed as in the assay for emetine. —N. EVERS and W. SMITH. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 758–762. (S. W. G.)

Emulsions of Cod Liver Oil—Analysis of. A progress report on an experimental study of various chloroform extraction procedures for the quantitative determination of cod liver oil. No conclusions are drawn. It is expected that a method can be submitted for collaborative study within 1 year.—W. F. KUNKE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 577–579. (A. P.-C.)

Ethanol, Ether and Water—Quantitative Analysis of Mixtures of. The method recommended is based on absorption of water vapor by calcium carbide and esterification of ethanol vapors by means of phosphoric anhydride into a mixture of mono- and diethyl phosphates. The ether is determined either by difference, or by absorption in a special absorber containing, for instance, activated charcoal.—A. N. IOUZIKHINE. *Zavodskaya Lab.*, 6 (1937), 1013–1014; through *Chimie & Industrie*, 40 (1938), 96. (A. P.-C.)

Ethyl Dihydroxymalonate. Its Application as a Test for Mesoxalic Acid. If to a drop of 1% solution of ethyl dihydroxymalonate (or mesoxalate) is added a similar amount of an ammoniacal 2% solution of zinc sulfate, and the mixture is heated to 100° C. for 3 to 4 minutes, it becomes first rose, then brown, and on cooling and exposure to a strong light, it shows a brilliant green fluorescence. Both zinc and ammonia are essential. Neither cadmium, nickel, cobalt nor an amine (*e. g.*, methylamine or ethylamine), gives the effect, nor is it obtained with oxalic, tartaric or citric acid. It is produced by dihydroxytartaric acid.—J. PARROD. *Compt. Rend. Acad. Sci.*, 206 (1938), 355–357; through *Chimie & Industrie*, 40 (1938), 240. (A. P.-C.)

Ferricyanides—New Microchemical Test for. A drop (on a filter paper) of the solution is treated with a drop of alkaline phenolphthalein solution. In the presence of ferricyanide a brilliant red coloration is produced. Nitrate, chlorate, iodate, bromate, dichromate, hypochlorite, hypobromite ions and hydrogen peroxide do not interfere; permanganate ion interferes, and persulfate ion reacts slowly, giving the same color. An excess of ammonium salts decolorizes the spot, lowering the sensitivity, which is 0.5γ of potassium ferricyanide in a drop.—A. G.

KNIGA. *J. Prikl. Khim.*, 10 (1937), 946–947; through *Chimie & Industrie*, 40 (1938), 36. (A. P.-C.)

Fluorine—Determination of Traces of. Four methods were studied collaboratively: (1) the peroxidized titanium method, (2*a*) the thorium nitrate titration, applied to an aliquot of the distillate, (2*b*) the same method applied to the evaporated distillate and (3) microtitration, as suggested by Armstrong (*Ind. Eng. Chem., Anal. Ed.*, 8 (1936), 384). While the data are yet too meager to permit final conclusions, the indications are: (1) There exists a small blank due to the equipment used; (2) This blank is materially reduced but not wholly eliminated when vitreosil is used instead of glass beads; (3) The recovery in the distillation is incomplete, about 0.02 mg. of fluorine apparently being retained; (4) This compensation of error in the Willard-Winter distillation ordinarily seems to be of no practical importance. When the amount of fluorine in the distillation flask is decreased, as is often the case when small quantities of fluorine occurring naturally in many materials are to be determined, it may become necessary to consider this possible source of error.—DAN DAHLE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 208–212. (A. P.-C.)

Formaldehyde—Method for the Quantitative Determination of, in the Presence of Hexamethylenetetramine. In order to determine the extent of decomposition of solutions of hexamethylenetetramine during heat sterilization and storage, it was necessary to determine formaldehyde quantitatively in the presence of the former. The decomposition of hexamethylenetetramine yields essentially ammonia and formaldehyde, any other side reaction being slight. The determination of ammonia by the Kjeldahl method and of formaldehyde by the iodometric method of Romijn were found unsuitable. The following modification of the mercurimetric method of Stüve for formaldehyde was adopted. To 20 cc. of the hexamethylenetetramine solution to be tested was added 5 cc. of potassium mercuric iodide reagent (10 Gm. of mercuric chloride, 25 Gm. of potassium iodide, 40 cc. of 10*N* sodium hydroxide and water to 100 cc.) in a 30-cc. glass-stoppered centrifuge tube. The mixture was stirred, allowed to stand 5 minutes and the precipitated mercury centrifuged out at 3500 r. p. m. for 10 minutes. The supernatant liquid was decanted and the mercury washed with 20 cc. of water. After centrifuging, the mercury is washed a second time. After carefully decanting the wash water, the mercury is stirred with 5 cc. of 2*N* acetic acid, treated with 5 cc. of 0.1*N* iodine solution and shaken until all of the mercury has dissolved. The excess iodine is titrated with sodium thiosulfate using starch indicator. The reactions are: $2KI.HgI_2 + HCHO + NaOH \rightarrow Hg + HCOONa + 2KI + NaI + 2H_2O$; $Hg + I_2 + 2KI \rightarrow 2KI.HgI_2$; $I_2 + 2Na_2S_2O_3 \rightarrow 2NaI + Na_2S_4O_6$.—J. BÜCHI. *Pharm. Acta. Helv.*, 13, (1938), 132. (M. F. W. D.)

Guaiacol—Determination of. The Viebock and Schwappach method, as modified by E. P. Clark for the estimation of alkoxyl groups, was applied to guaiacol, guaiacol carbonate, potassium guaiacol sulfonate, U. S. P. liquid guaiacol and wood creosote. The precision of the method applied to guaiacol carbonate is 0.3 part per 1000, and to guaiacol it is 3.0 parts per 1000. U. S. P. liquid guaiacol contains about 80% of "guaiacol-like compounds" calculated as guaiacol; potassium guaiacol sulfonate consists of more than one compound; a sample of beechwood creosote contained about 58% of "guaiacol-like compounds" calculated as guaiacol. The method is simple and practical and yields very accurate results with guaiacol carbonate and reasonably accurate results for guaiacol. It will be studied collaboratively.—K. L. MILSTEAD. *J. Assoc. Official Agr. Chem.*, 21 (1938), 543–550. (A. P.-C.)

Hexylresorcinol—Determination of, in Pharmaceutical Preparations. A method has been evolved for determining hexylresorcinol in olive oil, based on the following principle: dilute the sample with ether, extract with a solution containing barium hydroxide, sodium hydroxide and hydrazine. The barium hydroxide precipitates the fatty acids, thereby preventing them from going into solution in the alkaline medium and also preventing the formation of a permanent emulsion; the hydrazine prevents oxidation of the hexylresorcinol. Wash the alkaline extract with ether, acidify, extract the liberated hexylresorcinol with chloroform, wash the chloroform solution with sodium carbonate solution (to remove acidic compounds) and then with water, evaporate the solvent, and dry the residue to constant weight at 70° C. The technic is described in detail. The method apparently gives good results and will be studied collaboratively.—M. L. YAKOWITZ. *J. Assoc. Official Agr. Chem.*, 21 (1938), 536–538. (A. P.-C.)

Homatropine—Determination of, in Tablets. A method is presented (technic described in detail in *J. Assoc. Official Agr. Chem.*, 21 (1938), 95–96) for the assay of homatropine alkaloid and its salts in the commercially available pure substance and for the assay of homatropine in tablets. It consists essentially in dissolving in 10 to 20 cc. of water an amount of sample equivalent to about 0.1 to 0.15 Gm. of the alkaloidal salt, making ammoniacal, extracting with chloroform, evaporating to about 5 cc., adding a measured excess of fiftieth-normal sulfuric acid, removing the remaining chloroform and titrating back with fiftieth-normal sodium hydroxide in presence of methyl red indicator; 1-cc. fiftieth-normal acid = 0.007122 Gm. of homatropine hydrobromide, or 0.006233 Gm. of homatropine hydrochloride. A collaborative study of the method gave satisfactory results, and its adoption as official is recommended. Attempts to devise a method for the determination of homatropine in presence of cocaine were unsuccessful. Where only very approximate results are desired (accuracy not closer than 92%), total alkaloids (*W*) may be determined by extraction and drying over sulfuric acid for 24 hours, total chlorides may be determined in the aqueous residue from the extraction of the alkaloids by the Volhard method, the net cc. of decinormal silver nitrate being designated by *N;* then if x is the amount of homatropine hydrochloride present and y the amount of cocaine hydrochloride, the following equations may be used: (1) $0.88297x + 0.89262y = W$, (2) $x/0.03116 + y/0.03396 = N$.—E. M. HOSHALL. *J. Assoc. Official Agr. Chem.*, 21 (1938), 562–565. (A. P.-C.)

Hydrocyanic Acid—Determination of, in Glucoside-Bearing Materials. A collaborative study was made of the acid titration and of the alkaline titration method. The results on the whole showed very good agreement. With one exception the acid titration method gave lower results than did the alkaline titration method, which was rather unexpected as the sensitivity of the two methods (based on the respective solubility products of silver iodide and silver thiocyanate) are of the same order of magnitude. In general, there was no significant difference observed when the potassium iodide-ammonia indicator was added as a single solution and when added separately. A comparison of titration and photoelectric-turbidimetric methods were satisfactory; in cases where the distillate is turbid, the photoelectric method is considered to give more accurate results. Liberation of hydrocyanic acid is practically maximum at the end of two hours of

hydrolysis.—ROBERT A. GREENE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 614–618. (A. P.-C.)

Hydrocyanic Acid—Determination of, in Plants. The qualitative sodium picrate test suggested by Guignard (*Bull. Sci. Pharmacol.*, 13 (1906), 415) and described by Morrow (*Biochemical Laboratory Methods*, John Wiley & Sons (1927)) is very satisfactory for use in the field; but the test proposed by Fox (*Science*, 79 (1934), 237) is more sensitive and specific, and with the use of one four-thousandth molar silver nitrate 1 part of hydrocyanic acid in 2,000,000 can be detected. In sampling for quantitative determination, if the plants are to be transported for any distance care must be taken to avoid bruising or crushing; where possible it is preferable to secure the samples in the field. Chop the material fine, weigh, place in a flask (of a size suitable for the distillation) with 4 to 5 times its weight of water, stopper tightly, allow the contents to autolyze for 4 to 8 hours, and determine hydrocyanic acid by steam distillation according to the A. O. A. C. method for hydrocyanic acid in grain and stock feeds. Adoption of these methods as tentative is recommended.—ROBERT A. GREENE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 354–355. (A. P.-C.)

8-Hydroxyquinoline—Relative Value of Certain Azo Derivatives of, as Analytical Reagents. The paper continues a study begun by Gutzeit and Monnier, on the development of specific spot paper and spot plate analytical reagents, and reports the effect of 18 azo derivatives of 8-hydroxyquinoline on nearly all the metals except the alkali, alkaline earth and most of the rare earth metals. Test reagents were saturated alcoholic solutions of the dyes, and test solutions contained 3 mg. of active constituent per cc. of 20% nitric acid solution. In a few cases, 20% aqua regia and hydrochloric acid were employed. The following derivatives of 8-hydroxyquinoline gave specific tests for the metals indicated: 5-(2-hydroxyphenylazo)- for palladous ion (I); 5-(3-hydroxyphenylazo)- for mercuric ion (II) and I; 5-(2-chlorophenylazo)- for I; 5-(3-chlorophenylazo)- for I and II; 5-(4-chlorophenylazo)- for II; 5-(3-toylazo)- for I and II; 5-(4-arsonophenylazo)- for II; 5-(8-hydroxy-3,6-disulfo-1-naphthylazo)- for II; 5-(benzidinemonoazo)- for I, and vanadium as VO_2^+, or VO_3^-. In practically all cases chloride ion obscures the test, but tartrate ion has, in general, no effect. This series of dyes does not give specific tests for copper, nickel and molybdenum as $MoOCl_5^{--}$ ion. Only a few dyes give specific tests for mercury and palladium which may be distinguished by the fact that hydrochloric acid destroys all tests for mercury.—T. BOYD, E. F. DEGERING and R. N SHREVE. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 606–608. (E. G. V.)

Hypophosphites—Determination of, in Pharmaceutical Preparations. A brief study was made of the application to Syrup of Ammonium Hypophosphites, Syrup of Hypophosphites and Syrup of Hypophosphites Comp., of the bromine method devised by Bruening for the assay of the simple salts. The method merits further consideration, which should involve a study of the effects of the other ingredients of the syrups (sucrose, glycerol, citrate, etc.) on the bromine reagent. The slightly high results obtained would seem to indicate the probability of action of these ingredients.—HENRY R. BOND. *J. Assoc. Official Agr. Chem.*, 21 (1938), 529–531. (A. P.-C.)

Indicators—Composition of Universal. A suitable mixture comprises the following indicators: methyl orange, methyl red, bromothymol blue, phenolphthalein, thymolphthalein or eventually naphtholphthalein or cresolphthalein; alcohol or ether is used as solvent. Another mixture consists of phenolphthalein, methyl red, dimethylaminoazobenzene, bromothymol blue and thymol blue. These indicators cover the range from p_H 2–4 to p_H 9–11. For the p_H range of 1–7 the following mixture can be used: thymolphthalein, tropaeolin, bromocresol green, bromocresol blue, tetrabromophenol sulfonephthalein. For the alkaline range there can be used a mixture of neutral red, thymolphthalein, thymolsulfonephthalein, nitramine and *m*-nitrophenol.—L. W. HAASE. *Vom Wasser*, 11 (1936), 276–277; through *Chimie & Industrie*, 40 (1938), 233. (A. P.-C.)

Indicators—Mixed, Application of, in the Acidimetric Titration of Dilute and Colored Solutions. The use of fluorescein as an auxiliary indicator is based on the complete masking of the green fluorescence of the fluorescein by the red ions of methyl red and methyl orange. Thus, the exact neutralization point is indicated sharply by the reappearance of the green fluorescence in the titration of an acid solution with sodium hydroxide and its disappearance in the titration of an alkaline solution with an acid. Excellent results were obtained by working in diffused and artificial light in the titration of highly dilute and colored solutions, such as pitch, tar, contact mixtures and caramel.—R. KH. BURSTEIN. *Zav. Lab.*, 6 (1937), 825–826; through *Chimie & Industrie*, 40 (1938), 236. (A. P.-C.)

Inositol—Determination of, in Calcium and Magnesium Inositophosphates. Basing the purity of the compounds on the phosphorus content may be misleading where calcium and magnesium anhydromethylene diphosphate is present as an impurity; because this would not alter the phosphorus content. The author recommends hydrolysis by Lange's procedure (Reflux 1 Gm. of inositophosphate with 24 cc. of 1:3 sulfuric acid for 8 hours. Cool and dilute to 50 cc.), then determination of the inositol, which is not decomposed by the above treatment, by the method of Fleury and Joly as follows: To 2 cc. of the hydrolysate obtained above add successively 10 cc. of *M*/20 trisodium periodate, 0.5 cc. of 20% v/v sulfuric acid, distilled water to make 50 cc. Let stand at room temperature for 24 hours, then add sodium bicarbonate until effervescence ceases, add 15 cc. of *N*/10 arsenius solution and 1 cc. of 20% potassium iodide solution. After 10 minutes titrate with *N*/10 iodine to a permanent yellow color. Carry out a blank at the same time. The weight of anhydrous inositol in the portion assayed is equal to the difference in cc. of *N*/10 iodine between the blank and the sample multiplied by 0.0015.—M. C. BAILLY. *J. pharm. chim.*, 28 (1938), 199–208. (S. W. G.)

Iodide—Microchemical Detection of, in the Presence of Bromide and Chloride. A drop of the sample is mixed with a drop of a 1:4 or a 1:5 mixture of aniline and sulfuric acid and 2 to 3 crystals of potassium dichromate; the presence of iodide is detected by the formation of crystals of the periodide, $6C_6H_5NH_2.3H_2SO_4.HI.I_4$, which is easily observed under the microscope. The limiting concentration of iodide is 1:9000. The presence of bromide and chloride in amounts 275 to 660 times those of the iodide do not interfere with the detection.—I. M. KORENMANN. *J. Prikl. Khim.*, 10 (1937), 936–937; through *Chimie & Industrie*, 40 (1938), 36. (A. P.-C.)

Iodine in Sheep Thyroid—Determination of. Powdered thyroid 0.2 Gm. is mixed with 10 Gm. of a mixture of anhydrous sodium carbonate, 353; anhydrous potassium carbonate, 460; and potassium nitrate, 250, in a nickel crucible, covered with 5 Gm. of the powder, and heated in an electric oven; the mass becomes brown, then white and toward the end of the process, at a temperature which must not exceed 450° C., the mass tends to retract from the walls of the crucible. The melt is dissolved in 100

cc. of boiling water, and should yield a clear and colorless solution; this is diluted to about 400 cc., and made slightly acid to methyl orange with a 33% v/v solution of sulfuric acid. The liberated nitrous acid is eliminated by boiling (controlled by starch-iodide paper), 1 cc. of 20% solution of sodium bisulfite is added, the solution boiled for 10 minutes to expel sulfur dioxide, excess of bromine water added and the bromine removed by boiling for 10 minutes. After cooling, 3 cc. of a 10% solution of potassium iodide is added, and the liberated iodine titrated with $N/100$ sodium thiosulfate using starch mucilage as indicator. The ashing powder and other reagents must be tested for iodine by means of a blank determination. The error in general is of the order of $\pm 1.5\%$ but occasionally varies more widely.—J. SIGURJONSSON. *Biochem. J.*, 32 (1938), 945; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 276. (F. J. S.)

Iodine—Determination of, in Drinking Water, Urine and Substances Containing Only About 1000 Times as Much Organic Matter as Iodine. After boiling the sample in alkaline solution (which hydrolizes many compounds) and fusing with alkali, with rare earth oxides as catalysts (which decomposes urea, evaporates ammonia and begins the process of oxidation), the iodine may be freed by micro-Kjeldahl combustion in 4 minutes. Iodate is reduced and nitrite destroyed with azide. During the micro-Kjeldahl combustion the iodide is oxidized to iodine by ferric iron and distilled into bromine water which oxidizes the iodine to nonvolatile iodate. The excess bromine is blown out with a current of air at 100°. After adding 10 mg. of potassium iodide, the iodine is titrated with thiosulfate, using an electrometric method to determine the end point. The method is applicable to drinking water, soil solution, urine, thyroid gland, seaweed, sponge and many other substances, where a sample containing 0.2 gamma of iodine contains only small quantities of organic matter (other than urea), silica or halides. The method may be used to titrate accurately 0.04 microgram of iodine, but a blank of about 0.02 gamma must be subtracted on account of the potassium iodide. Blanks must be subtracted on account of the reagents used in the fusion, distillation and bromination of the sample. The electrometric titration is adapted to smaller quantities of iodine than heretofore. The distillation is performed with smaller addition of reagents than in previous methods. The method is shorter and less expensive than combustion tube methods.—A. C. BRATTON and J. F. MCCLENDON. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 600–605. (E. G. V.)

Iodine Ointment—Assay of. Collaborative study was made of the previously described methods (*Pharm. Abs.*, 4 (1938), 218) for free iodine and for organically combined iodine. Agreement on the free iodine is as satisfactory as can be expected considering the unstable character of the product and the difficulty of obtaining uniform samples. Results on organically combined iodine were disappointing. —WM. F. REINDOLLAR. *J. Assoc. Official Agr. Chem.*, 21 (1938), 550–552. (A. P.-C.)

Iron and Aluminum—Gravimetric Determination of, by the Precipitation of Their Hydroxides with Ammonium Hydroxide in the Presence of Calcium Barium and Magnesium Salts. Washing the precipitate with a slightly ammoniacal 2% solution of ammonium nitrate is recommended.—V. K. ZOLOTOUKHINE. *J. Prikl. Khim.*, 10 (1937), 1291–1295; through *Chimie & Industrie*, 40 (1938), 38. (A. P.-C.)

Lead—Determination of, by Means of *o*-Hydroxyquinoline. The determination of 0.04 to 0.1 Gm. of lead with oxine usually gives values which are about 1% low. If precipitation takes place from a hot solution the results are a little lower than when the precipitation takes place in the cold. In the latter case, filtration is more difficult and there is detectable adsorption of other ions. For the precipitation, 2.5 molecules of oxine are sufficient for one atom of lead. Make the solution slightly acid with acetic acid, add the reagent in the form of a solution saturated at room temperature and then add ammonium hydroxide until the solution has a slight odor of ammonia. After 2 hrs. filter off the oxine precipitate, wash with half-saturated aqueous oxine solution, then with cold water, dry at 105° C. and weigh. The solubility of the precipitate in ethanol, 10% ammonia, 2.5% ammonia, ammoniacal solution of oxine and half-saturated oxine solution decreases in the order named. The procedure can be applied to the determination of lead in insoluble precipitates which can be dissolved in hot ammonium acetate solution and then treated as above. V. HOVORKA. *Coll. Trav. Chim. Tchecoslovaquie*, 9 (1937) 191–206; through *Chimie & Industrie*, 40 (1938) 233. (A. P.-C.)

Lead Acetate—Analysis of Officinal. *Neutral Lead Acetate.*—Place about 2 Gm. of sample accurately weighed in a 125-cc. flask, add 50 cc. of distilled water and allow 30 minutes for complete solution. Add 5 drops of a 1% aqueous solution of gentian violet which imparts a red-violet color. Titrate with exactly normal sulfuric acid, adding the acid drop by drop and shaking the mixture continuously. When all the lead acetate is converted to the sulfate, a single drop of normal sulfuric acid causes the color of the mixture to change to blue. The lead content is obtained by multiplying the number of cc. of normal sulfuric acid used by 0.1035. The acetic acid is determined after destroying the color of the indicator by adding about 10 drops of 1% calcium hypochlorite and letting stand for 15 minutes. Add to the mixture 5 drops of phenolphthalein solution and titrate the acetic acid with normal sodium hydroxide. *Basic Lead Acetate.*—Transfer 5 cc. of the officinal solution to a tared vask and weigh accurately. Add 50 cc. of distilled water and proceed as above.—M. FRANCOIS and L. SEGUIN. *J. pharm. chim.*, 28 (1938), 193–199. (S. W. G.)

Linden—Notes on. By treatment with petrolic ether there was obtained a 0.33% yield of hard, brittle, dark green concrete from fresh linden flowers and 0.915% from dried flowers. Treatment of the concrete by the usual processes gave 32% of absolute from the fresh flowers and 19% from the dried flowers. Steam distillation of the dry-flower absolute yielded 5.7% of yellowish semisolid essential oil with the following characteristics: specific gravity at 15° C. 0.913, optical rotation of 20° C. −3° 20′, refractive index at 20° C. 1.4736, acid value 44.80, ester value 112.22, acetyl number 163.90, soluble in 2 volumes of 90% alcohol with opalescence, soluble in all proportions in 95% alcohol. It reduces ammoniacal silver nitrate and contains oximable compounds; it gives no coloration with bromine in chloroform solution. It possesses a faint flowery odor, perceptible especially at high dilution.—GEORGES IGOLEN. *Rev. marques parfum. France*, 16 (1938) 111–112. (A. P.-C.)

Magnesium—Fractional Determination of, in the Presence of Barium, Strontium and Calcium. Heat the sample in a test tube to 60° to 70° C., add an excess of 5% calcium saccharate solution, and shake the mixture vigorously; a white flaky precipitate shows the presence of magnesium. The test is good in the presence of barium, calcium and strontium, and its sensititivity is 0.2 mg. of magnesium per 5 cc. of the solution. The presence of magnesium in a mixture with salts of barium, strontium, calcium and ammonium can be determined by means of 10% cal-

cium saccharate solution, after removing ammonium salts with formaldehyde. The sensitivity of the test is 1.2 mg. per 5 cc. of the solution. With the formaldehyde method for the decomposition of ammonium salts and by use of ammonium hydroxide for precipitation of magnesium, the sensitivity of the determination of magnesium as magnesium hydroxide in the presence of barium, calcium, strontium and ammonium ions, increased to 0.3 mg. of magnesium per 5 cc. of the solution.—N. A. TANANAÏEV and R. A. LOVI. *J. Prikl. Khim.*, 10 (1937), 1112–1117; through *Chimie & Industrie*, 40 (1938), 37. (A. P.-C.)

Magnesium Carbonate and Magnesium Oxide—Preparation, Composition, Impurities and Use of. Methods of preparation of the compounds are reviewed. Chemical composition of light and heavy magnesias and of the basic magnesium carbonate are given. The following procedure is recommended for the determination of calcium in magnesium carbonate or oxide. Weigh out 5 Gm. of carbonate, or 2 Gm. of oxide into an 800-cc. beaker; mix with 150 cc. of cold distilled water, dissolve in a slight excess of hydrochloric acid, added gradually, and add 20 Gm. of ammonium chloride. Filter and wash if necessary. Now add 5 drops of methyl orange indicator and make slightly alkaline with ammonia. Then add dilute hydrochloric acid drop by drop until just permanently pink. Cool, pour in 100 cc. of a 10% solution of oxalic acid. Finally, neutralize with a good grade of commercial pyridine until the indicator is permanently a neutral color (not full pink)—*i. e.*, the oxalic acid should not be neutralized by the pyridine. After standing two to three hours, filter, dissolve and precipitate twice in the usual manner, then ignite the final precipitate of calcium oxalate to calcium oxide, cool and weigh.—J. S. F. GARD. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 572–581. (S. W. G.)

Manganese—Determination of, in Mineral Waters. The following procedure is recommended: Evaporate a liter of the water to dryness in a tared porcelain dish, and weigh the residue. Add 4 cc. of diluted sulfuric acid, evaporate just to dryness; then take up the residue 4 or 5 times in 50-cc. portions of distilled water, evaporating to dryness each time to eliminate chlorides. To the residue add 10 cc. of distilled water and heat on a water bath taking care to include all adhering particles in the dish. Heat a mixture of 5 cc. of $N/10$ silver nitrate and 5 cc. of a hot saturated solution of potassium persulfate, contained in a small Erlenmeyer flask, on a water bath for 2–3 minutes or until a heavy precipitate of silver is obtained, then immediately transfer the contents of the flask to the porcelain dish on the water bath. A violet color appears at once. Remove the dish from the hot water bath and place it in cold water. Rinse the flask with three 5-cc. portions of cold distilled water adding the rinsings to the mixture in the dish. Cool the mixture to below 15° C., dilute with cold distilled water to about 50 cc. and add 30 cc. of $N/50$ potassium thiocyanate. Let the mixture stand for 20 minutes with frequent stirring. Twenty-five cc. of the thiocyanate reacts with the 5 cc. of $N/10$ silver nitrate to precipitate the silver nitrate-persulfate complex and block the oxidizing action of the silver. Part of the other 5 cc. of the thiocyanate reacts with the permanganate, the excess reacting with any ferric salts present to give a pronounced reddish brown color. Titrate with $N/50$ silver nitrate, using a microburette, until the brown color disappears. The difference, 5 cc. $-$ x, gives the quantity of thiocyanate used up by the permanaganate. 0.1 cc. corresponds to 1 cc. of $N/100$ potassium permanganate or 0.00011 Gm. of manganese. Results of manganese and iron determinations on a series of water samples are tabulated.—G. VAN BENEDEN. *J. pharm. Belg.*, 20 (1938), 853, 871, 889, 907. (S. W. G.)

Menthol—Determination of, in Its Mixtures and Solutions by Measuring Optical Rotation. The menthol content of solutions in light petroleum or benzene, or of melts with paraffin wax, is determined polarimetrically.—A. A. VAGNER. *Mem. Inst. Chem. Ukrain. Acad. Sci.*, 7 (1938), 97–101; through *J. Soc. Chem. Ind.*, 11 (1938), 1362. (E. G. V.)

Mercurimetric Method—Determinations by. *Ammonia and Its Salts.*—Place an accurately measured volume of the solution of ammonia or ammonium salt in a centrifuge tube, add an excess of Nessler's reagent, mix, heat in a water bath at 70–75° for five minutes, then centrifuge. Decant the supernatant liquid, wash the precipitate with three portions of 5% sodium hydroxide solution, centrifuging after each washing. Dissolve the precipitate in sulfuric-nitric acid, transfer to an Erlenmeyer flask and heat under a hood until fumes of sulfur trioxide appear. Cool, dilute with 100 cc. of water, add several drops of 2% solution of potassium permanganate (obtain a faint rose color), then precipitate the mercury with twelve drops of a 10% solution of sodium nitroprussiate. The white precipitate of mercury nitroprussiate is determined volumetrically with $N/10$ sodium chloride, using a microburette and titrating to the complete disappearance of the milky turbidity. The number of cc. of $N/10$ sodium chloride used times the factor 0.000333 gives the amount of ammonia in the sample. This factor is slightly lower than the theoretical factor. The following factors are given: 1 cc. of $N/10$ sodium chloride is equivalent to 0.00101 Gm. of ammonium sulfate; 0.00177 Gm. of ammonium bromide; 0.00263 Gm. of ammonium iodide; 0.00117 Gm. of ammonium sulfate. *Sulfites and Bisulfites.*—The above procedure was followed, using 0.5–2.0 cc. samples containing about 0.8% of sodium bisulfite, and mercurous nitrate solution as the precipitating agent. The precipitation is made in the cold and requires about 15 minutes. 1 cc. of $N/10$ sodium chloride is equivalent to 0.00246 Gm. of sodium bisulfite. The results are practically stoichiometric. *Compounds Containing Mercury.*—Mercuric acetate may be precipitated with sodium nitroprussiate and determined as above. Factor: 1 cc. of $N/10$ sodium is equivalent to 0.0161 Gm. of mercuric acetate. Mercurochrome is treated with 20 cc. of sulfuric acid and 1 Gm. of potassium permanganate for 45 minutes. The final clear solution is diluted to 100 cc., 2% potassium permanganate solution is added until a faint rose color persists, then the determination is completed as above. 1 cc. of $N/10$ sodium chloride is equivalent to 0.0416 Gm. of mercurochrome or 0.01012 Gm. of mercury. Other complex mercury compounds may be treated in a similar manner. *Organic Compounds Which Are Precipitated by Mercury.*—The above procedure is applied to a number of compounds, the factors for which are given as: 1 cc. of $N/10$ sodium chloride is equivalent to 0.00694 Gm. of $K_4Fe(CN)_6.3H_2O$; 0.004 Gm. $K_3Fe(CN)_6$; 0.0145 Gm. $Na_2[Fe(CN)_6NO].2H_2O$; 0.00385 Gm. tartaric acid; 0.0077 Gm. lithium salicylate; 0.0208 Gm. bismuth subsalicylate; 0.02 Gm. luminal; 0.025 Gm. luminal sodium. *Alkaloids.*—The alkaloid is precipitated with Mayer-Valzer reagent, and the procedure given for ammonia is followed. The following factors are given: 1 cc. of $N/10$ sodium chloride is equivalent to 0.0236 Gm. homatropine hydrobromide; 0.0303 Gm. yohimbine hydrochloride; 0.0694 Gm. quinidine; 0.0125 Gm. euquinine.—A. IONESCO MATIU and C. ICHIM. *J. pharm. chim.*, 28 (1938) 417–430. (S. W. G.)

Mercury—Determination of, by Formic Acid. Take 10 cc. of a solution containing about 1% of mercury, in the mercuric state, and precipitate the oxide with sodium hydroxide. Filter off the precipitate and wash thoroughly until free from anions, then heat with 30% formic acid on a water bath for thirty minutes. Filter off the precipitated mercury, wash thoroughly, transfer to a stoppered flask, add a known quantity of solution of iodine in potassium iodide, shake until the mercury is dissolved and titrate the excess of iodine. Other reducible metals, such as copper, which interfere with other methods, do not affect this, as the decomposition products are soluble and are washed away from the mercury.—L. SPITZER. *Ann. chim. applicata Roma*, 27 (1937), 566; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 276. (S. W. G.)

Mercury—Determination of, with *s*-Diphenylcarbazide. The colorimetric method of determining mercury with diphenylcarbazide necessitates a careful control of experimental conditions if accurate results are to be obtained. The reagent should be dissolved in absolute alcohol and a fresh solution should be prepared each day. The intensity of the color developed by the mercury solution is independent of the reagent concentration, if its ratio to the mercury is 2 to 1 or greater. The maximum color intensity is attained within 15 minutes after the addition of the reagent. The solutions must be free from chloride ions. The presence of ammonium ions gives slightly low results. An electrolyte concentration greater than $0.003N$ usually causes the colored mercury compound to precipitate in less than an hour. The color is greatly influenced by the p_H of the solution. A p_H of 3.5 to 4.5 is suitable, but for a given series of comparisons the value must be held constant to 0.3 p_H unit if the error from this source is not to exceed 5%. A satisfactory p_H may be obtained by titration on an aliquot of the sample solution with dilute acetic acid or sodium acetate, using either the glass electrode or bromophenol blue as the indicator. If the foregoing experimental conditions are observed, and the thickness of the solution layer is 10 cm., diphenylcarbazide will determine quantitatively as little as 0.4 mg. of mercury in a liter of solution with a precision of approximately 5%. For quantities ranging from 5 to 50 gamma per 10 cc. the average precision is about 3%. When a colorimeter of the Duboscq type with setting at 20 was used for the observations, the sensitivity was decreased. Precise determinations could not be made on solutions containing less than 0.8 mg. of mercury per liter. No attempt was made to increase the sensitivity in either method by using color filters.—F. W. LAIRD and A. SMITH. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 576–578. (E. G. V.)

Mersalylum B. P.—Determination of. Mersalylum or Salyrgan is the sodium salt of salicyl-(γ-hydroxymercuri - β - methoxypropyl) - amide - O-acetic acid. *Mercury.*—Dissolve about 0.75 Gm. of the sample, accurately weighed, in 5 cc. of water, add 5 cc. of 90% formic acid and boil the mixture on a water bath under a reflux condenser for 3 hours. The white precipitate at first formed redissolves, and gray metallic mercury is formed. It is necessary to boil for some time, since, although the main portion of the mercury is precipitated very rapidly, a quantitative decomposition into mercury is not obtained until about two hours. The condenser is then washed down with warm water to avoid any loss of free acid, which is to be determined later. The mercury is filtered off at the pump, preferably through a sintered glass G 4p filter, and washed with water. The filtrate is retained for the extraction of the free acid. The receiver is then changed, and the mercury dissolved in nitric acid, the vessel being covered with a clock-glass which is later rinsed with water, since there is considerable risk of loss by splashing. The mercury nitrate is run through, followed by water, and a further quantity of nitric acid. Care must be taken to obtain the whole of the mercury in solution, both from the pores of the sinter and any larger globules of the metal which tend to form in this case. Solution of potassium permanganate is then added until a pink color persists, the excess being destroyed by addition of solution of ferrous sulfate. The solution is then titrated with $N/10$ thiocyanate, using 3 cc. of 10% ferric alum solution as indicator. The ammonium thiocyanate should be standardized against pure mercuric oxide, or pure mercury dissolved in nitric acid, using permanganate solution as described above. The above procedure may be applied to the 10% solution of mersalyl, by taking 5 cc. accurately measured, and adding 5 cc. of 90% formic acid, and continuing as above. *Salicylallylamide-O-acetic acid.*—The filtrate from the mercury is shaken with successive quantities of ether until complete extraction of the acid is obtained. Six extractions are sufficient. The ether solutions are washed with the same 10-cc. portion of water, and the ether is removed by evaporation. The residue contains a large amount of formic acid which is driven off by heating on a boiling water bath. The residue is then dried in an oven at 60° C. and finally *in vacuo* over sulfuric acid until the weight is constant.—C. E. WATERHOUSE. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 458–462. (S. W. G.)

Methenamine—Properties of. The solubility of methenamine is given in the French Codex as 100 Gm. in 59 parts of water at 20° C. The author states that not more than 81 Gm. of methenamine will dissolve in 100 parts of distilled water after 1.5–2 hours. The error may be caused by the fact that the solvent action is exothermic. (U. S. P. XI gives solubility as 66.7 Gm. in 100 cc. of water at 25° C.) Methenamine is practically insoluble in anhydrous ether. The solubility in chloroform is given as 1 in 7.46, but this should be 1 in 12. The condensation reaction with beta-naphthol is not specific; precipitates being obtained with formaldehyde, analgesine, phenols and urea.—P. BOUCHEREAU. *J. pharm. chim.*, 28 (1938), 489–490. (S. W. G.)

Microanalysis—Quantitative. VIII. Determination of Phosphorus. A procedure is described for determining 0.5 to 10γ of phosphorus. It has been applied to the determination of the phosphorus content of the blood of a rat. The method depends upon the conversion of phosphorus to phosphoric acid, precipitation as ammonium phosphomolybdate, dissolving the precipitate in a measured volume of sodium hydroxide solution, adding an equal volume of decinormal hydrochloric acid and titrating back to a phenolphthalein end point with decinormal sodium hydroxide. The concentration of the reagents and the procedure are adapted to work with these small quantities and are quite different from those used for determining small quantities of phosphorus in steel, although the principles involved are the same.—R. LINDNER and P. L. KIRK. *Mikrochemie*, 22 (1937), 300–305; through *Chimie & Industrie*, 40 (1938), 235. (A. P.-C.)

Moisture—Toluene Distillation Method for the Determination of, An Improved Technic in the. Satisfactory results are obtained with Bidwell and Sterling's so-called "direct method for water determination" under the following conditions: (1) an apparatus allowing a flow of liquid in the same direction as the flow of vapors must be used; (2) the collecting tube must be rinsed with a strongly alkaline solution before the estimation is begun; (3) liberation of volatile fatty acids must be prevented by the addition of a small quantity of an-

hydrous disodium phosphate.—J. A. DE LOUREIRO. *J. Assoc. Official Agr. Chem.*, 21 (1938), 645–648. (A. P.-C.)

β-Naphthylamine—Two New Colorimetric Indicators Derived from. β-Naphthylamine red, from diazotized naphthylamine and anthranilic acid, is red with acids and yellow with bases. β-Naphthylamine orange, from naphthylamine and sulfanilic acid, is orange-red with acids and yellow-orange with bases. The ammonium salts of methyl red, methyl orange and Congo red are more soluble than their sodium salts.—H. EICHLER. *Chem.-Ztg.*, 61 (1937), 797–798; through *Chimie & Industrie*, 40 (1938), 235. (A. P.-C.)

Nessler's Reagent—Composition of. The existence of the complex $KHgI_3.1.5H_2O$ in Nessler's reagent was confirmed; this complex presumably constitutes the deposit which forms in saturated solutions.—J. AKIYAMA. *J. Pharm. Soc. Japan*, 57 (1937), 178-179; through *Chimie & Industrie*, 40 (1938), 236. (A. P.-C.)

Nipagin and Nipasol—Distinction and Colorimetric Evaluation of. The following procedure is described: Suspend 10 mg. of yellow mercury silver oxide in 1 cc. of concentrated sulfuric acid, add 20 mg. of nipagin (A) or nipasol (B) and place on a boiling water bath. B gives after a minute a clear brownish solution and A, however, changes the coarse yellow suspension into a fine whitish one. After five minutes remove from the bath and dilute with five cc. water. A then produces an almost colorless clear solution while B yields a muddy violet turbid dilution. With 5 cc. of Ehrlich's diazo reagent the dilution of A couples to form a yellow dye while B under the same conditions produces an orange-yellow dye. The color intensity is so great that it is suited for the detection and determination in microsublimates and also the color is sufficiently constant and proportional as to be used in colorimetric evaluation.—PAUL V. AUFSCHNAITER. *Scientia Pharm.*, 11 (1938), 125. (H. M. B.)

Nitroglycerine—Determination of, in Medicinal Mixtures. The high results obtained in certain cases in the previous report (*Pharm. Abs.*, (1938), 221–222) seem to be due to the simultaneous presence of iron and plant extracts. Use of various acids other than sulfuric did not give satisfactory results in presence of this interference. A study was made of the separation of the iron by the A. O. A. C. alcohol aliquot method before making the acid distillation. The technic is described in detail. Although the method seems promising, it is not as yet satisfactory for mixtures containing nitroglycerin in presence of reduced iron and plant extracts. The investigation showed that the tablets may be powdered before assaying without any significant loss of nitroglycerin.—OMER C. KENWORTHY. *J. Assoc. Official Agr. Chem.*, 21 (1938), 541–543. (A. P.-C.)

2-Nitro-1,3-Indandione as a Reagent for Bases. This reagent is not suitable for the detection of all bases. Most frequently the precipitates formed are amorphous; on the other hand, in most cases when crystalline products are obtained, they dissolve too readily. It may be used, however, in 5% solution for the microscopic detection of alypine, berberine, brucine, ephetonine, eucaine A, piperazine, theobromine and the theophylline.—L. ROSENTHALER. *Scientia Pharm.*, 9 (1938), 6; through *Chimie & Industrie*, 40 (1938), 240. (A. P.-C.)

Ointment of Mercuric Nitrate (Citrine Ointment)—Assay of. A method has been devised (technic described in detail) for the determination of mercury in Citrine Ointment N. F. It consists essentially in boiling 2 to 3 Gm. of sample for one to one and a half hours with 40 cc. of 1 + 1 nitric acid, diluting with 30 to 40 cc. of water, filtering, making to 200 cc., adding 7 cc. of nitric acid and 5 cc. of sulfuric acid to a 100-cc. aliquot, heating while adding small successive amounts of potassium permanganate crystals till a dark purple color persists for 3 to 5 minutes while boiling gently (a total of 2 to 5 Gm. may be required), placing on a steam bath with addition of more potassium permanganate if required to give a dark purple color persisting for 15 minutes while on the bath, adding hydrogen peroxide dropwise to the hot solution to destroy excess potassium permanganate and dissolve manganese dioxide, removing from the bath and adding potassium permanganate solution to a faint pink which persists for about 1 minute, adding ferrous sulfate solution dropwise to discharge the color, cooling to 20° C. and titrating with decinormal ammonium thiocyanate (1 cc. = 0.01002 Gm. of mercury) in presence of ferric ammonium sulfate indicator. The method was studied collaboratively with satisfactory results, and its adoption as tentative is recommended.—H. O. MORAW. *J. Assoc. Official Agr. Chem.*, 21 (1938), 579–585. (A. P.-C.)

Organic Reagents in Analytical Chemistry. The properties of 40 organic reagents which form colored compounds or complexes with iron are described as well as the properties of organic substances which react distinctively with other metals.—J. V. DUBSKY and A. LANGER. *Chem. Obzor*, 13 (1938), 78–80, 99–100, 123–124, 144–147; through *Chem. Abstr.*, 33 (1939), 937. (E. G. V.)

Periploca Aphylla—Chemical and Pharmacological Investigation of. Among other substances isolated were a resin alcohol $C_{25}H_{42}O_3$, which melts at 272° to 275° C. and gives an acetyl derivative melting at 188.5° C., a fatty acid, a reducing sugar, a sterol, a bitter substance, a waxlike compound and an uncrystallized glucoside which possesses a marked activity similar to that of pilocarpine.—R. N. CHOPRA, A. T. DUTT, N. R. CHATTERJEE and N. DE. *Arch. Pharm.*, 275 (1937), 192–195; through *Chimie & Industrie*, 38 (1937), 735. (A. P.-C.)

Peppermint Leaves—Preparation of Concentrates and the Extraction of Crystalline Carotene from. One Kg. of dry mint leaves is extracted with petroleum ether (I), a 3:1 mixture of I and ethyl alcohol, 95° boiling ligroin, or $ClCH_2CH_2Cl$. The extract is concentrated to 100 cc. saponified with aqueous-alcoholic potassium hydroxide, washed and dried by passage through a column of sodium sulfate. The evaporated filtrate is washed with hot ethyl alcohol and the residue is taken up in carbon disulfide or dry benzene and treated with five volumes of ethyl alcohol, precipitating some dark impurities. This precipitation is repeated until no more material separates out. This gives a pure concentrate of I, from which crystals can be obtained by keeping in the cold for ten days.—S. D. BALAKHOVSKII and G. N. ROSENBERG. *Bull. biol. med. exptl. U. R. S. S.*, 5 (1938), 521–522, (in French); through *Chem. Abstr.*, 33 (1939), 2653. (F. J. S.)

p_H—Rôle of, in Qualitative Analysis. Determination of the acidity or alkalinity of the solution to be analyzed by means of litmus paper is not sufficiently accurate; it is necessary to determine the p_H with an accuracy of 1 to 0.5 unit. This is readily done by means of buffer solutions and a series of indicators; methyl violet, dimethyl yellow, methyl orange, methyl red, phenol red, phenolphthalein and thymolphthalein.—N. A. TANANAÏEV and S. I. SCHNEIDERMANN. *J. Prikl. Khim.*, 10 (1937), 924–931; through *Chimie & Industrie*, 40 (1938), 36. (A. P.-C.)

Phenacetin—British Pharmacopœia Test for Readily Carbonizable Substances in. The authors point out that the test for carbonizable substances is entirely nonspecific, and give the results of their

study of the relation of the test to the impurities in phenacetin. An impurity was isolated as an orange-yellow liquid, $C_{11}H_{16}NO_2$, of which the merest trace gave an intense orange coloration with sulfuric acid. The test detects this impurity at very great dilution since no measurable quantity is obtained from 250 Gm. of phenacetin complying with the Pharmacopœial limit; its occurrence in commercial grade phenacetin was much less than 0.04%, while from 35 Gm. of the commercial tar (by-product in manufacture of phenacetin from *p*-phenetidine by acetylation with acetic acid) examined only 0.05 Gm. of the impurity was obtained. It appears that the possibility of phenacetin B. P. being seriously contaminated with this impurity is remote. The sulfuric acid test may be negative even if a relatively large amount of tarry matter is present if the coloring impurity is absent. The authors therefore suggest that the limit test "for readily carbonizable substances" be replaced by a more comprehensive limit of tarry matter, for which a simple solubility test should suffice, *e. g.*, dissolve 2.5 Gm. in 50 cc. of alcohol (95%) by heating, cool to 15° C., when the solution should be colorless, when viewed in a Nessler cylinder. The impurity isolated may be formed by the action of atmospheric oxygen and acetic acid upon some impurity in the commercial *p*-phenetidine.—J. L. PINDER and P. F. R. VENABLES. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 478–488. (S. W. G.)

Phenazone—Detection and Determination of, in Amidopyrine. As a qualitative test, about 0.1 Gm. of the amidopyrine suspected to contain phenazone is mized with double its weight of powdered ammoniated mercury; the mixture is suspended in water, boiled for some minutes and filtered. If phenazone is present the filtrate (1) gives with hydrogen sulfide a precipitate, at first pale, which rapidly turns brown and then black, (2) gives a whitish precipitate with dilute potassium iodide, soluble in excess, (3) in the presence of excess of potassium iodide decolorizes an aqueous solution of iodine. For quantitative determination 0.2 Gm. is dissolved in a large beaker in 400 cc. of water and 0.5 Gm. of ammoniated mercury, in fine powder, is added. The mixture is boiled for a few minutes, cooled and filtered, washing the residue and adding the washings to the filtrate. Then 8 to 10 Gm. of potassium iodide are dissolved, a few cc. of starch mucilage are added and the liquid titrated with *N*/10 iodine. One cc. of *N*/10 iodine represents 0.0125 Gm. of phenazone. If the proportion of phenazone present is large the amount taken for the test should be reduced to 0.1 Gm. as, if there is more than 0.03% of phenazone present in the liquid, the results will be low.—ANON. *Ann. chim. applicata*, 28 (1938), 170; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 769. (S. W. G.)

Phenolphthalein—Detection of Small Amounts of. A suspension of 0.5 to 1 Gm. of the powdered sample in 20 cc. of a freshly prepared solution of sodium bicarbonate is shaken in a separatory funnel three times with ether, using 25 cc. for the first and 15 cc. for each subsequent extraction. The combined ethereal extracts are washed and evaporated to dryness. The residue, containing phenolphthalein and the anthraquinone derivatives originally present, is dissolved in 20 cc. of 10% potassium hydroxide and the red to purple solution is oxidized by successive additions of 30% hydrogen peroxide, preferably in a beaker or a porcelain casserole, heating gently over a low flame. An Erlenmeyer flask should not be used for this process, because of foaming and a tendency of the alkaline solution to creep. The solution is allowed to settle in the cold. A purplish sediment of alkali salts of anthraquinone derivatives if present, is removed, and the alkaline solution is cooled with ice and acidified with an excess of dilute sulfuric acid. Effervescence and a change of color to colorless or yellow take place. The solution is extracted with three successive portions of ether, using 20, 15 and 15 cc., respectively. The combined ethereal extracts are washed and evaporated first in a casserole to a small volume at room temperature and finally to dryness in a Pyrex tube surrounded with water at about 60°. The residue in the test tube is heated with an excess of resorcinol in a metal bath at 180° to 200° for 20 minutes, or at boiling temperature for five minutes over a small flame. No condensing agent is used. The resulting melt is dissolved in about 5 cc. of potassium hydroxide diluted with water. According to the quantity of phenolphthalein present in the original sample, a more or less pronounced green fluorescence will be observed. The presence of from 5 to 10 gamma of phenolphthalein in the original mixture can be detected by this procedure. Cascara sagrada tablets to which succinic acid and oxalic acid had been added gave negative fluorescence tests.—E. H. MAECHLING. *Ind. Eng. Chem. Anal. Ed.*, 10 (1938), 586. (E. G. V.)

Phlorizin—New Color Reaction of. To 2 cc. of a solution containing 0.5 to 500 mg. of phlorizin per liter add one drop of a 1% solution of α-nitroso-β-naphthol and 3 drops of nitric acid (specific gravity 1.4). Heat to boiling, cool quickly, add 1 cc. ethanol and 2 to 3 cc. of ether and shake. The red color is not stable and does not follow the Beer-Lambert law, hence determinations in the ordinary colorimeter are not possible. Approximate estimations can be made in the Lovibond colorimeter.—A. LAMBRECHTS. *Compt. rend. soc. biol.*, 124 (1937), 263–264; through *Chimie & Industrie*, 38 (1937), 667–668. (A. P.-C.)

Phosphate—Determination of, by Molybdomanganimetry. The author describes the procedure in detail. The method is similar to that generally used for determination of copper, iron, magnesium, molybdenum, etc., and is adapted for phosphate determination as follows: Precipitate as ammonium phosphomolybdate, dissolve the precipitate in diluted sodium hydroxide solution, reduce the molybdate with zinc in acid medium, and titrate the molybdenum sesquioxide with potassium permanganate. Procedures are given for the determination of total phosphorus in blood, and the different acid-soluble fractions of phosphorus.—L. THIVOLLE. *Bull. biologistes Pharm.*, 42 (1938); through *J. pharm. Belg.*, 20 (1938), 961. (S. W. G.)

Plasters—Analysis of. Presence of Zinc Resinates in Caoutchouc Plasters of Zinc Oxide. Weigh a portion of the plaster having a surface of 500 sq. cm. Extract with benzene, using a bent rod to work the plaster and using the smallest possible amount of solvent. Dry and weigh the cloth; the loss in weight being the weight of the plaster mass. Combine the benzene extracts and washings in a cyclindrical container, add an equal volume of 99% alcohol, mix and let stand. The caoutchouc and zinc oxide are precipitated. Decant the supernatant liquid, suspend the caoutchouc in benzene and precipitate again with alcohol. Decant the supernatant liquid, combine the two decanted portions and filter (Solution I). *Determination of Caoutchouc and Free Zinc Oxide.*—Treat the above precipitated mixture again with a little benzene, transfer the solution to a decantation flask which has been rinsed with alcohol containing a little benzene. Add a slight excess of alcoholic hydrochloric acid (calculate on basis of 25% zinc oxide) a little at a time, and enough alcohol to dissolve the zinc chloride formed without precipitating the caoutchouc. When all the zinc oxide has reacted, add enough alcohol (99%) to completely precipitate

the caoutchouc. The zinc is determined in the supernatant liquid by evaporating to dryness, dissolving in water, precipitating as zinc carbonate, igniting to the oxide and weighing. The mass of caoutchouc is transferred to a tared crystallization dish which is kept under reduced pressure until the solvent has been removed. The final weight is not exact as it is difficult to obtain constant weight. *Determination of Solid Constituents.*—The Solution I (above) is made just alkaline to phenolphthalein with alcoholic potassium hydroxide. Evaporate to dryness to remove the alcohol, add diluted hydrochloric acid and ether. Separate and wash the ethereal and aqueous solutions. To the aqueous solution add sodium carbonate and determine the precipitated zinc carbonate as above. This gives the combined zinc in the plaster. The ethereal solution is extracted with 1% sodium hydroxide solution several times, then washed with water. The ethereal solution is then dried with sodium sulfate and evaporated to dryness to give the "neutral fraction." The alkaline solutions are combined, extracted with ether, acidified with hydrochloric acid and extracted with ether. The ethereal layer is dried with sodium sulfate and evaporated to dryness to obtain the "acid fraction."—G. DILLEMANN. *J. pharm. chim.*, 28 (1938), 344–355. (S. W. G.)

Potassium—Determination of Small Amounts of. To 1.5 cc. of 95% ethyl alcohol in a 15-cc. centrifuge tube add a 5-cc. aliquot of the potassium solution. Mix thoroughly. Add dropwise with continuous shaking, 2.0 cc. of the precipitating reagent. Allow to stand for 1 hour at a temperature of from 20° to 25°. Centrifuge for about 10 minutes at about 2000 r. p. m., so that the precipitate is firmly packed in the bottom of the tube. Pour off the supernatant liquid and allow the tube to drain for about 5 minutes. Wash the precipitate with 5 cc. of 70% alcohol, breaking up the bulk of the precipitate by forcing the wash solution in a fine stream from a pipette. Centrifuge for 5 minutes and drain as before. Dry the precipitate for $^1/_2$ hour at 80° to 85° to remove all the alcohol. Add 5 cc. of the ceric sulfate reagent and 1 cc. of 1 to 1 sulfuric acid. Heat in a water bath at 90° to 100° until all the precipitate is oxidized, as indicated by its disappearance (usually within about 5 minutes). Maintain an excess of ceric sulfate throughout the reaction (5 cc. of 0.02*N* ceric sulfate are sufficient for precipitates containing no more than 0.5 mg. of potassium). Cool to room temperature and titrate the excess ceric sulfate with ferrous ammonium sulfate, using one drop of *o*-phenanthroline ferrous complex as indicator. The end point is very sharp, the color of the solution changing from pale blue to red.—D. S. BROWN, R. R. ROBINSON and G. M. BROWNING. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 652–654. (E. G. V.)

Potassium Bromide with Caffeine—Effervescent, Analysis of. A method has been developed (technic described in detail) and studied collaboratively. It consists essentially in dissolving 3 Gm. of sample in 50 cc. of water in a 250-cc. Erlenmeyer flask, acidifying with nitric acid (adding 5 cc. excess), adding 30 cc. of decinormal silver nitrate and 2 cc. of an 8% solution of ferric ammonium sulfate and titrating with decinormal ammonium or potassium thiocyanate (1 cc. decinormal silver nitrate = 0.01190 Gm. of potassium bromide); dissolving 15 Gm. in 50 cc. of water in a separatory funnel, making basic to litmus with 5% sodium hydroxide solution, extracting with three 50-cc. portions of chloroform, evaporating the solvent, drying at 80° C. and weighing anhydrous caffeine. Attention is drawn to the precautions required in carrying out the method. The results were satisfactory and adoption of the method as tentative is recommended.—H. G. UNDERWOOD. *J. Assoc. Official Agr. Chem.*, 21 (1938), 571–575. (A. P.-C.)

Pyridium—Determination of. Low results which had previously been obtained in the determination of pyridium in ointment are shown to have been due to partial decomposition of the pyridium by strong hydrochloric acid during the evaporation of the acid washings on the steam bath. To avoid this decomposition, instead of evaporating the combined acid washings they were made ammoniacal and extracted with chloroform, and the chloroform extract was evaporated; on dissolving the residue in dilute hydrochloric acid and titrating with titanium chloride in the usual manner, theoretical results were obtained. The technic of the modified method is described in detail in *J. Assoc. Official Agr. Chem.*, 21 (1938), 94–95.—HARRY J. FISHER. *J. Assoc. Official Agr. Chem.*, 21 (1938), 552–554. (A. P.-C.)

Rotenone—Titrimetric Step in Determining. The carbon tetrachloride solvate obtained from extraction of the root and crystallization at 0° is filtered and washed by suction. Then, without further drying, it is dissolved in about 25 cc. of acetone in a 250-cc. flask. This is readily accomplished by placing the crucible in a funnel and washing the contents through into the flask with small lots of acetone. The solvent is evaporated completely on the steam bath. The residue is treated with 10 cc. of 80% (by volume) dichloroacetic acid and warmed gently until the residue just dissolves. The solution is then cooled in an ice-bath for a few minutes, 10 cc. of cold water are then added slowly with swirling, a few seed crystals of rotenone dichloracetic acid solvate are added, and the flask is again cooled in the ice bath for 2 or 3 minutes. Separation of a few small needle crystals will usually be noted at this point. If not, water is added a drop or two at a time, with intermittent cooling, until a few crystals are noted. Water is then added 10 to 15 drops at a time, with about one minute's cooling between additions, until 25 cc. have been added, then 25 cc. more are added dropwise and the solution is again cooled, and finally 50 cc. are added more rapidly and the solution is again cooled. The material is filtered through a Gooch crucible, with filter paper, and washed with about 250 cc. of water in small portions. The outside of the crucible is washed with water and the contents are dissolved in 25 cc. of chloroform. This solution may be accomplished by placing the crucible and contents in a beaker, adding the chloroform, and leaving the crucible in the beaker during the titration. To the chloroform solution 50 cc. of freshly boiled water are added, and the mixture is titrated with 0.1*N* alkali, with phenolphthalein as indicator. The mixture must be thoroughly agitated, particularly near the end point, to ensure that all the acid is extracted from the chloroform layer. Each cc. of 0.1*N* alkali is equivalent to 39.4 mg. of rotenone. A blank should be run on the chloroform used. The usual allowances for added rotenone and for solubility in carbon tetrachloride are made—any rotenone added in the original crystallization is subtracted from the result, and 0.07 Gm. is added to allow for solubility in the 25 cc. of carbon tetrachloride used.—H. A. JONES. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 684–685. (E. G. V.)

Salicylic Acid and Salicylates—Determination of, in Pharmaceutical Preparations. The general method is to extract the salicylic acid (with salicylates, liberated by acidification) with ether and to titrate the separated acid in aqueous ethyl alcohol solution with 0.1*N* potassium hydroxide. Variations of this method (for example, water distillation of the acid) for various types of pharmaceutical preparations are described.—D. PONTE. *Boll. chim.-farm.*, 77 (1938), 457–459; through *J. Soc. Chem. Ind.*, 57 (1938), 1228. (E. G. V.)

Salt. The first photographs obtained from the salt mines of the Retsof Mining Corporation at Retsof, N. Y.—DAVID DEUTSCH. *Am. Drug.*, 99, No. 2 (1939), 34. (E. V. S.)

Santonin—Note on the Extraction Method for, in Mixtures. The following method is convenient for the direct gravimetric determination of santonin in liquid preparations containing emodin and other plant extractives, and can be applied to other mixtures: Make an accurately measured portion slightly acid with hydrochloric acid, extract with portions of chloroform to complete removal of santonin; if necessary evaporate the chloroform to about 100 cc.; shake with 20 cc. of 10% sodium hydroxide, separate, wash with 20 cc. of water, filter the chloroform through cotton or filter paper into a tared beaker; wash the sodium hydroxide and wash water with 25 cc. of chloroform and add to the main portion of chloroform; evaporate, dry at 100° C. for 30 minutes and weigh; determine the melting point of the residue to ascertain whether it is pure santonin. The residue may be further purified by treating with barium hydroxide solution, filtering and re-extracting the santonin after acidification; neutral substances or oils can be removed by extracting the alkaline solution of santonin with chloroform before acidification.—IRWIN B. SHUPE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 515. (A. P.-C.)

Santonin, Phenolphthalein and Calomel—Determination of, in Tablets. Further collaborative study of the previously described method (*Pharm. Abs.*, 4 (1938), 224–225) still showed high results for phenolphthalein; and it is concluded that the method as written is subject to factors difficult to control with any certainty. Modifications of the method will be studied.—HARRY J. FISHER. *J. Assoc. Official Agr. Chem.*, 21 (1938), 531–533. (A. P.-C.)

Shellac—Note on the Basicity and Molecular Weight of. The basicity and the molecular weight of the two main constituent resin acids of shellac, *viz.*, the pure lac resin and the soft resin of the lac, have been ascertained from a study of their behavior with caustic alkali. An acid potassium salt of the pure lac resin has been isolated by partial neutralization of the resin with caustic potash and its properties studied.—S. R. PALIT and G. N. BHATTACHARYA. *J. Indian Chem. Soc.*, 16 (1939), 258. (F. J. S.)

Silver Salts—Micro-Crystalloscopic Reactions of Organic Anions of Insoluble. Some acids like oxalic (dilute solution) or fumaric (saturated solution) give micro-crystalline precipitates when treated with silver nitrate solution (about 3%). Acids of the acetic acid series require the presence of ammonia to form crystalline precipitates with silver nitrate. *Procedure for Volatile Acids.*—Place several drops of the sample (formic, acetic, propionic, butyric acids) in a small flat-bottomed cylinder 15–20 mm. in height and diameter, add a droplet of ammoniacal silver nitrate reagent and cover with a glass plate. Examine under a magnification of 150–200 diameters as soon as a deposit is noticeable, observing the formations along the border. *Procedure for Less Volatile Acids.*—Add a droplet of a 5–10% aqueous solution of the acid or salt to a drop of ammoniacal silver nitrate reagent. In the case of a very weak solution of the acid to be identified, supersaturate the solution with ammonia and evaporate at a low temperature. Treat the residue with one drop of ammoniacal silver nitrate reagent. Crystals obtained with formic, acetic, propionic, mono-chloroacetic, *o*-butyric and *iso*-butyric acids are illustrated. —G. DENIGÈS. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 173–179. (S. W. G.)

Sodium—Colorimetric Determination of, in Plant Ashes. Sodium is precipitated as triple zinc uranyl acetate and subsequently determined after reaction with potassium ferrocyanide. Phosphorus and iron are removed from test solutions by calcium hydroxide and potassium is eliminated as potassium chlorate.—E. STOLZE. *Bodenk. Pflanzenernahr.*, 8 (1938), 217–225; through *J. Soc. Chem. Ind.*, 11 (1938), 1344. (E. G. V.)

Sodium Bicarbonate of the Swiss Pharmacopœia—Difference of, from Sodium Bicarbonate with an Inadmissable Amount of Soda by the Phenolphthalein Test. The test as described in the Swiss Pharmacopœia for detecting inadmissable amounts of sodium carbonate in sodium bicarbonate is entirely inadequate since the purest sodium bicarbonate will give a positive test. The author suggests the following modified test for the presence of 0.5% of sodium carbonate in sodium bicarbonate: In a 50-cc. Erlenmeyer flask mix 15 cc. of saturated aqueous sodium chloride solution with 2 Gm. of sodium bicarbonate. Gently swirl the contents and allow it to stand for 2 minutes at room temperature. Mix the contents again by swirling and then pour, all at once, onto a filter of 9 cm. diameter and collect the filtrate in a 50 cc. graduated cylinder. The filtrate is made up to 25 cc. with recently boiled and cooled distilled water, mixed by twice inverting the cylinder and then treating with 0.1 cc. of 1% alcoholic solution of phenolphthalein and mixed well. The mixture is immediately observed from above against a white back ground. Sodium bicarbonate with no sodium carbonate shows no color, whereas sodium bicarbonate containing 0.5% sodium carbonate gives a definite rose color. Somewhat similar directions are given in detail for detecting the difference between sodium bicarbonate containing 2.0% and 2.5% sodium carbonate.—T. SABALITSCHKA. *Pharm. Acta Helv.*, 13 (1938), 138. (M. F. W. D.)

Sulfanilamide—Microscopic Identification of. Place a drop of benzaldehyde on a microscope slide and stir in about 1 mg. of powdered sulfanilamide; stir the mixture occasionally for about 1 minute or until the reaction product appears, then examine under the microscope at 100X. The reaction product appears as small smooth plates having the outline of a parallelogram, which grows to a good size within several minutes. The parallelograms have an acute angle of 68° and an obtuse angle of 112°. Place a drop of cinnamon oil on a microscope slide, stir in about 1 mg. of sulfanilamide and examine under the microscope at about 100X, using strictly axial illumination. After several minutes the reaction product appears in the form of plate-like crystals. As the plates rotate they disappear from view when the flat faces are presented to the observer and exhibit maximum visibility or "relief" when the crystals present an edge view to the observer.—MORRIS L. YAKOWITZ. *J. Assoc. Official Agr. Chem.*, 21 (1938), 351. (A. P.-C.)

Sulfate Titration—Use of Tetrahydroxyquinone in a Semimicro Method. Description of the standardization procedure essentially outlines the method. The barium chloride solution is standardized conveniently by titration against 1 cc. of 0.1*N* sulfuric acid accurately measured with an Ostwald pipette into a 50-cc. beaker. After neutralization with 0.1*N* sodium hydroxide and addition of 2 cc. of ethanol, the barium chloride is added from the Koch pipette. As the end point is approached, samples of the well-stirred mixture are transferred (at 0.01-cc. titration intervals) with a small glass rod to droplets of the indicator solution on a suitable spot plate until a droplet turns definitely pink almost immediately. Under these conditions, a blank of 0.01 to 0.02 cc. is deducted. The approximate end point is previously estimated, or, in the case of unknowns, is determined by preliminary titration. Thus, only 3 to 5 droplets need be removed from a

total volume of approximately 5 cc., just before the end point is reached in the final titrations. Even with the inclusion of preliminary titrations, a marked economy in tetrahydroxyquinone is effected as compared with internal use of the indicator. The method greatly facilitates the direct titration of small amounts of sulfate ion in certain washed samples containing organic constituents.—W. A. PEABODY and R. S. FISHER. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 651–652. (E. G. V.)

Sulfur—Organic, Determination of. Approximately 0.5 Gm. of sample is accurately weighed into a suitable glass mortar; 2 Gm. of a 1:1 mixture of sodium carbonate and cobalt oxide are added, and the whole is ground together. The sample and combustion mix are transferred to a suitable steel combustion boat by means of a camel's hair brush, and covered with a layer of anhydrous sodium carbonate. Having introduced the charged combustion boat into the tube and assembled the apparatus, a gentle stream of hydrogen is turned on, and the medium flame of a Bunsen burner is placed beneath the end of the boat away from the oxygen inlet. Within two minutes the sample begins to glow; at this point the flame is removed, and the progress of the combustion is regulated by the rate of the oxygen flow. After 5 minutes the glow will have traveled the length of the boat and the combustion is complete. Occasionally the charge actually ignites; this does no harm, though considerable carbon may be deposited in the outlet tube. After cooling the oxygen stream is turned off, and the combustion boat and contents are introduced direct into the 600-cc. beaker. The charge is dissolved with the aid of a stirring rod and the boat removed after rinsing. The contents of the beaker are carefully acidified with hydrochloric acid, a few cc. of bromine water are added, the solution is heated to boiling, the bromine is driven off, and the solution is filtered. The sulfate is precipitated from the hot filtrate with barium chloride in the usual manner.—G. H. YOUNG. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 686. (E. G. V.)

Sulfur—Reaction of Free. The following qualitative test is given: Dissolve the sulfur in several cc. of pyridine and add sodium hydroxide solution drop by drop until the maximum color is obtained. The reaction may be modified as follows: Mix the trace of sulfur with 1–2 cc. of sodium hydroxide solution, cautiously add 1–2 cc. of pyridine in such a manner as will form a layer, then swirl very gently. If the color remains green, further careful addition of pyridine will give a blue color. Four layers may then be observed: colorless alkali, a definite yellow band, a green band and a blue band. The blue color is not stable; it fades rapidly and finally disappears. The reaction is sensitive to 0.005 mg. of sulfur.—L. VAN ITALLIE. *J. pharm. chim.*, 29 (1939), 97–100. (S. W. G.)

Synthetics—Microchemical Tests for the Identification of. Collaborative tests for the identification of acetylsalicylic acid (addition of 5% silver nitrate solution to the drug dissolved in 2% triethanolamine), salicylic acid (addition of 5% silver nitrate solution to the drug dissolved in 2% triethanolamine, addition of bromide-bromate solution or lead triethanolamine solution to the dry powder), and benzoic acid (addition of 5% silver nitrate solution to the drug dissolved in 2% triethanolamine, addition of zinc pyridine solution or of lead triethanolamine solution to the dry powder) gave satisfactory results, and adoption of the tests as tentative is recommended. The preparation of the reagent, technic of the tests and description of the crystals are given in detail in *J. Assoc. Official Agr. Chem.*, 21 (1938), 93–94.—IRWIN S. SHUPE. *J. Assoc. Official Agr. Chem.*, 21 (1938), 528–529. (A. P.-C.)

Tellurium—Identification and Microdetermination of. Application to Toxicologic Studies. The following procedure is recommended: Place 1 cc. of the sodium tellurate solution (0.1–0.01 mg. per cc.) in a tube, add 2 cc. of hypophosphite-sulfuric acid reagent (crystalline sodium hypophosphite 100 Gm., distilled water 200 cc., sulfuric acid 150 cc.), heat the mixture, while shaking, in a Bunsen flame just to boiling. Remove from the flame and add about 20 drops of hydrochloric acid, holding the pipette against the wall of the tube. Examine the juncture of the liquids against a white background. With amounts down to 0.01 mg. of tellurium a definite ring appears immediately. With smaller amounts, heating the juncture of the liquids in the flame again, will cause the formation of the ring with amounts down to 0.004 mg. The tellurium should be oxidized to its highest state by treating with sulfuric acid and permanganate, adding the latter drop by drop until a rose color persists. If iron is present a yellow ring will obscure that formed with tellurium, but gentle heating will cause the yellow ring to disappear leaving the characteristic ring formed with tellurium. Selenium interferes and should be removed. Heating mixtures containing the different compounds, after addition of the sulfuric acid reagent, in a boiling water bath gives precipitates after the following periods: selenium, 3 minutes; bismuth, 5 minutes; antimony, 15 minutes; arsenic, 20 minutes; tellurium, at least two hours. Arsenic forms a brownish black ring on addition of the sulfuric acid reagent, but on addition of the hydrochloric acid a second distinct slate gray ring of tellurium appears. Bismuth should be removed by passing a current of hydrogen sulfide into the slightly acidified solution; bismuth is precipitated, while the tellurate remains in solution. Antimony may be removed after addition of the sulfuric acid reagent by heating the mixture in a boiling water bath for one-half hour; the antimony is completely precipitated and the tellurium remains in solution. Comparison with a series of standards enables the quantitative determination of tellurium. Sulfate, phosphate and calcium ions do not interfere. The reaction may also be used to detect amounts of arsenic down to 0.002 mg. Rings obtained with different amounts of tellurium and mixtures of tellurium and iron are illustrated.—L. VIGNOLI and A. BEN KHALED. *J. pharm. chim.*, 29 (1939), 148–158. (S. W. G.)

Thallium—Toxicological Detection of. A weighed amount of the organic material is oxidized in the usual way with hydrochloric acid and potassium chlorate, and the mixture is filtered through glass wool, the filter being washed with hot water. The liquid is made up to 100 or 250 cc. and filtered; 90 or 225 cc. of this liquid is shaken out five times with ether to extract the thallium trichloride. The aqueous liquid is treated with chlorine and again shaken out twice with ether. The ethereal solution is transferred to a flask, evaporated to dryness and the residue is heated with a few drops of sulfuric acid, followed by nitric acid and hydrogen peroxide to destroy all organic matter. The liquid is then evaporated almost to dryness, diluted with water, and evaporated again. The residue is dissolved in water, transferred to a small glass dish and concentrated to a small volume. It is then made slightly alkaline with ammonia and treated with excess of potassium iodide. After standing overnight the precipitated thallous iodide is collected on a Gooch crucible, washed with a little water and alcohol, dried and weighed. If the amount of thallium present is less than 1 mg., the thallium is precipitated in a volume of about 1 cc. in a centrifuge tube, and the precipitate is separated and washed by centrifuging. The thallium iodide is treated with two drops of sulfuric acid, followed by 1 cc. of water, two drops of sodium

nitrite solution (10%) and 0.5 cc. of chloroform. The mixture is well shaken, transferred to a serum tube, and the color of the chloroformic solution of iodine is compared with standards containing known amounts of iodine.—H. KLUGE. *Z. Untersuch. Lebensm.*, 76 (1938), 156; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 775. (S. W. G.)

Theobromine—Determination of, in Theobromine-Calcium Tablets. Boie's method for the acidimetric determination of theobromine in combination with various salts is accurate and much less time consuming than Emery and Spencer's periodide method. The method (technic described in detail) is based on the fact that silver nitrate reacts with theobromine to form insoluble silver theobromine and liberate nitric acid. The sample is put in solution, the acidity is adjusted, silver nitrate is added and the liberated nitric acid is titrated with decinormal sodium hydroxide. The method with a few modifications is applicable to theobromine alkaloid, to its salts with calcium salicylate (theocalcin), and to the latter in combination with excipients ordinarily used in tablets. Experiments indicate that it is applicable to theophylline and its salts. Collaborative study of the method gave satisfactory results, and its adoption as tenative is recommended. —P. S. JORGENSEN. *J. Assoc. Official Agr. Chem.*, 21 (1938), 555–557. (A. P.-C.)

Theophylline Sodium Salicylate—Quantitative Determination of. Attempts to determine theophylline in combination with sodium salicylate by the U. S. P. assay for theophylline or theophylline sodium acetate were unsuccessful because methyl salicylate is formed in the methylation procedure. The Stevens and Wilson method was unsatisfactory when used directly because the end point was masked by the salicylic acid on addition of the ferric alum indicator. It is therefore necessary to effect complete separation of the components. Two methods were studied collaboratively: (1) a gravimetric method in which the salicylate is removed by means of a solvent consisting of carbon tetrachloride and ether and determined by the A. O. A. C. bromine method, the theophylline in the remaining acid solution being extracted with chloroform-alcohol solvent and weighed; (2) a volumetric method which is a modification of the Stevens and Wilson method, in which theophylline is determined by titration of the unconsumed silver nitrate in the filtrate, which is previously shaken out with chloroform-alcohol solvent to remove the salicylic acid. The two methods gave concordant and satisfactory results when applied to the pure product. The volumetric method is more rapid, but it is considered that the gravimetric method is useful as an alternative method. Results obtained when the method was applied to sample containing excipients showed that further study of the methods is necessary.—M. HARRIS. *J. Assoc. Official Agr. Chem.*, 21 (1938), 587–593. (A. P.-C.)

Viridone—Analysis of. Viridone, the bisulfite compound of 1:2-NO.$C_{10}H_6$.OH, may be determined iodometrically.—R. D. SCHTSCHERBATSCHEV and A. J. BASCHKIROVA. *Za Rekons. Textil Prom.*, 14 (1935), No. 7, 42–44; through *J. Soc. Chem. Ind.*, 11 (1938), 1265. (E. G. V.)

Vitamin A—Assay of Preparations Containing. The following procedure is proposed for the determination of vitamin A and the differentiation between the vitamin and carotene. Note the color of the preparation. An intense yellow-red color generally indicates the presence of carotene. To 0.5 cc. of a solution of the sample in chloroform add 2 drops of acetic anhydride and 5 cc. of 20% solution of antimony trichloride in chloroform. A more or less intense blue color appears immediately. This color may show the following characteristic changes: (1) If the color is formed with carotene, the blue will persist without fading. (2) If the color is formed with vitamin A, the blue will fade rapidly (in 2 to 5 minutes). If the blue color fades rapidly at first then remains constant, a mixture of carotene and vitamin A is present. (3) If the blue color gives way to a red, carry out the following procedure: To 1 cc. of the sample add 1 cc. of sodium hydroxide solution and 10 cc. of water. Heat in a water bath until solution is effected, transfer to a separatory funnel and extract with 20 cc. of ether. Evaporate the ether layer to dryness, dissolve the residue in 1 cc. of chloroform and proceed as above. If the red color does not appear, the above interpretations may be applied. If the red color does appear it will form slowly. The red color is caused by the presence of sterols.—Y. RAOUL and P. MEUNIER. *J. pharm. chim.*, 29 (1939), 112–118. (S. W. G.)

Vitamin A—Study of the Determination of, by Spectrophotometry and by Photoelectric Colorimetry. A comparison has been made of the determination of vitamin A in cod liver oils and concentrates of vitamin A by means of extinction coefficient measurements at 3280 Å. and by photoelectric colorimetry. The methods are shown to yield results of equal accuracy, but with cod liver oils special precautions have to be taken in the preparation and purification of the unsaponifiable fraction. No significant difference was found between the means of the quotients, blue value/E value, for low-potency cod liver oils and those for concentrates. The estimation of vitamin A by direct spectrophotometric measurements before and after its destruction by intense ultraviolet irradiation has been investigated. The conditions are described which permitted the complete destruction of vitamin A in a concentrate with apparently no significant effect on the other absorbing constituents of the oil except carotene. The residual absorption after irradiation amounted to about 5% of the initial absorption. With cod liver oils the values obtained by this method are 20 to 30% lower than those obtained by absorption measurements on the unsaponifiable fraction. The results obtained with the concentrate indicate that a correction may be applied which reduces the discrepancy to about 10 to 15%.—W. D. MCFARLANE and A. J. SUTHERLAND. *Can. J. Research*, 16B (1938), 421–431; through *Chem. Abstr.*, 33 (1939), 2935. (F. J. S.)

Vitamin B_1 Assay by a Rat-Curative Procedure. The method described is based on the technic of Smith (*U. S. Pub. Health Rept.*, 45 (1930), 116). With a view to inducing polyneuritis in all the test animals, the basal diet was modified to make it more complete except for vitamin B_1 and consisted of: sucrose 61.25, purified casein 18.0, salts I (described in the U. S. P. XI under vitamin A assay) 4.0, cod liver oil 2.0, autoclaved yeast 4.0, autoclaved peanuts 10.0, purified liver extract 0.75%. The method of preparation of the ingredients of the ration is described and the reasons for the modifications are explained. These diet changes make possible the use of the same test animal for repeated curative tests, and it is shown that the length of the period of curative response in each animal is proportional to the quantity of vitamin B_1 in the test dose administered. The procedure is dependent on the production of an uncomplicated deficiency syndrome in the test animal.—O. L. KLINE, C. D. TOLLE and E. M. NELSON. *J. Assoc. Official Agr. Chem.*, 21 (1938), 305–313. (A. P.-C.)

Yperite—Detection of. The usual alkaloid precipitating reagents, more particularly Dragendorff's and Mayer's, can be used for detecting yperite; the sensitiveness in both cases, however, is less than with Grignard's reagent. Dragendorff's reagent can detect 0.13 Gm. of yperite per liter of alcohol;

Mayer's reagent, 0.8 Gm.; Grignard's reagent, 0.08 Gm.—J. KÖKL and V. KARHANEK. *Chem. Obzor.*, 12 (1937), 134; through *Chimie & Industrie*, 40 (1938), 261. (A. P.-C.)

PHARMACOGNOSY

A. VEGETABLE DRUGS

Cascara Bark—Quality of, from Kenya. Comparative physiological tests on an extract prepared from cascara bark from Kenya (water 8.6%, aqueous extract 23.3, ash (on dry bark) 6.9%) showed that 2 drachms of the extract was approximately equivalent in laxative efficiency to 1.5 drachms of the B. P. extract obtained from N. American bark; the Kenya extract was uniformly preferred by patients as less drastic in its action.—ANON. *Bull. Imp. Inst.*, 36 (1938), 461–463; through *J. Soc. Chem. Ind.*, 58 (1939), 325. (E. G. V.)

Croton, Castor, Jatropha and Jequirity—Identification of. A comparative microscopic study of the prismatic cells in the outer coats of these seeds has been found to be of use in their identification. The coats are cleared by immersion in 5% solution of potassium chlorate in dilute nitric acid over a boiling water bath until the color is bleached and the tissues are softened. (1) *Cross-sectional View at the Top.*—The cells in all four seeds are polygonal in shape, about 17μ in diameter in castor, croton and jatropha, and about 9μ in diameter in jequirity. The lumen is more or less circular in castor seed, slit-like in jatropha and slit-like with radiating creases in croton and jequirity. (2) *Side View.* (*a*) *Length.*—The length of the cells is about 160μ in jequirity, about 250μ in castor, about 300μ in croton and about 400μ in jatropha. (*b*) *Width.*—In castor and croton the cells taper in width toward the bottom, the top width being about 17μ and the bottom about 8μ. In jatropha the tapering is less abrupt, the width at the top being about 12μ. There is no appreciable tapering in the width of the cells in jequirity, which are about 9μ wide. (*c*) *Lumen.*—All the cells in castor seed show a uniform lumen 3μ in diameter, and all the cells in croton show a uniform lumen about 1μ in diameter, whereas the cells in jatropha and jequirity show a uniform lumen varying in width in different cells from about 1 to 6μ in jatropha and from about 1 to 3μ in jequirity. (*d*) *Walls.*—The cell-walls in castor and jatropha show fine transverse striæ giving the cells a ribbed appearance. These striæ are not noticeable in the cell-walls in croton and jequirity, and the cells do not show a ribbed appearance.—ANNUAL REPORT OF THE CHEMICAL EXAMINER, GOVERNMENT OF MADRAS, 1937. *Analyst*, 64 (1939), 120. (G. L. W.)

Drugs—Composition of the Ash of. Ash contents and their qualitative composition are recorded for quebracho, Brazil, guaiacum, sassafras and red sandalwoods, for Chinese and Ceylon cinnamons, and for cascara sagrada, frangula, cassia, condurango, oak and pomegranate barks.—V. L. ROSENTHALER. *Mikrochem.*, 25 (1938), 5–9; through *J. Soc. Chem. Ind.*, 58 (1939), 436. (E. G. V.)

Lappa—Pharmacognostic Description of. *Arctium Lappa* is compared with *A. minus* and three differences are noted which are recommended for inclusion in the monograph on Lappa in the N. F.—H. W. YOUNGKEN and RAYMOND VAN DER WYK. *Bull. Natl. Formulary Committee*, 7 (1939), 230–231 (H. M. B.)

Oleander Shell—Yellow. The main frame-work of yellow oleander shells consists of characteristic fibers which are of use in identification. The cells from yellow oleander shells are sclerenchymatous fibers, spindle-shaped in appearance and varying in length from about 150 to 300μ and in width from about 10 to 15μ. The fibers have pointed ends on both sides and a uniform lumen, about 2μ in diameter. The fibers may be stained with phloroglucinol and hydrochloric acid or with carbol-fuchsine.—ANNUAL REPORT OF THE CHEMICAL EXAMINER, GOVERNMENT OF MADRAS, 1937. *Analyst*, 64 (1939), 121. (G. L. W.)

Pithecolobium Saman. A Phytochemical Investigation of the Bark of. *Pithecolobium Saman*, Benth., commonly known as the "rain-tree" is indigenous to South America. It was introduced into the Netherland East Indies in 1878 as a shade tree. The author describes the plant as well as the bark and gives a brief review of the literature. He then describes his phytochemical investigations. A preliminary examination of the powdered bark showed 10.02% ash and 1.34% alkaloid, fat, glycerine and phytostearin. From the water insoluble portion of the alcoholic extract the author obtained a thick oily green substance, protocatechic acid, phytostearin and saponin. The water soluble portion of the alcoholic extract yielded protocatechic acid, free and combined, and combined oxalic acid. An alkaloid was found whose hydrochloride has the formula $C_{17}H_{36}N_3O(HCl).H_2O$. The saponin is also described.—M. DUYSTER. *Pharm. Tijdschr. Nederlnd.-Indië.*, 14 (1937), 397; 15 (1938), 1, 33, 97, 162. (E. H. W.)

Poppy Seeds—Use of, in Manchoukuo. I. The oil is expressed from the seed first at room temperature and then at 60–70°, the total yield being 41.3% (warm press 39%). The analytical characteristics of the seeds, oil and seed cake are given. Applications of the cake are indicated.—J. ARIMA and M. NINOMIYA. *Rept. Inst. Sci. Res., Manchoukuo*, 2 (1938), 45–46; through *J. Soc. Chem. Ind.*, 58 (1939), 776. (E. G. V.)

Rotenone Yielding Plants of South America. Some Lonchocarpus Spieces. A review.—J. LEGROS. *Inter. Rev. Agr.*, 30 (1939), 11–29, 51–61; through *J. Soc. Chem. Ind.*, 58 (1939), 531. (E. G. V.)

Sabal. Botany, time of collection, a description of the fruit and the histology of the seed are given. A comparison of *Serrenoa repens* and Sabal Palmetto with nine illustrations is offered.—E. J. IRELAND. *Bull Natl. Formulary Committee*, 7 (1938), 26–32. (H. M. B.)

Salvia Officinalis—Histology of. A report including a check up on previous statements concerning the histology of the leaf and other additions. A proposed description for the N. F. is given.—H. W. YOUNGKEN and RAYMOND VAN DER WYK. *Bull. Natl. Formulary Committee*, 7 (1938), 79–81. (H. M. B.)

B. ANIMAL DRUGS

Parathyroid—Pharmacognostical Study of. The author's own summary, somewhat condensed shows the scope of the paper. The history of parathyroid is reviewed. Whole fresh and whole desiccated parathyroid glands of cattle are described. Histology of bovine parathyroid is given and appearance of cells after treatment with various stains is described. Considerable difference is found in different members of the same species and these differences are noted. All follicles of the thyroid in cattle contain colloid but in parathyroid, colloid containing follicles were only occasionally found. Several types of epithelial cells in parathyroid are described. Only one type was seen in bovine thyroid. Study of powdered desiccated parathyroid of cattle showed colloid fragments were rare but they were the most conspicuous elements in powdered thyroid of this and other species. Several qualita-

tive tests for powdered parathyroid and thyroid are described.—HEBER W. YOUNGKEN. *J. Am. Pharm. Assoc.*, 28 (1939), 638. (Z. M. C.)

PHARMACY

GALENICAL

Adrenaline Hydrochloride Solutions—Stability of. The stability of solution of adrenaline hydrochloride containing 0.1% of sodium metabisulfate has been compared with that of the same solution without this addition; at the same time the opportunity was taken to investigate the effect of substituting sulfurous acid for hydrochloric acid in the solution. The conditions of storage and handling were those generally employed commercially, except that portions of the solutions were also stored at 37.5° C. in order to accelerate any processes of destruction taking place and to emphasize differences of behavior between the solutions. The three solutions were prepared from the same batch of adrenaline which had been previously assayed biologically and found to have 85% of the activity of our standard of pure *l*-adrenaline. Each solution contained 0.12% of this sample. The solutions were labeled X, Y and Z respectively. Y was prepared in accordance with the formula of the British Pharmacopœia 1932; Z was the same solution to which 0.1% of sodium metabisulfite has been added. In solution X sulfurous acid replaced the hydrochloric acid, but the other constituents of the solution were the same: the content of sulfurous acid was 0.128% w/w. Solutions Y and Z were heated for one hour at 80° C. All solutions were filled under carbon dioxide into 1 ounce amber-stoppered bottles which were subsequently capped. The bottles were stored at room temperature in the laboratory in the dark, and at 37.5° C. in the incubator. The criterion of activity is the magnitude of the increase in the blood pressure produced by the intravenous injection of the solution of adrenaline into a cat specially prepared for the test.—H. R. ROWLINSON and S. W. F. UNDERHILL. *Chemist and Druggist*, 131 (1939), 100. (A. C. DeD.)

Derris Stability. Effect of Temperature and Light on Decomposition of Derris. Thin films of derris emulsions on glass plates were exposed to air in light or darkness at various temperatures. Exposure to light for 15 days at 0.3° (open air) and 21–25° (greenhouse under glass) caused decomposition of 60–73% of the deposit, respectively, whereas no appreciable decomposition occurred in the dark except at higher temperatures (for example, 14% and 27% at 38° and 49°, respectively).—R. D. CHISHOLM. *Soap*, 15 (1939), 103, 104; through *J. Soc. Chem. Ind.*, 58 (1939), 783. (E. G. V.)

Glycerins of Thymol. The current formula for Glycerinum Thymolis Rubrum A. P. F. is open to three objections: It is unnecessarily troublesome to prepare, it is incompatible (effervescence) with glycerin and medicated glycerins and the color, besides varying from batch to batch, also fades on standing. The formulæ of the glycerins of thymol used in Australia, Britain and the United States are tabulated side by side with a revised formula now put forward to help overcome the objections. The harmlessness of the suggested formula to delicate membranes, such as the human eye, has been tested biologically.—A. ALBERT and C. BENNETT. *Australasian J. Pharm.*, 20 (1939), 173. (A. C. DeD.)

Liniment of Calamine—Manufacture of. Eight lots of liniment were prepared by varying primarily the amounts of lime water; in two cases 0.74% v/v and 2.00% v/v of oleic acid were added to the olive oil. After titration and shaking for one hour the amount of settling after one week and after one month was determined. It was found that the % calcium hydroxide in the lime water plays an important part in the stability of the suspension; that the lower the content, the less stable the preparation; that the presence of free acid in the oil does not materially affect the suspension and that the present method of mixing is satisfactory.—ANON. *Bull. Natl. Formulary Committee*, 7 (1938), 66–67. (H. M. B.)

Perchloroethylene—Preservation of, Against Oxidation. The use of perchloroethylene for hookworm may be attended by unpleasant results which were attributed to the fact that the compound undergoes atmospheric oxidation with the production of poisonous carbonyl chloride. Atmospheric oxidation of perchloroethylene did not take place in the dark but proceeded at a fairly rapid rate in sunlight or artificial light. The extent of photochemical oxidation was measured in all experiments by allowing the carbonyl chloride to hydrolyze and titrating the resulting hydrochloric acid using phenolphthalein as an indicator. It was found that ether, alcohol, thiourea, sodium thiosulfate and other compounds would retard the oxidation; thymol being especially efficient in this respect.—KENNETH C. BAILEY. *J. Chem. Soc.* (London) (1939), 767–769. (W. T. S.)

Water-Soluble Medicament—Production of a Stable, from the Latex of Lactuca Virosa. The liquid portion of fresh latex is separated from the solid, preferably by mixing with water, followed by filtration or centrifuging, and the product, to which reducing agents and/or preservatives may be added, also heated to about 80°, if desired, to destroy oxidases, is evaporated.—KNOLL A.-G. Chem. Fabr. Brit. pat. 483,789; through *J. Soc. Chem. Ind.*, 57 (1938) 1503. (E. G. V.)

NON-OFFICIAL FORMULÆ

Astringent Drugs. Tannin and tannin-bearing vegetable drugs and certain salts of heavy metals used for this purpose are discussed. The following formulæ are offered: (1) *For Rhinitis as a Snuff.*—Tannic acid 0.10 Gm., menthol 0.10, lactose 3. (2) *Astringent Douche.*—Zinc sulfate 30.0, tannic acid 30. (3) *Astringent Nasal Ointment.*—Solution of aluminum acetate 1.00 cc., lanolin 6.00 Gm., liquid petrolatum 10.00 cc. Twelve references.—MILTON A. LESSER. *Drug and Cosmetic Ind.*, 44 (1939), 298–301. (H. M. B.)

Facial Packs and Masks. These products are discussed in detail. Eight formulæ are offered for packs (powder) and two for liquid masks.—J. AUGUSTIN. *Riechstoff Ind. Kosmetik*, 14 (1939), 29–33. (H. M. B.)

Hair Oils, Brilliantines, Pomades and Fixatives. *Hair oils* consist chiefly of non-drying oil with an antiseptic, perfume and dye; occasionally additional substances such as cholesterol are present (9 formulæ). *Pomades* which are in vogue in Europe again consist of natural oils and fats, which, if saponifiable must be preserved by the esters of *p*-hydroxybenzoic or boric acid plus a perfume (formulæ for 6 fatty bases, 6 pomades and 5 perfume combinations for the same). *Brilliantines* are classified as solid, liquid and those which separate in layers or emulsify on shaking producing a cream. The solid ones contain natural and synthetic fats, oils, waxes, fatty alcohols and similar substances (5 formulæ for bases and two for the class); the liquid products consist of equal parts of castor oil and alcohol with perfume and dye (one formula). The "shake" types are similar to the liquid ones but contain liquid petrolatum or fats and oils not soluble in alcohol (8 formulæ). *Fixatives* are discussed in detail (17 formulæ).—EKMANN. *Riechstoff-Ind. u. Kosmetik*, 14 (1939), 1–15. (H. M. B.)

Liquid Soaps—Preparation of Various. Liquid soaps should be absolutely clear, as neutral as possible, yield a mild and not too much lather quickly, possess a detergent action, have a satisfactory fluidity and a pleasant and not too lingering odor. Raw materials used are discussed in detail. These soaps may be prepared by dissolving soft soap or by the solution of a high percentage potassium soap (2 formulæ), by the emulsion-saponification of neutral fats (one formula) and by the esterification of fatty acids (one formula). Formulæ for liquid soaps of general use (6), soaps with solvents (5), liquid toilet soaps (1), perfumes for soaps (4), liquid shampoos (4) are offered.—EKMANN. *Riechstoff-Ind. u. Kosmetik*, 14 (1939), 49–59. (H. M. B.)

Soapless Shampoos. A soapless shampoo should not react with hard water to leave a deposit in the hair, should be neutral or slightly acid and may be of the lathering or non-lathering types. The composition of the types are discussed and the following formula offered: Sulfonated castor oil 70 parts, sulfonated olive oil 25 and mineral oil 5.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 44 (1939), 432–433. (H. M. B.)

DISPENSING

Aqueous Elixir—Proposed Change in Formula. Finding that the National Formulary preparation darkened in color, vanillin was suspected to be the cause. A series of experiments was undertaken and though the cause of darkening has not been determined absolutely, it seems desirable to have a formula for aqueous elixir which would yield a colored product rather than a colorless one. So it is suggested that 5 cc. of official solution of amaranth be used in each liter of elixir.—ADLEY B. NICHOLS and GERALD S. SAVITZ. *J. Am. Pharm. Assoc.*, 28 (1939), 322. (Z. M. C.)

Coloring Agents—Pharmaceutical. Sixteen red dyestuffs have been examined as to their suitability for use in pharmaceutical preparations, including the effect of acid, alkali, salt concentrations, heavy metals and alkaloids. As regards resistance to acid or alkali, the latter was found to be the more disturbing factor. An example of salting out is the precipitation of Bordeaux B by the 13.58% of solids present in Nebula Hyoscinæ Comp., B. P. C. Only half the dye remains in solution, so that the amount can be reduced to 0.25% w/v. It was decided to concentrate on six of the most suitable coloring agents, the tinctorial values of which are shown in a table. These are given in cc. of 1% w/v dye solution required to produce the same intensity of color as 2 cc. of 1%. Bordeaux B solution was made up to 100 cc. with water. The following method of preparation is advocated: To 100 cc. of 30% (v/v) aqueous solution of glycerin add 1 Gm. of Bordeaux B and boil for ten minutes. Cool and readjust to volume with distilled water previously boiled and cooled. Add excess of chloroform and shake to obtain a saturated solution. Separate the undissolved chloroform and filter. Solutions of acid magenta, amaranth and Bordeaux B prepared as above kept perfectly over a period of 12 months.—C. L. M. BROWN. *Chemist and Druggist*, 131 (1939), 96. (A. C. DeD.)

Eye Lotion—Preparation of a Composition for Use as. The exact proportions of 21 ingredients are claimed; the mixture is tabletted.—G. W. TAYLOR. Brit. pat. 500,266; through *J. Soc. Chem. Ind.*, 58 (1939), 674. (E. G. V.)

Filter—"Kapsenberg." An illustration is given showing this new piece of filtering apparatus.—ANON. *Pharm. J.*, 141 (1938), 629. (W. B. B.)

Iodine Ointment—Non-Staining. Two methods of preparing non-staining iodine ointment with little loss of iodine are given: (1) *Cold Process.*—The iodine is dissolved in the oil without the aid of heat and allowed to stand in a cold vessel until the brown color disappears, when the melted soft paraffin is added and mixed by thorough stirring, as this does not mix readily with the iodized oil. About two months are required by this method to produce a non-staining ointment. (2) *Quick Process.*—The iodine in very fine powder is stirred with the cold oil in a wide-mouth stoppered bottle until dissolved. After replacing and tying the stopper in position, the bottle is heated in hot water with occasional shaking until the brown color is replaced by a bright green, at which stage it is desirable that the temperature should not be excessively high. The melted soft paraffin is then added with thorough stirring, or, alternatively, the iodized oil is triturated in a mortar with the unmelted soft paraffin. Any heating after admixture results in formation of the resin-like sludge.—J. C. PENMAN. *Chemist and Druggist*, 131 (1939), 99. (A. C. DeD.)

Methyl Cellulose Preparations as Emulsifiers. Various commercial products described as methyl cellulose derivatives were used to prepare emulsions of oils in water, Tylose SL 400 being found suitable. A 10% mucilage may be prepared by heating the emulsifier with water and allowing to cool, or by wetting it with an equivalent amount of glycerin, alcohol 90% or oil and then adding water. The oil is then stirred by hand into the mucilage, forming an emulsion of which the degree of dispersion and stability is only slightly less than that of good acacia emulsions. Methyl cellulose preparations possess advantages over acacia and soaps as emulsifiers in that their mucilage is tasteless, neutral in reaction, does not ferment or grow molds, and dries on the skin without unpleasant stickiness. Emulsions prepared with methyl cellulose preparations are compatible with both alkalis and dilute mineral acids. Five representative formulæ are given.—H. CLEMENS and H. W. READ. *Australasian J. Pharm.*, 20 (1939), 191. (A. C. DeD.)

Pilular Masses—Adsorbing Properties of. Althæa and liquorice roots were most active in adsorbing strychnine nitrate; dandelion root was less satisfactory. Pills containing alkaloids should not be kept for long periods.—T. TSCHERIKOVSKAJA. *Sovet. Farm.*, 1 (1935), 7–16; through *J. Soc. Chem. Ind.*, 58 (1939), 214. (E. G. V.)

Proflavine Formulæ—Some. As the homogeneous substance, Proflavine, is superior in several respects to the variable mixture, Acriflavine, a series of formulæ containing the former has been prepared, with a view to rendering it more readily available for therapeutic use. A suggested monograph for Proflavine Base is included, and a formula given converting this to proflavine oleate which is found to be insoluble in water, but soluble in soap solutions.—A. ALBERT and C. BENNETT. *Australasian J. Pharm.*, 20 (1939), 175. (A. C. DeD.)

Soluble Iodides with Solution of Strychnine—Incompatibility of. The composition of the deposit formed on mixing Liquor Strychninæ Hydrochloridi and potassium iodide has been shown to be $C_{21}H_{22}O_2N_2.HI.H_2O$, *i. e.*, strychnine hydriodide monohydrate. The solubilities of this salt have been determined for water for various strengths of potassium iodide solutions and for dilute alcohols. The circumstances under which dangerous incompatibility may arise have been determined from these results, and the figures obtained were checked by a direct method.—R. K. WYBURN. *Australasian J. Pharm.*, 20 (1939), 176. (A. C. DeD.)

Volatile Oils—Formulæ for Strong Aqueous Solutions of. A process is described whereby aqueous solutions of essential oils may now be prepared up to 4% in strength, such solutions remaining per-

fectly transparent on dilution. It is suggested that this process should be of value in formulating various pharmaceutical preparations such as deodorants, liniments, antiseptics, inhalations, mouthwashes and insect repellants, whenever water can, with advantage, replace the more expensive diluents, such as alcohol. Sixteen typical formulæ are given illustrating some applications of this process to the commoner essential oils and their constituents.—A. ALBERT and R. K. WYBURN. *Australasian J. Pharm.*, 20 (1939), 30. (A. C. DeD.)

PHARMACEUTICAL HISTORY

Apothecaries of Ostmark as Authors and Poets. I. II. Historical accounts dealing with Georg Trahl and Louis Grillepois.—RODERICK WALD. *Wien. Pharm. Wochschr.*, 72 (1939), 67, 129–131. (H. M. B.)

Apothecaries of Ostmark as Authors and Poets. III. A biographical sketch dealing with Alexander Tschirch.—RODERICK WAHL. *Wien. Pharm. Wochschr.*, 72 (1939), 180–182. (H. M. B.)

Apothecary to the "Golden Lions." Interesting facts about apothecary landmarks.—HERBERT MÜLLER. *Wien. Pharm. Wochschr.*, 72 (1939), 66–67. (H. M. B.)

Arabian Perfumery—Evolution and Economic Development of. Historical and a review.—ANON. *Riechstoff-Ind. u. Kosmetik*, 14 (1939), 60–62. (H. M. B.)

Brünn and Its Apothecaries.—ANON. *Wien. Pharm. Wochschr.*, 72 (1939), 191–192. (H. M. B.)

German Apothecaries—Famous. HERBERT F. MÜLLER. *Wien. Pharm. Wochschr.*, 72 (1929), 98–99. (H. M. B.)

German Apothecaries in Bohemia and Mähren.—ANON. *Wien. Pharm. Wochschr.*, 72 (1939), 169–170. (H. M. B.)

Military Pharmacy—History of, in Holland. Part II describes an early Formulary and Part III an old military garden guide—E. I. VAN ITALLIE. *Pharm. Weekblad*, 75 (1938), 1282 and 1350. (E. H. W.)

Natural Sciences, Their Aims and Functions—History of the. A discussion. OTTO ZEKERT. *Scientia Pharm.*, 10 (1939), 45–47. (H. M. B.)

Pill—Story of the. The story of the pill from the days of the Ebers Papyrus to recent times is reviewed.—WILLIAM KIRKBY. *Chemist and Druggist*, 130 (1939), 678. (A. C. DeD.)

Plagues in the 16th to 18th Centuries and Their Historical Influence. Part I includes a historical introduction and a discussion of the influence of the plagues on the supply and prices of drugs. Three tables are offered listing the drugs used, prices from 1597 to 1682 in five cities and two districts as well as those for the rich and the poor. Precautions taken by the apothecaries against infection, common determinations for the apothecaries in times of plague, medical supervision of the apothecary, collaboration between the physicians and apothecaries, places of distribution of drugs besides apothecaries are discussed. Part II includes the remedies used in the treatment of the infections such as the simples, compound remedies, aromatic drugs, drugs for smoking, knowledge of nutrition and diet necessities. Sixty-two references.—KURT ANNECKE. *Wien Pharm. Wochschr.*, 71 (1938) 20–21, 34–36, 44–48, 56–60, 70–72, 86–88, 97–100, 112–114, 123–126, 145–147, 171–173. (H. M. B.)

Rubber Centenary. The discovery of rubber both in America and England is reviewed. The vulcanization process is described.—ANON. *Chemist and Druggist*, 130 (1939), 673. (A. C. DeD.)

PHARMACEUTICAL ECONOMICS

Ampul Manufacture—Cost Aspect of. The paper first discusses hospital accounting practices in general. Then details about the laboratory itself and the necessary equipment are given. Quality of glass, kind of labels, the water used, buffer solutions, quality of the chemicals are considered. The ampul container, the label, the buffer solution and the chemicals represent the material costs. Indirect costs include labor, heat, light, power depreciation in equipment and laundry and a portion of the cost of operating all administrative departments which function in behalf of pharmacy such as accounting and purchasing. A study was conducted in New York and figures are given.—DONALD A. CLARKE. *J. Am. Pharm. Assoc.*, 28 (1939), 684. (Z. M. C.)

Assistant Pharmacist. Reference is made to an earlier paper by the author, dealing with the history of assistant registration and statistics concerning the number so licensed. The present paper points out that since 1926 a considerable number of states have abolished licensing of assistants. It also points out the importance of continuing the fight against the system if pharmacy is to progress educationally.—J. G. BEARD. *J. Am. Pharm. Assoc.*, 28 (1939), 701. (Z. M. C.)

Chemical Foreign Trade in 1938. Chemicals and chemical ware, like all foreign trade along the line, showed diminished volume and value. Imports were 24% under 1937 and exports were about 8% lower. Leading the import list of medicinals and pharmaceuticals were menthol, quinine sulfate, alkaloids and preparations in capsules, pills, etc. Among medicinals sent abroad the leading items were sold to about the same value as in 1937.—O. WILSON. *Ind. Eng. Chem.*, 31 (1939), 492–496. (E. G. V.)

"Divided We Fall." A Survey of Hospital Pharmacy Associations in the United States. By means of questionnaires, the author collected considerable information about hospital associations in the United States. This information includes name of president with address, date of organization, membership and aims.—BLOSSOM L. LEHRKE. *J. Am. Pharm. Assoc.*, 28 (1939), 680. (Z. M. C.)

Hospital Pharmacist—Comments of an Experienced. These comments cover pharmaceutical internship, proper recognition of pharmacy by the medical staff, location of the pharmacy, equipment, hospital formulary.—PAUL D. BROWN. *J. Am. Pharm. Assoc.*, 28 (1939), 309. (Z. M. C.)

If They Only Would! Selection of employees is the general topic. Discussion covers letters of application, letters of recommendation and personal interviews, an outline for written tests, reasons why drug clerks quit their jobs.—CLARENCE M. BROWN. *J. Am. Pharm. Assoc.*, 28 (1939), 312. (Z. M. C.)

Pharmacy in the United States and Other Countries—Comparisons and Contrasts of Conditions of. The author submits a wealth of information obtained by correspondence with women pharmacists in seventeen countries. It is given under two general heads, aspects of pharmacy which particularly affect women and general conditions affecting both men and women.—INA GRIFFITH. *J. Am. Pharm. Assoc.*, 28 (1939), 317. (Z. M. C.)

Prescription Pharmacists—Need for an Association of Exclusive. The author directs attention to the increasing number of professional shops and expresses the opinion that there is need for an association whose membership would be limited to exclusive prescription stores governed by a strict code of ethics. Some important things to include in the code of ethics are enumerated and some of them are discussed. Other points in connection with such an

organization are also discussed.—A. L. MALMO. *J. Am. Pharm. Assoc.*, 28 (1939), 673. (Z. M. C.)

Prescription Survey—1939. The survey attempted to answer two questions: Is the nature of prescriptions changing and how are prescriptions distributed through time and customers? The findings are based on one month and cover narcotic and non-narcotic prescriptions but not refills. Subtitles show scope of the survey: collection of data; sole proprietary prescriptions; prescriptions with proprietaries, daily distribution, one-prescription customers, multiple-prescription customers. The author also submits a number of charts.—J. H. GOODNESS. *J. Am. Pharm. Assoc.*, 28 (1939), 692. (Z. M. C.)

Profession and the Country Drug Store. Topics discussed are professional equipment, ability to promote professional work, time element necessary, professional remuneration, manifestations of ability, possibilities for improvement, support necessary for improvement. It is suggested that "there should be an organization to whom the country pharmacist could appeal for professional advice."—CHARLES E. WILSON. *J. Am. Pharm. Assoc.*, 28 (1939), 676. (Z. M. C.)

Professional Pharmacy—Applied Principles of. The author lays down some principles which have been found practical and that he believes can be applied in any professional pharmacy. He discusses library and literature and equipment.—MAX LEMBERGER. *J. Am. Pharm. Assoc.*, 28 (1939), 302. (Z. M. C.)

MISCELLANEOUS

Acetals in Perfumery. A number of acetals of interest to the soap-perfumer, since they resemble the corresponding aldehydes in odor, but are stable to soap and alkalis, are enumerated and briefly described.—C. FUCHS. *Fette u. Seifen*, 45 (1938), 511–513; through *J. Soc. Chem. Ind.*, 57 (1938), 1501. (E. G. V.)

Alcohol Denaturants—Perfumed. The United States Bureau of Internal Revenue has authorized manufacturers of denaturants to add odorant or perfume materials in amounts not greater than one part to 250 by weight, the denaturants now authorized for completely denatured alcohol, provided that such addition does not decrease the denaturing value nor change the chemical or physical constants beyond limits of the present specifications for these denaturants except as to odor. The odorant material may be added only by the producer of the denaturant and the Bureau must be notified as to the names and properties of the materials used. ANON. *Perfumery Essent. Oil Record*, 30 (1939), 244. (A. C. DeD.)

Capillary Analysis in Pharmacy. Strips of filter paper (2 by 25 cm.) are dipped into the liquid (tinctures direct, fluidextracts in 20% solution, drugs in ethyl alcohol) in glass tubes (5 by 3 cm.), dried after 24 hours and examined in ultraviolet light. The appearance of pure and adulterated preparations is described.—V. ZANOTTI. *G. Farm. Chim.*, 85 (1936), 40–45; through *J. Soc. Chem. Ind.*, 11 (1938), 1361. (E. G. V.)

Cosmetic Emulsions—Liquid. Laboratory considerations, formulation and manufacturing procedure are discussed.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 30 (1939), 203. (A. C. DeD.)

Cosmetic Preparation. For the manufacture of a dry, solid cake an emulsion is made of oil and wax (0.8–80%) and dispersing agent (1–13%) in a large volume of water, and to the emulsion are added fillers (35–80%) and pigments and colors (12–50%), the whole being subsequently dried, pulverized and compressed to shape.—M. FACTOR & CO. Brit. pat. 501,732; through *J. Soc. Chem. Ind.*, 58 (1939), 673. (E. G. V.)

Cosmetic Preparations—Dry. Condensation products of high-molecular weight protein-degradation products with higher fatty acids are mixed with calcined salts, for example, borax, and inert fillers, and the acidity is so adjusted that the preparation forms an aqueous solution having p_H 5–7.—CHEM. FABR. GRUNAU, LANDSHOFF and MEYER A.-G. Brit. pat. 500,631; through *J. Soc. Chem. Ind.*, 58 (1939), 673. (E. G. V.)

Creams and Lotions—Manufacture of, for Toilet Purposes. An acid-removing preparation comprises an ordinary white cream or lotion in which is incorporated a mild alkaline agent (for example, 3% sodium bicarbonate solution) and a sensitive indicator, for example, bromothymol-blue, so that the changes in acidity produced by contact with the acid excretions of the skin, and their neutralization by the mild alkaline agent, can be followed by the change in color of the preparation as it is applied. A bleaching agent, for example, sodium perborate, may also be present.—R. E. GOLDSBROUGH. Brit. pat. 498,890; through *J. Soc. Chem. Ind.*, 58 (1939), 673. (E. G. V.)

Fruit Products. XI. Fruit Syrup Production. (A) Extraction and Preservation of Fruit Juices for Syrup Making. (B) Effect of Sugar Concentration on Retention of Flavor in Syrups. (C) Preservation of Syrups by Heat and Chemical Treatments. Syrup production from strawberry, cherry, raspberry and loganberry by 4 methods is examined. Enzyme treatment was the most satisfactory for obtaining the juice. High sugar concentrations (not greater than 50%) are necessary for the retention of flavor by cherry, raspberry and loganberry syrups. Loss of flavor was more rapid in the strawberry and cherry juices. Sulfur dioxide was superior to benzoic acid as a preservative for syrups. Hydroxybenzoic acids (10 parts per million) were inefficient. Pasteurization (74°, 30 minutes) prevented fermentation in syrups, but modified their flavor. **XII. Constituents of Fresh Juices from Single Varieties of Soft Fruits. Suitability of the Juices for Syrup Manufacture.** Analyses are recorded and discussed. **XIII. Commercial Production of Fruit Syrups, 1937.** Fermentation in soft fruits during transit modifies the flavors of syrups made therefrom. Fermentation of strawberries is prevented by 120 parts per million of sulfur dioxide and of raspberries by 600 parts per million. **XIV. Production of Unfermented Apple Juice, 1934–1938.** Various processing methods are examined and a satisfactory technic is developed.—V. L. S. CHARLEY, R. C. CURTIS and V. E. SILLS. *Agric. Hort. Research Sta., Long Ashton, Bristol* (1938), 170–185, 186–190, 191–194, 195–230; through *J. Soc. Chem. Ind.*, 57 (1938), 1493. (E. G. V.)

Fungicide—Copper Proteinate as. The use of sodium copper lysalbate and protalbate as a fungicide is recommended.—G. POLLACCI, R. CIFERRI and M. GALLOTTI. *Boll. soc. ital. biol. sper.*, 14 (1939), 158–159; through *J. Soc. Chem. Ind.*, 58 (1939), 872. (E. G. V.)

Fungicide—Resin-Lime-Sulfur as a. A spray containing 1% calcium oxide-sulfur and 1% resin soap largely reduced infection by snapdragon-rust, and was superior to calcium oxide-sulfur-spreader and Bordeaux mixture-spreader in controlling downy mildew of onion. Application of the spray to the underside of bean leaves reduced mildew infection on the upper surface.—C. E. YARWOOD. *Phytopath Z.*, 28 (1938), 22; through *J. Soc. Chem. Ind.*, 58 (1939), 417. (E. G. V.)

Furfural—Some Pharmaceutical Applications of. As a first step in the systematic investigation of

furfural derivatives, α-furyl-8-methyl-, -7-methyl- and -6-methyl-cinchonic acids were prepared by the condensation of furfural and pyruvic acid with *o*-, *m*- and *p*-toluidine. The condensations were carried out in alcoholic solution; the compounds separated on cooling. They are decolorized by boiling with bone black and recrystallizing from alcohol; they melt at 248° C., 272° C. and 253° C., respectively. These compounds are all less toxic than atophan. The sodium salts are readily prepared by dissolving the acids in 10% sodium carbonate solution and concentrating the resulting solution.—A. MANGINI. *Ann. chim. applicata*, 27 (1937), 386–392H; through *Chimie & Industrie*, 40 (1938), 527. (A. P.-C.)

Hair Dyes. Preparations (which may be in molded form) comprising 1:2:4-triacetyl-derivatives of the benzene and naphthalene series (which may be substituted by alkyl, hydroxyalkyl or alkoxyl) and a basic hydrolyzing agent (sodium carbonate) are claimed. There may be added (or used with them) known oxidation dyes, hydrogen peroxide, and small amounts of iron, copper, cobalt or nickel salts.—I. G. FARBENIND. A.-G. Brit. pat. 493,855; through *J. Soc. Chem. Ind.*, 58 (1939), 32. (E. G. V.)

Insecticidal Gases. VI. Properties of Propylene Oxide. Propylene oxide has an insecticidal activity (when tested as gas or in aqueous solution) similar to that of ethylene oxide. A. L. LEPIGRE. *Bull Soc. d'Encou.*, 137 (1938), 367–381; through *J. Soc. Chem. Ind.*, 58 (1939), 87. (E. G. V.)

Medicinal Compounds—Liquid. A liquid medicinal preparation containing pepsin, rennin and papain, and, if desired, bismuth salts, is colored green by means of a mixture (1:2, in 3% solution) of Brilliant-blue and Tartrazine. The color is not destroyed by enzymes present in the preparation.—E. K. STRATTON. U. S. pat. 2,073,659; *J. Soc. Chem. Ind.*, 58 (1939), 778. (E. G. V.)

Perfume Industry—Distillation and Distillation Technic in. An account is given of elementary principles involved in the distillation practice and the application of the process in the preparation of perfumery products (essential oils and isolates).—I. HEROLD. *Deut. Parfüm-Ztg.*, 25 (1939), 106–108; through *J. Soc. Chem. Ind.*, 58 (1939), 663. (E. G. V.)

Pharmaceutical, Bactericidal, Fungicidal, and Like Agents—Manufacture of. Disinfectant preparations are obtained by incorporating a phenol and/or an essential oil containing hydroxy group in a soap preparation made from C_{6-12} fatty acids. For example, a mixture of *p*-chloro-*m*-cresol (1.8), chloroxylenol (1.8), chlorothymol (1) and chlorocarvacrol (1.6 parts) is added to 93.8 parts of an aqueous solution of (*a*) $C_7H_{13}.CO_2K$ containing 13.5% of $C_7H_{13}.CO_2H$ (I) or (*b*) a soap solution containing 12% of fatty acids consisting of 2 parts of I and 1 part of olein. The products are used in the form of 0.5–1% solutions.—DEUTS. HYDRIERWERKE A.-G. Brit. pat. 499,402; through *J. Soc. Chem. Ind.*, 58 (1939), 438. (E. G. V.)

Pharmaceutically Active Organic Substances—Water-Soluble or Emulsifiable Preparations Comprising. Preparations of vegetable extracts, essential oils, resins, fats, waxes, etc., normally insoluble in water, which give stable and homogeneous emulsions or solutions on dilution with water are obtained by adding water soluble phosphatides (lysolecithin) to the product, preferably in ethyl alcohol solution. Preparations are described containing crude sage, valerian, elder flower, and *Artemisia absynthium* extracts, sage oil, carbon tetrachloride. chenopodium oil, sterols and triolein.—G. W, JOHNSON. From I. G. FARBENIND. A.-G. Brit. pat. 505,983; through *J. Soc. Chem. Ind.*, 58 (1939), 887. (E. G. V.)

Plant Pharmacy—Mercuric Sulfoproteinate in. Caseinogen is hydrolyzed with warm aqueous potassium hydroxide to anhydro-albuminates and the hydrolysate is treated with mercuric chloride and precipitated sulfur to give a preparation applicable as a fungicide (for example, for peronospora on vines).—G. POLLACCI, R. CIFERRI and M. GOLLOTTI. *Boll. soc. ital biol. sper.*, 14 (1939), 159–161; through *J. Soc. Chem. Ind.*, 58 (1939), 872. (E. G. V.)

Styptic Sticks—Shaving. An improved method for the manufacture of the sticks is discussed.—*Perfumery Essent. Oil Record*, 30 (1939), 247. (A. C. DeD.)

Surface Active Agents Manufactured in America and Commercially Available. About 150 agents are listed. Type of agent, use and manufacturer are given in each case.—F. J. VAN ANTWERPEN. *Ind. Eng. Chem.*, 31 (1939), 66–69. (E. G. V.)

Toilet Soap—Manufacture of. The value of the determination of sodium chloride, free sodium hydroxide and water (conveniently by the xylene-distillation method) in the fitted soap as a means of controlling its condition for subsequent processing is emphasized.—ANON. *Allgem. Oel- u. Fett-Ztg.*, 35 (1938), 437–444; through *J. Soc. Chem. Ind.*, 58 (1939), 71. (E. G. V.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Adrenaline—Camphor as a Means of Preserving the Activity of. Two solutions of adrenaline were prepared (1:10,000), one in Ringer's solution and the other in Ringer's solution saturated with camphor. Several days before the test these solutions were diluted to 1:1,000,000 and 1:5,000,000, respectively. The analyses were made on the blood vessels of isolated rabbit ears. In order to make the conditions of the experiments similar, corresponding amounts of camphor were added to the adrenaline in Ringer's prior to inoculation. The extent of the constrictor effect was the criterion of activity. The above experiments showed that the properties of adrenaline in Ringer's solution disappear comparatively rapid as compared to the Ringer's saturated with camphor. The latter retains the maximum constrictor effect for a long time. As a control a series of experiments were carried out to determine the effect on the vessels by camphor in dilution of 1:1,000,000 but in 10 minutes there was no action. It was found that synthetic camphor did not possess the preservative properties and therefore only natural camphor could be used. Other tests were carried out using menthol and borneol in concentrations of 1:2,000,000; acetone 1:800; thymol 1:2,000,000. In some cases the decrease in activity of the adrenaline was negligible and in other cases it did not occur at all. These experiments showed that these substances were less effective than camphor over long periods of time.—N. A. MIKHIV. *Physiol. J.* (U. S. S. R.), 22 (1937), 1119; through *Central Medical Reference Journal* (U. S. S. R.), 21 (1938), 180. (C. J.)

Androgens—Clinical Administration of. A comparison has been made of the efficiency of various preparations of androgens given by different routes in maintaining sexual function in a male postpuberal eunuch. The preparations were given in succession with short free intervals over a period of a year, and bland ointment and injections of sesame oil were given as controls. The minimum effective dose of testosterone propionate when given by subcutaneous injection was 40 mg. per week. To ob-

tain an equivalent effect it was found necessary to give two to three times this dose rubbed in as an ointment, six times the dose rubbed in as a tincture or twenty times the dose by mouth. Progesterone was found to prolong the action of testosterone propionate when given in conjunction with it. Total testicular extracts had little effect when given by injection and none by mouth.—G. L. FOSS. *Lancet*, 236 (1939), 502. (W. H. H.)

Antispasmodics. A number of secondary and tertiary amines have been prepared which contain alkyl, cyclohexyl, alpha-cyclohexylethyl or beta-cyclohexylethyl groups. Some of these compounds have been found to be strong antispasmodics.—F. F. BLICKE and F. F. ZIENTY. *J. Am. Chem. Soc.*, 61 (1939), 93. (E. B. S.)

Ascorbic Acid and Glutathione—Functions of, in the Living Animal, with Special Reference to the Esterase Content. Increasing the ascorbic acid content is accompanied by a parallel change in the esterase content. Injections of glutathione produce an increase in the glutathione content of all organs, but especially of the liver and kidney, and generally the ascorbic acid content is likewise raised. In a number of animals there was also a marked increase in esterase activity, even greater than with ascorbic acid. However, the glutathione effect on esterase is different from that of ascorbic acid in that a strong activation is followed later by an inhibition of the esterase activity. It is assumed that glutathione acts upon the apo-enzyme and not on the co-enzyme of esterase, and that the effect of increased glutathione is due to an induced increase in the tissue proteolysis. The co-enzyme nature of ascorbic acid is denied but it is thought probable that it may protect some active group of the esterase which is sensitive to oxidation, perhaps by maintaining a negative reduction-oxidation potential. This explanation might be substantiated if, as some assume, this active group is cortical hormone.—S. RAABE. *Biochem. Z.*, 299 (1938), 141–167; through *Chem. Abstr.*, 33 (1939), 1771. (F. J. S.)

Atropine—Action of Toxic Doses of, on the Central Nervous System. Atropine shows synergy with an aliphatic hypnotic. Large doses synergize with a spinal convulsant. Hypnotics may antagonize atropine stimulation and convulsants may oppose atropine depression. Atropine, like morphine, has a two-fold action on the central nervous system.—THEODORE KOPPANYI. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 244. (A. E. M.)

B Complex—Evidence of Another Factor in the, for Rats. Rats require at least 2 factors besides B_1, flavin, nicotinic acid and B_6. One of them is supplied by alfalfa, the other is supplied by a fuller's earth adsorbate from rice polish extract, molasses or yellow corn. This latter (B_8) factor differs from the chick antidermatitis factor, the antiparalytic factor and U and W.—W. R. WYATT. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 281. (A. E. M.)

Benzol—Adrenaline Cardio-Ventricular Fibrillation. Previous intravenous injection of novocaine at a dose of 30 mg. per Kg. showed no protecting action upon benzol-adrenaline cardioventricular fibrillation. Simultaneous injection of 8–10 mg. of novocaine per Kg. with adrenaline definitely protected the heart against the benzol-adrenaline ventricular fibrillation. Simultaneous injection of 4–5 mg. of novocaine per Kg. with adrenaline gave no protective effect on the benzol-adrenaline ventricular fibrillation. Since as shown in previous communications simultaneous injection of 4–5 mg. of novocaine with adrenaline decidedly protected the chloroformed dogs against ventricular fibrillation, the inhalation of benzol is considered to exert a more detrimental effect upon the myocardium than the inhalation of chloroform. In benzol-inhaling dogs intravenous adrenaline after F 933 was followed by the usual reversed response of hypotension. Ventricular fibrillation was prevented. But with the gradual diminution of the F 933 effect and with progressive return of the normal rise of general arterial blood pressure following adrenaline, ventricular fibrillation eventually occurred. The significance of the initial rise of the general arterial blood pressure in determining the ventricular fibrillation of this type is especially emphasized. Previous double cervical vagotomy and denervation of both carotid sinuses showed definite protecting action against the benzol-adrenaline ventricular fibrillation. Exclusion of the carotid sinus pressor-sensitive moderator nerves, by occlusion of both common carotid arteries demonstrated a similar preventive effect on the benzol-adrenaline ventricular fibrillation.—T. C. R. SHEN. *Arch. intern. pharmacodynamie*, 61 (1939), 43. (W. H. H.)

1,2-Benzopyrene—Action of, upon the Central Nervous System. The authors injected into the brain of a certain number of rabbits benzopyrene mixed in lanolin or suspended in oil. Some of the animals died very rapidly by diffusion of the mixture into the ventricular spaces and by pure reaction; the others were sacrificed at various times after injection; autopsy showed the absence of a cerebral tumor, the existence of fibrous and inconstant reactions of minute vessels, and also, in certain cases, the appearance of a strange body, a large nucleated special analogue to that described in the hematolenticular syndromes.—I. BERTRAND and J. GRUNER. *Assoc. Franc. pour L'Etude du Cancer*, Nov. 21, 1938; through *Presse Medicale*, 4 (1939), 68. (W. H. H.)

1,2-Benzopyrene—Carcinogenic Activity of, Compared to Methylcholanthrene. The author has stated that methylcholanthrene and 1,2-benzopyrene possesses the same carcinogenic activity with regard to the conjunctive subcutaneous tissue of the white rat. With an optimum dose of 3 mg. the delay of appearance of the tumors varies from 40 days to 2 months. All of the sarcoma are very polymorphous. The conjunctive subcutaneous tissue of the dog is refractory to the carcinogenic action of methylcholanthrene and benzopyrene. These two hydrocarbons have not been able to produce carcinization of the mammary tissue and hepatic tissue of the rabbit nor of the gastro-intestinal mucous membrane of rats, after administration by oral route.—P. VALADE. *Assoc. Franc. pour L'Etude du Cancer*, Nov. 21, 1938; through *Presse Medicale*, 4 (1939), 69. (W. H. H.)

Blood Pressure—Obtaining a Substance for Lowering. An acetic acid extract of pituitary glands, particularly the posterior lobes, is treated with ether and light petroleum. The clear liquid is removed and neutralized and the precipitate formed is isolated. It may be purified by first extracting with small quantities of water and finally with larger amounts to dissolve the active material. It may be further purified by deaminizing.—E. WOLLHEIM. Brit. pat. 486,064; through *J. Soc. Chem. Ind.*, 57 (1938), 1503. (E. G. V.)

Caffeine Effects upon the Activity of the Longitudinal Muscles of the Small Intestine. References are made to the rather extensive literature dealing with the effect of various substances upon normal physiological state of the small intestine. This report gives evidence of the effect of caffeine on muscular motility of isolated segments of the small intestine of the rabbit. Experimental procedure is given in some detail. There is discussion of the findings and kymographic records are shown. A table shows comparative sensitivity of duodenum, jejunum and ileum. The three regions of small intestine were found to have different sensitivities.

No part is highly sensitive since complete recovery occurs even after perfusion with 2% caffeine solutions. Study of kymographic records shows that the degree of tonicity and amplitude of contraction were affected to a greater extent than is indicated by variation in rythymicity or rate. The tendency is to improve tonus and decrease amplitude temporarily of longitudinal musculature. Caffeine affects smooth muscle directly. No correlation exists between caffeine effects and rythymicity frequency of contractions and metabolic rate. No absolute gradient was found. Combined effects of caffeine upon myogenic activity of longitudinal musculature are such that absorption from the lumen may improve physical factors of pressure and movement and so facilitate the absorption of nutrients.—RALPH H. CHENEY. *J. Am. Pharm. Assoc.*, 28 (1939), 271. (Z. M. C.)

Calomel Ointment—Pharmacology of. Experiments using rabbits indicate only slight differences in the toxicity of official calomel ointment and a proposed colloidal calomel ointment although the rate of absorption of the new product is more rapid.—E. E. VIXHER. *Bull. Natl. Formulary Committee*, 7 (1939), 205–207. (H. M. B.)

Chemical Constitution and Physiological Action. The object was to see whether the saturation of the nucleus had any influence on the toxicity of a substance. Cyclohexene and cyclohexane were injected in increasing doses intraperitoneally into rabbits. Both groups presented the same toxic symptoms, except that for a given dose the animals receiving cyclohexene died sooner than those receiving cyclohexane and showed a more rapid hypothermy and paralysis. A crystalline substance, probably adipic acid, was recovered from the urine animals injected with either of the two compounds. The sodium salts of phenylpropiolic acid, cinnamic acid and phenylpropionic acid were injected into the lymph sacs of frogs. All the animals showed similar symptoms of intoxication. The average survival time was 40 minutes for phenylpropiolic acid, 65 minutes for cinnamic acid and 110 minutes for phenylpropionic acid. The toxicity increased as the saturation decreased. The 3 substances were injected into rabbits and leucocyte counts were made. All produced an increase but the increase in leucocytes bore no relation to the saturation of the side chain.—A. TORBOLI. *Boll. soc. ital. biol sper.*, 12 (1937), 368–370; through *Chimie & Industrie*, 40 (1938), 525. (A. P.-C.)

Digitalis Action—Potentiation of, by Epinephrine and Potassium. Digitalis exerts an early sensitizing action on the heart. Epinephrine or potassium are able to make manifest typical digitalis effects, long before the digitalis action *per se* is produced. Epinephrine and potassium effect the same changes.—W. J. R. CAMP. *Arch. intern. Pharmacodynamie*, 61 (1939), 60. (W. H. H.)

Digitalis and Calcium. The hypersensibility of digitalized cats to calcium has been put in evidence by means of direct recording of the heart beats. The modifications happen in the contractile function of the heart under the influence of calcium gluconate in cats not having undergone other treatment; in cats previously digitalized it has been studied by the electrocardiographic method. Calcium gluconate produces, in the normal cat, at first a sinusal bradycardia with lengthening of the auriculo-ventricular conduction, a diminution of amplitude of the R wave with progressive inversion of the T wave, then substitution of sinusal rhythm with an extra systole rhythm which in turn is shortly replaced by ventricular fibrillation followed by arrest of the heart. Using a digitalized animal, calcium gluconate produces immediate appearance of extrasystole rhythm which is followed by ventricular fibrillation and death of the animal. Electrocardiographic technique has permitted of detecting the nature and precise moment of definite heart stoppage and of determining in these conditions the necessary doses of calcium gluconate for producing death, both of normal and digitalized cats. The sensibility of calcium is increased; the minimal lethal dose of calcium gluconate represents 60% of the quantity necessary for producing death in a normal animal. Digitalis and calcium exercise additive action which often produces grave cardio-vascular troubles, therefore this associated medication in therapeutics has been avoided especially in subjects who already present electrocardiographic signs of digitalis intoxication.—J. LA BARRE and J. VAN HEERSWYVIGHELS. *Arch. intern. pharmacodynamie*, 61 (1939), 233. (W. H. H.)

Endocrine Compounds. The Adrenal Glands. The conclusion of a review.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 44 (1939), 424–425, 452. (H. M. B.)

Ergobasine—Action of, on the Cardiac Functions. Ergobasine has a negative chronotropic and a positive inotropic action on the heart of the frog, isolated or *in situ*. The negative chronotropic action can be preceded by a positive one, while the positive inotropic action often is followed by a negative one. On the mammalian heart, *in situ* or isolated, ergobasine has a negative chronotropic action at times followed by an increase in the frequency of the beat, while the amplitude of the contraction is hardly affected. As compared with ergotamine, ergobasine is less toxic toward the heart and possesses a lower sympathicolytic power. The doses of ergobasine which are active on the heart are far removed from the doses which can be used in therapeutics, and in medical practice this secondary reaction very seldom has to be taken into consideration.—L. DONATELLI. *Boll. soc. ital. biol. sper.*, 13 (1938), 158–159; through *Chimie & Industrie*, 40 (1938), 531. (A. P.-C.)

Ergotamine—Action of, on the Cardiac Functions. In the frog heart ergotamine has a negative chronotropic and inotropic action. At times with very small doses or for a particular reactivity of the heart, the two actions are preceded, respectively, by increase in frequency and amplitude of contraction. In the rabbit heart, isolated or *in situ*, ergotamine produced a negative chronotropic action followed at times by increase in frequency, while the amplitude of the contractions was hardly affected. The most constant actions with the doses used are a slowing and diminution of amplitude of cardiac contractions, although the opposite is also encountered. There is no qualitative difference between the actions exerted by ergotamine and by ergobasine, but the former has a more pronounced sympathicolytic action.—L. DONATELLI. *Boll. soc. ital. biol. sper.*, 13 (1938), 159–160; through *Chimie & Industrie*, 40 (1938), 531. (A. P.-C.)

Ferrous Tri- α,α'-Bipyridyl Complex—Pharmacological Studies on the. In rabbits the minimum lethal dose subcutaneously was about 35 mg. per Kg, of the sulfate. No oral doses were lethal. After oral administration of 50 mg. per kilo, traces of inorganic trivalent iron were detected in the urine.—E. BECCARI. *Boll. soc. ital. biol. sper.*, 13 (1938), 6–8; through *Chimie & Industrie*, 40 (1938), 530. (A. P.-C.)

Gelatin—Effect of, on Muscular Fatigue. Gelatin powder was stirred into fruit juice and given to persons at a dose of 45 to 67 Gm. per day. Tests on a bicycle ergometer showed that the work produced, before fatigue set in, was increased from 37 to 240%. Women did not respond to the treatment.—G. B. RAY, J. R. JOHNSON and M. M.

TAYLOR. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 157. (A. E. M.)

Globin Insulin—Clinical Experience with. A single dose of globin insulin was able to regulate, in practically every case, mild or moderately severe diabetes. Several severe cases, uncontrollable with protamine insulin, could be managed with the globin compound.—LOUIS BAUMAN. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 170. (A. E. M.)

Globin Insulin. Insulin Preparations with Prolonged Activity. I. Insulin mixed with globin remains clear at a p_H of 4 or less, but is precipitated above 5. Both clear and precipitated solutions caused a prolonged hypoglucemia when injected into animals. A combination of 0.2–0.3 mg. zinc with 3.8 mg. globin and 100 units insulin produced further prolongation of effect.—L. REINER, D. S. SEARLE and E. H. LANG. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 171. (A. E. M.)

Glycine and Smooth Muscle Contraction. Glycine in concentrations of 1:1250 produces contractions of the isolated inactive or adynamic uterus of the rabbit or guinea pig. This concentration is characterized by good frequency; it is not dependent upon sympathetic or parasympathetic excitation. Glycine in a concentration of 1:750 to 1:1500 improves the contractions of the isolated stomach of the frog. Glycine in a concentration of 1:1250 to 1:2500 augments progressively the amplitude of the contraction of the isolated intestine of the rabbit.—R. J. LESZCZYNSKI. *Arch. intern. pharmacodynamie*, 61 (1939), 201. (W. H. H.)

Histamine and Pilocarpine—Effect of, on Gastric Secretion Inhibited by Fat. Histamine phosphate, administered subcutaneously, elicited a copious secretion of gastric juice from a Pavlov or an Armour stomach pouch in a dog, notwithstanding the inhibitory effect of previously ingested fat. Under the same circmstances subcutaneous injection of pilocarpine hydrochloride provoked a gastric secretion, whose volume was not less than that of the control pilocarpine secretion, but whose peptic power was decidely lower. The inhibitory effect of fat on gastric secretion was more strongly manifested in the Armour pouch than in the Pavlov pouch.—A. ALLEY and B. P. BABKIN. *Arch. intern. pharmacodynamie*, 61 (1939), 99. (W. H. H.)

Insulin. Observations concerning the strength of the International Standard insulin together with a comparison between the subcutaneous and intravenous methods of injection in rabbits. Chinchilla rabbits were injected with 0.5 unit of insulin, both of the old International Standard and the new crystalline one. The activity of the two preparations was compared in the cross test. At different times after injection the blood sugar level was determined, so that an impression could be obtained of the blood sugar curve. The injection was given partly subcutaneously and partly intravenously. No real difference could be shown between the action of the old standard and the crystalline one at any point on the blood sugar curves. The average blood sugar values varied as much after intravenous as after subcutaneous injection, so that the intravenous method of testing insulin with chinchilla rabbits is not to be preferred.—R. W. SPANHOFF. *Pharm. Weekblad*, 75 (1938), 933. (E. H. W.)

Laxatives. Classifications of cathartics are reviewed. Laxatives include (1) those exerting their action through a chemical agent such as cascara sagrada, (2) those which act by absorbing and holding water thus preventing fluid absorption from the bowel, *i. e.*, agar, (3) those acting mechanically by virtue of their consistency or bulk as mineral oil and (4) the salines. Examples of each class are discussed; twelve references.—MILTON A. LESSER. *Drug and Cosmetic Ind.*, 44 (1939), 171–174. (H. M. B.)

Magnesium—Action of, on Diuresis Provoked by Hypertonic Solutions of Sodium Chloride. Small doses of magnesium inhibit diuresis provoked by intravenous injection of hypertonic sodium chloride solutions.—S. GAJETTO. *Arch. Farmacol. Sper.*, 65 (1938), 24–48; through *Chimie & Industrie*, 40 (1938), 524. (A. P.-C.)

Medical Injections. Pectin is added to a solution of insulin (weakly acid) to prolong the duration of action after injection.—D. J. VAN AALST. Brit. pat. 499,765; through *J. Soc. Chem. Ind.*, 58 (1939), 552. (E. G. V.)

Mercury Diuretic—Investigation of a New. The physical and physiological properties of a new diuretic "Dilurgen"—the sodium salt of *s*-(3-hydroxy-2-hydroxymercuripropyl)(β-carboxypropionyl) urea—are described.—E. GEIGER and L. VARGHA. *Magyar Orvosi Arch.*, 39 (1938), 525; through *Chem. Abstr.*, 33 (1939), 3965. (F. J. S.)

Methyladrenaline. The blood pressure raising action of Methadren is less than that of adrenaline. This substance does not produce tachyphylaxis. The pressor action will be evident after ergotamine and cocaine. Methadren has been isolated. It possesses a vasoconstrictor action upon vascular preparations. Methadren fails to lower the blood pressure when the same has been treated previously with ergotamine or prosympal, nor does it have a vasodilating action. Methadren fails to accelerate the heart, nor does it dilate the coronaries. Mobilization of glycogen is slight. Methadren is in mice thirty times, in dogs four hundred times less toxic than adrenaline. Methadren may replace adrenaline in combination with local anesthetics.—E. GEIGER. *Arch. intern. pharmacodynamie*, 61 (1939), 64. (W. H. H.)

Nitrogen Metabolism—Action of Oxidizing and Reducing Substances upon. Poisoning by hydroquinone and pyrogallol have the same effect upon nitrogen metabolism. Animals are highly sensitive to the rate of the specific endogenous consumption during the period of administration of the poisons and decrease this consumption in the days which follow, to a very low level when compared to the normal value; it is probable that the first phenomenon is an index of a cellular fusion in which the corpuscles take a large part, and that the second show the general diminution of activity of the organism produced by the anemia. The rise and fall of the consumption of specific endogenous nitrogen are essentially due to variations of catabolism products; the excretion of creatinine remains constant but the original pure compounds increase although the loss of the original product decreases very strongly. This may bring a new proof of the independence of which the different elements of endogenous nitrogen metabolism enjoy. The creatinuria, an extremely common-place reaction, increases or appears from the administration of the poison, lessens or disappears from the suppression. While the purine oxidation coefficient does not present any change during the duration of the observations, the ammoniauria raises and the protein oxidation diminishes very greatly in the days which follow administration of the toxic substances. It is actually impossible to know if the lowering of the urine formation is the immediate consequence of the diminution of protein catabolism or result of the insufficiency in storage of oxygen.—R. BONNET, J. FOURNEL and T. TERROINE. *Arch. intern. pharmacodynamie*, 59 (1938), 383. (W. H. H.)

Oestrogenic Hormone—Induction of Lipemia and Calcemia in the Cock by Means of. Oestro-

genic hormone induced a strong lipemia in cocks within forty-eight hours of its injection. The extent of the effect depends upon the dose of hormone administered: 2 mg. of oestradiol benzoate are without effect, but 4 mg. cause a 3–4 fold increase in the blood fat concentration. Oestradiol benzoate is 2.5 times as effective as oestrone. Treatment of cocks with oestrogenic hormone during a period of four months causes such strong chronic lipemia and extreme fatting of the organs that, due to fat embolism and subsequent extravasation of the lipemic blood into the bronchia, acute dyspnea sets in. Administration of active principles derived from the anterior hypophysis simultaneously with oestrogenic hormone does not inhibit the lipemia. The diet (carbohydrates, fat) does not influence the lipemia. Large doses of oestradiol benzoate induce lipemia in starved as well as in normally fed birds. The necessary fat is derived, therefore, from the body fat deposits. Hormonal sterins other than oestrogenic hormone, *e. g.*, testosterone, progesterone, do not induce lipemia. The effect is therefore specific to the oestrogenic hormone. Lipemia cannot be induced in humans or in mammals (rabbits, rats) by the administration of oestrogenic hormone. The effect is limited to birds. Oestrogenic hormone causes a severe calcemia in the cock. The induced increase in the blood calcium values is roughly parallel to the increase in the blood fat values. The phosphorous concentration of the blood on the other hand is increased only slightly by the administration of oestrogenic hormone. There is a rise in the concentration of fat and calcium in hen's blood during the laying season. In the cock, the effect of administration of oestrogenichormone may be considered, therefore, as a feminization of the fat and calcium metabolism. The calcemia induced in the cock by the administration of oestrogenic hormone is, however, much greater than that which occurs naturally in the hen.—B. ZONDEK and L. MARX. *Arch. intern. pharmacodynamie*, 61 (1939), 77. (W. H. H.)

Pancreas—Influence of Ingestion of Raw or Desiccated, upon Blood Lipids During Infection. Raw pancreas or 10 to 20 Gm. of desiccated pancreas were given with meals to children with various types of infection. There was a conspicuous increase in lipids in general and phospholipids particularly, in spite of the fact that during infection the lipids usually remain low and do not recover before convalescence is in progress.—ALBERT V. STOESSER. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 202. (A. E. M.)

Pentothal Narcosis—Pathological Findings in Mice after. In nineteen out of twenty mice narcotized with pentothal sodium focal necrosis of the liver was found post mortem. Similar changes were found after nembutal, but not after amytal or evipan.—C. REYNOLDS, J. R. SCHENKEN and J. R. VEAL. *Current Researches Anesthesia and Analgesia*, 17 (1938), 357; through *Brit. Med. J.*, 4075 (1939), 312F. (W. H. H.)

Piperido-Methyl-Benzodioxane, Etc.—Effect of, upon the Isolated Uterus. Piperido-methyl-benzodioxane (F 933), diethyl-methyl-aminobenzodioxane (F 883), phenoxy-dimethyl-amino-ethane (L 407) and methoxy-phenoxy-ethanol-amino-ethane (L 416) caused, in small doses, a stimulation of the motility of the isolated uterus of the guinea pig, rabbit, cat, dog and monkey. Stronger doses of these substances caused an even greater increase in contracture of the uterine muscle. Piperido-methyl-benzodioxane (F 933) slightly diminished or suppressed, but did not invert, the normal inhibitory effect of adrenaline upon the isolated immature guinea pig uterus, adult guinea pig and the non-gravid cat. Piperido-methyl-benzodioxane (F 933) is capable of inverting the normal stimulating action of adrenaline upon the non-gravid rabbit uterus and gravid cat. The adrenolytic power upon the uterus, of F 883, L 407 and L 416 is weaker than that of F 933.—J. DAELS. *Arch. intern. pharmacodynamie*, 61 (1939), 113. (W. H. H.)

Pituitary and Melanophore Hormone. The principle obtained from pituitary extracts is thermostable, resistant to alkali and to pepsin, destroyed by trypsin and absorbed on charcoal. It has also, with regard to its distribution in different parts of the pituitary (mainly in the pars intermedia) similar properties to the melanophore-expanding, hormone. It increases oxygen uptake and carbon dioxide output, especially in fasting animals, depresses the respiratory quotient and raises body temperature. It also stimulates fat metabolism.—D. K. O'DONOVAN and J. B. COLLIP. *Endocrinology*, 23 (1938), 718; through *Brit. Med. J.*, 4074 (1939), 256F. (W. H. H.)

Pregneninonol—Uterine Hemorrhage Induced by Oral Administration of. In normally menstruating women the authors have been able to induce uterine hemorrhage during the inter-menstrual stage by giving pregneninonol *per os* in the postmenstruum (intracyclic hemorrhage). In secondary amenorrhœa hemorrhage has been induced by oral administration of pregneninonol without preliminary treatment with oestrogenic hormone. The effective dose of pregneninonol given by mouth is about six times greater than the effective dose of progesterone given by intramuscular injection.—B. ZONDEK and S. ROZIN. *Lancet*, 236 (1939), 504. (W. H. H.)

Procaine—Behaviour of Hyperbaric Solutions of. It has been widely believed that if solutions of local anesthetics with a higher specific gravity than that of the cerebrospinal fluid were injected into the subarachnoid space, they would behave in a manner similar to that observed with hyperbaric colored solutions observed in glass models of the spinal canal. To disprove this, the authors investigated the concentration of procaine in the spinal fluid three interspaces above the point of injection in 122 adult patients undergoing spinal anesthesia. A solution of procaine in cerebrospinal fluid was used which had a specific gravity of 1.0097 as compared with the specific gravity 1.0015 for the spinal fluid itself. Contrary to what would be expected from the behaviour of models, procaine rapidly reached a level higher than the point of injection, even though the cephalad direction was considerably uphill from the injection point. A small procaine concentration was found as high as the cisterna magna.—H. KOSTER, A. SHAPIRO and A. LEIKENSOHN. *Arch. Surg.*, 37 (1938), 603; through *Abbott Abstract Service*, (1938), No. 404. (F. J. S.)

Pyrrole Derivatives—Pharmacological Studies on Some. VIII. In comparative studies on mice, the minimum lethal dose regularly increased in the following order: α-pyrylmethyl ketone, α-pyrylethyl ketone, α-pyrylpropyl ketone and α-pyrylisobutyl ketone, whereas in frogs it diminished in the same order.—A. RABBENO, G. RASTELLI and S. SACCHI. *Boll. soc. ital. biol. sper.*, 13 (1938), 167–169; through *Chimie & Industrie*, 40 (1938), 531–532. (A. P.-C.)

Senecio Vulgaris—Contribution to the Knowledge of. A review of the author's dissertation Groningen. He discusses the pharmacology of *Senecio vulgaris* and other species of *Senecio* and describes experiments on the guinea pig uterus and perfusion of the frog heart. A 70% alcoholic extract of Radix Senecio Vulgaris is shaken with petroleum ether directly after diluting with water and acidifying with HCl. The solution is decolorized with charcoal; after drying the petroleum ether is distilled

off under reduced pressure. Five Kg. of Radix Senecio Vulgaris yielded 2.3 cc. of a viscous, light yellow liquid with characteristic odor; $n_D^{20} = 1.4830$; freezing point = 11° C. The substance is insoluble in water; soluble in organic solvents such as alcohol, ether, chloroform and petroleum ether. It contains no nitrogen, halogen, sulfur or phosphorous. Carbon content = 79.09%; hydrogen content = 11.37%. It gives reactions of an unsaturated carbon compound and for an aromatic aldehyde group. Pharmacologically this isolated material is at least twice as active as histamine.—J. VAN DER MEER. *Pharm. Weekblad*, 75 (1938), 1170. (E. H. W.)

Sucrose Hypertonic Solutions—Kidney Damage from. Massive volumes of 20% sucrose were injected intravenously in rabbits, which could receive as much as 130 cc. per kilo per hour without lethal results. Approximately 135% of the injected fluid was excreted as urine, but certain evidence of kidney damage was found during the first 48 hours following the experiment: the phenolsulfonphthalein excretion was diminished, and temporary anuria was often present. Examination of the kidneys 24 to 48 hours after the injection of sucrose revealed hydropic degeneration of the convoluted tubules. These changes were temporary. Solutions of sodium sulfate, urea, glucose and sorbitol were made up to equal the sucrose solution in osmotic pressure and were injected in comparable volumes. All except sorbitol were found to be more toxic than sucrose. Sorbitol in 8% solution in Ringer's was less effective as a diuretic than sucrose of 20% strength, but had no ill effects on the kidneys.—H. F. HELMHOLZ, J. L. BOLLMAN. *Proc. Staff Meetings Mayo Clinic*, 14 (1939), 567; through *Abbott Abstract Service*, (1939), No. 541. (F. J. S.)

Sulfanilamide—Concentration of, in Spinal Fluid and Blood Following Single Intrathecal Injection of Drug. It is possible to obtain a relatively high concentration (10 to 16 mg. %) of sulfanilamide in the spinal fluid 4 hours after a single intrathecal injection of 80 mg. to patients free from meningitis. The drug is eliminated within 18 to 24 hours. The concentration in the blood remains low, 1 mg. % or less.—E. NETER, D. H. WEINTRAUB and A. L. DAYMAN. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 164. (A. E. M.)

Synephrine and Neosynephrine. The action of *l*-neosynephrine upon the normal, cocainized or denervated nictitating membrane is very similar to that of adrenaline. Upon the normal muscle, the action of neosynephrine is 3.5–4 times weaker than adrenaline. The action of the *para* racemic isomer (synephrine) is much less weaker, is not augmented by cocaine, but is exaggerated by denervation.—Z. M. BACQ. *Arch. intern. pharmacodynamie*, 60 (1938), 456. (W. H. H.)

Testosterone—Research upon the Action of, upon the Mammary Gland of the Rabbit. To understand more precisely the action of testosterone that one recognizes in the treatment of painful breasts, the authors have undertaken a series of experiments in order to see if there is an antagonism between folliculin and testosterone. The experiments have been carried out upon animals previously castrated. These experiments, reported in detail show without possible discussion that when given in sufficient dosage testosterone in association with folliculin assures the complete development of the mammary gland and at the same time produces an active secretion. Its action resembles that of progesterone but is less powerful; and it is probable that the day will come when one will be able to procure a sufficient quantity of progesterone and the indications for the usage of testosterone in gynecology will be considerably reduced.—COTTE, J. F. MARTIN and MILEFF. *Soc. de Chir. de Lyon*, Feb. 9, 1939; through *Presse Medicale*, No. 17 (1939), 330. (W. H. H.)

Tetramethylammonium Formate—Pharmacological Study of. Tetramethylammonium formate in minimal doses has an exciting action on the heart and respiratory centers and kills higher animals with acute pulmonary edema. The minimum lethal dose for rabbits was 0.000172-Gm. equivalent per kilo body weight.—S. GAJETTO. *Arch. farmacol. sper.*, 65 (1938), 1–23; through *Chimie & Industrie*, 40 (1938), 530. (A. P.-C.)

Xanthine Derivatives—Action of, upon Autonomic Nervous System. Caffeine, theobromine and theophylline have, in various concentrations, a very marked sympathicolytic action; they always decrease in a strong manner the motor effects of electrical stimulation of the cervical sympathetic when measured upon the nictitating membrane of the cat. It has the same inhibitory effect upon the uterus of the cat (2 out of 3: caffeine). The point of attack of caffeine or its derivatives is peripheral, that is, situated in the terminal organ and not upon the nervous pathway. The xanthine derivatives studied exert an uncertain or variable action upon the effects of injections of adrenaline: no action, light sensitization or light desensitization of the nictitating membrane or uterus. It is suggested that caffeine and its derivatives oppose the liberation of a chemical mediator of the adrenergic nerves, thus explaining their sympathicolytic action, already verified previously upon many other organs. Caffeine in a weak concentration (0.5%) augments the inotropic and chromotropic effects of vagal excitation upon the foot of the tortoise. In a stronger concentration (5%) it diminishes, on the contrary, the vagal action upon the tortoise. The sensitization and desensitization effects are perfectly reversible. In the cat, caffeine augments the cardio-moderating action of excitation of the vagus nerves. In the dog, it augments the general vasodilating action of acetylcholine and the local vasodilating action due to stimulation of the erector nerve. The discussion showed that the action of caffeine is peripheral and is not due to an inhibition of choline esterase. The desensitization of the parasympathetic by strong doses of caffeine is interpreted by a diminution of the quantity of chemical mediator liberated by each influx at the termination of the cholinergic nerve. The sensitization of the parasympathetic by weak doses of caffeine and the sensitization to all concentrations of acetylcholine are placed in relation with certain known actions of xanthine derivatives upon the cellular permeability.—H. FREDERICQ and Z. M. BACQ. *Arch. intern. pharmacodynamie*, 60 (1938), 423. (W. H. H.)

Yohimbine Derivatives—Effect of Certain, upon Arterial Strips. Yohimbine derivatives, as hydrochlorides, do not directly affect the arterial muscle strip whether it be in contracted or relaxed state. A determined, consistently restricting dose of epinephrine is inhibited in their action. This inhibiting action can be abolished by previously sensitizing the arterial strip to epinephrine with cocaine. Histamine, barium chloride and sodium nitrite are not modified in their action by yohimbine derivatives. The derivatives (ethyl, allyl-amine, allyl, butyl, phenyl and diethylaminoethyl) are antisympathicomimetic agents.—HAROLD F. CHASE, FREDERICK F. YONKMAN and ALBERT G. YOUNG. *Proc. Soc. Exptl. Biol. Med.* 40 (1939), 308. (A. E. M.)

TOXICOLOGY

Barbiturate Poisoning—Use of Picrotoxin in the Treatment of. A woman twenty years of age took 72 grs. of sodium amytal. When seen by the authors she was comatose, anoxemic, cyanotic and dis-

played very slow and shallow respirations, with occasional convulsive seizures. Picrotoxin was administered by the fractional dose method, being pushed just short of the point necessary to provoke convulsions, and over a period of 24 hours a total dose of 156 mg. was given. In addition, large quantities of fluid were given intravenously, and other supportive measures were carried out. After 24 hours, the patient regained consciousness, and proceeded to have an uneventful recovery, being quite well after a few days. Picrotoxin in this case demonstrated its clinical effectiveness as an antidote to barbiturate poisoning; it should be kept in mind, however, that the drug itself is merely an analeptic; supportive measures of other types are also required if the outcome is to be successful.—J. T. STEPHENS and J. P. ANDERSON. *Ohio State Med. J.*, 35 (1939), 396; through *Abbott Abstract Service*, (1939), No. 499. (F. J. S.)

Benzene—Research upon the Toxicity of. Commercially pure benzene like chemically pure benzene possesses a paralyzing action upon the peripheral vasomotor system of the animal by direct action upon the muscle fibers of the vessels and may be clearly toxic upon the myocardium. The commercially pure product is nevertheless possessed of a greater toxicity than that of the chemically pure. The major toxicity is not due to the presence of thiophene in the commercial product, but to the presence of other compounds which distil between the temperature of 80.4° and 81.2°. The study from the pharmacodynamic view will be a subsequent enterprise.—R. CHARLIER. *Arch. intern. pharmacodynamie*, 61 (1939), 123. (W. H. H.)

Burns—New Cause of Death by. Rabbits burnt at a temperature slightly below or at 80°, and who survive their burn at least three days, present very grave myocardiac lesions. For the most part these animals clearly show very important electrocardiographic anomalies. The death of the majority of these animals is explained very well by their cardiac troubles.—A. FAIN. *Arch. intern. pharmacodynamie*, 61 (1939), 172. (W. H. H.)

Carbon Monoxide Poisoning—Results of Accurate Determination of Hemoglobin Content and Red Corpuscle Count after. In 13 out of 21 cases the number of red corpuscles was above 5,000,000, with a normal hemoglobin content (15 to 18%). One year after an acute poisoning there was still a very high hemoglobin content (19.65%), and 5,770,000 red corpuscles. This polygobulia could be explained by a lesion of the corresponding regulatory nerve centers and should be classed along with the symptoms of irritation and attack of the central nervous system previously observed after carbon monoxide poisoning.—K. HUMPERDINCK. *Arch. Gewerbepath. Gewerbehyg.*, 8 (1938), 464–468; through *Chimie & Industrie*, 40 (1938), 891. (A. P.-C.)

Chloroform—Toxic Action and Distribution of. From a review of this complete work, it appears that almost all organs and tissues of the living organism are affected and damaged by chloroform. It is found in the blood, brain, bulbus, medulla, liver, kidneys, spleen, heart, muscles and fat. Given by inhalation, the chloroformic vapors at 0.90–1.01% solution, produce complete narcosis for several hours; at 1.01–1.22%, arrest of the respiration in two hours; at 1.45–1.55%, arrest of breathing in one hour and five minutes; at 1.60–1.70%, arrest of breathing in forty minutes. Hypodermically, at a dose of 1.60 grs. per Kg., it produces narcosis for the duration of fifteen to twenty minutes, and death, from the same dose, after thirty hours with arrest of the heart in systole. The organs and the organic systems apparently not affected are few and these are the ovaries, the testes, the lymphatic glands, the spleen and the thyroid. More or less minor lesions are found in the gastro-enteric tube (following hypodermic administration) and in the pancreas. Instead the liver, which is always the most damaged, the brain and the spinal medulla, the kidneys, the surrenals and the heart (to a lesser degree) offer for consideration true degenerative and regressive phenomena. The most salient characteristics are, for the liver: much turbid swelling, fatty degeneration and micro-vacuolization, the Kupffer elements and the bilious vasa are not damaged; for the kidney: almost the same cytologic alterations which are more manifest in correspondence with the convoluted tubules, collecting tubules and the loops of Henle; for the heart: less evident fatty degeneration and phenomena of homogenization of the myofibrils, to which are added regressive signs (not frequent), which involve the cardiac ganglia; for the medulla: granulo-adipose degeneration and chromatolysis of the cells of the post. grey horns; for the bulbus: vacuolization, and granulo-pigment degeneration, tigrolysis; for the mesencephalon: alterations which interest principally the nervous cells of the *locus niger;* for the cortex: fatty degeneration (ascending frontal) but with signs more evident in the marginal cells of the small vasa and in the cerebral capillaries; for the cerebellum: intense regressive phenomena in the Purkinje cells; for the third ventricle: chromatolysis (hypothalamic region), cellular deformations of the *tuber cinarium*, reduction of the Nissl masses, picnosis and nuclear lysis; for the nuclei of the base: slight modifications in form and aspect of the neuro fibrillar reticulum.—A. RISI. *Arch. intern. pharmacodynamie*, 61 (1939), 155. (W. H. H.)

Copper Fungicides—Value of New. Trials with a number of proprietary preparations are recorded.—K. J. KADOW and H. W. ANDERSON. *Phytopath.*, 28 (1939), 11–12; through *J. Soc. Chem. Ind.*, 59 (1939), 418. (E. G. V.)

Electrodialysis in Toxicological Research. The apparatus consists of a 12-cm. crystallizing dish and 2 concentric cylinders, 9 and 6 cm. in diameter; the flaring lower ends of each cylinder are closed with a cellophane membrane (60 Gm. per sq. m.). Each cylinder rests on a horizontal glass tube cooler in which cold water circulates. The crystallizing dish contains water and the anode; the middle space receives the fluid or magma to be examined; the inner space contains water and the cathode. The platinum electrodes are 3 to 4 cm. apart; direct current at 120 v. may gradually rise to 120 to 180 milliamp. Promising results by this method were obtained in determining the toxicological distribution of fluorine in the bodies of rabbits, also in determining the localization of barbituric derivatives (barbital and evipan) after intravenous injections. Special precautions to ensure accuracy are discussed.—R. FABRE. *Bull. acad. roy. méd. Belg.*, 2 (1937), 539–546; through *Chimie & Industrie*, 40 (1938), 470. (A. P.-C.)

Fluorine Poisoning. II. Increasing amounts of 1% aqueous sodium fluoride solution were injected hypodermically into rats and guinea pigs. For guinea pigs, in acute poisoning, the minimum lethal dose is close to 0.1 Gm. per kilo body weight. The average lethal dose is about 0.125 Gm. and the maximum lethal dose 0.15 Gm. per kilo; in the latter case death occurs 5 to 7 hours after injection. In chronic poisoning, the minimum lethal dose is of the order of 0.075 Gm. per kilo body weight. Lethal doses for rats are as follows: in acute poisoning, minimum 0.075, average 0.09, maximum 0.15 Gm. per kilo body weight; in chronic poisoning, the lethal doses are about the same as in acute poisoning. To obtain prolonged (3 to 4 months) experimental

intoxication by hypodermic injection of sodium fluoride, it is recommended that a dose 20 times smaller than the lethal dose be injected daily.—A. CANNAVA. *Arch. Ital. Sci. Farmacol*, 6 (1937), 456–468; through *Chimie & Industrie*, 40 (1938), 674–675. (A. P.-C.)

Germicides—Evaluation of. Recent methods for the bio-assay of germicides, including tests designed to investigate the toxcity toward tissue cells as well as toward bacteria (determination of toxicity index), are described and discussed.—C. G. DUNN. *Soap*, 15 (1939), 97–99, 101, 127; through *J. Soc. Chem. Ind.*, 58 (1939), 671. (E. G. V.)

Heart Muscle Degeneration—Specific, Dye That Causes. The dye which is found in lipsticks used by Manchoukuo women and which produces specific degeneration in heart muscle of white rats is Rhodamine B.—K. MAKINO and M. MASAYAMA. *J. Oriental Med.*, 29 (1939), 1231–1233 (German Abstr., 213); through *Chem. Abstr.*, 33 (1939), 3075. (F. J. S.)

Insecticidal Efficiency—Relation of Concentration of Active Ingredient to, of Dusts. The barium fluosilicate in dusting preparations was not directly proportional to the kill of *Œcanthus niveus*. Data obtained are utilized to determine the economic optimum of barium fluosilicate in the preparation.—L. M. SMITH. *J. Econ. Entomology*, 31 (1938), 598–602; through *J. Soc. Chem. Ind.*, 58 (1939), 531. (E. G. V.)

Insecticides—Synthetic, Value of α-Naphthyl Isothiocyanate (Thiocarbimide) in Fly Sprays. Comparisons of the toxicity of sprays containing various concentrations of pyrethrins alone, with others containing 1% of α-naphthyl isothiocyanate (I) as well as pyrethrins, show that the better the insecticide, the greater is the proportion of pyrethrins that can be replaced by I; it is suggested that 1% of I together with 37, 55 and 80 mg. of pyrethrins per 100 cc. will make B-, A- and AA-grade insecticides, respectively.—N. TISCHLER and J. STONIS. *Soap*, 14 (1938), 97, 99; through *J. Soc. Chem. Ind.*, 57 (1938), 1509. (E. G. V.)

Metaldehyde (Paraldehyde)—Toxicologic Study of. The author reviews the properties and the toxicology of metaldehyde. The following procedure for the detection of metaldehyde is recommended: Place about 20 cc. of the liquefied sample in a decantation flask, add 40 cc. of chloroform, stir vigorously several times and allow to separate. If an emulsion persists, separate the layers by centrifuging. Filter the chloroform solution and evaporate on a watch glass, adding a little of the chloroform solution at a time. Cover the residue in the watch glass with a second slightly smaller glass, place a piece of moistened filter paper on the outside of the upper glass, transfer to a piece of asbestos that has a hole (about 3 cm. diam.) in its center and heat cautiously with a small flame. The metaldehyde, which sublimes in a few seconds, collects on the upper glass, and can be identified microscopically or by its color reaction with guaiacol and sulfuric acid.—G. VITTE. *Bull. trav. soc. pharm. Bordeaux*, 77 (1939), 12–23. (S. W. G.)

Methylcholanthrene—Cancers Produced by, in Mice. The authors report that methylcholanthrene is an energetic cancerous producing agent, certainly less active than benzopyrene, but much more rapidly. Injected under the skin of mice it produces fuso-cellular sarcoma or fusiform cellular epitheliomas. After painting on the skin, the frequency of cancer production is dependent upon the concentration of the substance used. After injection in other regions of the body (testicles, thigh, peritoneum) the cancer-producing hydrocarbon produced in general fuso-cellular sarcomas.—J. L. NICOD and J. REGAMEY. *Assoc. Franc. pour L'Etude du Cancer*, (Nov. 21, 1938); through *Presse Medicale*, 4 (1939), 69. (W. H. H.)

Mustard Oils—Fungicidal Value of. The descending order of toxicity toward facultative saprophytes was: alyl-, phenyl-, methyl- and ethylthiocarbimides; ethyl and methyl mercaptans; methyl and ethyl thiocyanates; allyl, methyl and ethyl sulfides. Sinigrin had little or no toxic value.—J. C. WALKER. *Phytopath.*, 27 (1937), 142; through *J. Soc. Chem. Ind.*, 58 (1939), 87. (E. G. V.)

Oduvan Leaf. The poisonous principle can be isolated in purer condition by extraction with alkaline ether than with the usual acid ether, tannins and other impurities being retained by the alkaline aqueous solution. The ethereal extract thus obtained is highly poisonous to frogs, and when treated with sulfuric acid gives a blue color gradually changing to a permanganate tint. It does not give a green color with concentrated hydrochloric acid.—ANNUAL REPORT OF THE CHEMICAL EXAMINER, GOVERNMENT OF MADRAS, 1937. *Analyst*, 64 (1939), 121. (G. L. W.)

Oil Insecticides—Micromethod of Testing, on Scale Insects. Apparatus and technic are described.—R. H. SMITH. *J. Econ. Entomology*, 31 (1938), 632–633; through *J. Soc. Chem. Ind.*, 58 (1939), 531. (E. G. V.)

Poisoning with Dinitro-*o*-Cresol. Death occurred 60 hours after poisoning took place. Post mortem examination gave the following results: skin colored yellow as in the case of absorption of picric acid, surprising emaciation, desiccation of all the organs, hyperplasia of the bone marrow, hardening of the fatty tissues and presence of dinitrocresol.—M. NORDMANN and O. WEBER. *Arch. Gewerbepath. Gewerbehyg.*, 8 (1938), 441–448; through *Chimie & Industrie*, 40 (1938), 891. (A. P.-C.)

Saturnism—Anemia Produced by. Report of a clinical study of lead poisoning in a 53-year old workman who recovered lead waste in a storage battery factory. Examination of the blood showed a decrease in the red corpuscles count and in the hemoglobin content. The urine contained an appreciable amount of lead and of coproporphyrin. In this anemia, lead most probably acts as a catalyst in the destruction of red blood corpuscles; it is therefore essential to prevent it from circulating through the organism. This result was obtained in the present instance by intravenous injections of 10% calcium chloride solution. After a few injections, the lead and coproporphyrin disappeared from the urine and became fixed in the internal organs, particularly the bones. The decrease in urinary coproporphyrin caused the disappearance of the abdominal syndromes. To obtain a subsequent "mobilization" of the lead and facilitate its elimination, the calcium chloride treatment was followed by a magnesium sulfate treatment.—L. PRETI. *Medicina Lavoro*, 29 (1938), No. 2, 33–42; through *Chimie & Industrie*, 40 (1938), 675. (A. P.-C.)

Silicic Acid—Toxicological Determination of, in Organs. The yellow shade imparted to the solution of the blue silicomolybdic acid complex by the presence of the complex phosphomolybdic acid is eliminated by means of a suitable filter. The absolute color is determined by means of a step-photometer. The procedure, compositions of solutions and experimental results are given. The micromethod has an accuracy of 3 to 10%.—H. KAISER and E. WETZEL. *Angew. Chem.*, 50 (1937), 865–866; through *Chimie & Industrie*, 40 (1938), 470. (A. P.-C.)

Sulfur—Fungicidal Properties of. The toxicity of sulfur to spores of fungi causing storage diseases was accentuated by presence of small amounts of

certain other fungicides and diminished by that of some insecticides.—J. J. TAUBENHAUS. *Phytopath.*, 27 (1937), 141; through *J. Soc. Chem. Ind.*, 58 (1939), 87. (E. G. V.)

Thallium. The toxic effect and the influence upon the wool cover of thallium are studied in dependence upon the method of its administration: local (cutaneous), hypodermic, intravenous or oral (in boli). The chief indicators were the "experimental moult" of Angora rabbit and the toxic reaction. The principal experiments were carried out on eighty rabbits with the same dose of thallium in absolutely identical conditions on homogeneous material of the same age and sex. The terms and symptoms of the toxic reaction, the dynamics of the changes in the body weight, as well as the specific reaction of the wool cover proved to be quite identical with the four methods tested. The method of hypodermic injections, which simplifies the individual dosing and is four to eight times more rapid than the method of oral thallization, is best for obtaining "experimental thallium moulting" in Angora rabbit. This conclusion is of significance for animal husbandry. The opinion, which exists in contemporary dermatology about the necessity of using only the oral method of thallium treatment should be revised. Buschke's opinion is incorrect. Data obtained are considered from the viewpoint of our general theory of the mechanism of thallium action both upon the hair cover and the organism as a whole.—N. A. ILJIN. *Arch. intern. pharmacodynamie*, 60 (1938), 377. (W. H. H.)

THERAPEUTICS

Alcoholism—Hidden Forms of Pellagra in. In addition to reporting six classical cases of pellagra in which the symptoms were relieved by the administration of nicotinic acid, the authors describe two other cases of great interest. These patients did not show any of the mucous membrane or skin lesions of pellagra; one suffered from an obscure psychosis and the other had a prolonged febrile illness of undetermined origin. In the psychotic case, treatment with 200 mg. of nicotinic acid and a high caloric, high vitamin diet resulted in a cure in four days. The authors believe that a case of this kind carries the implication that all chronic alcoholics may be potential or even borderline pellagrins who may become pellagrous at any time if their food supply is curtailed. The authors make a practice of using nicotinic acid routinely in such patients, regardless of the presence or absence of typical signs of the disease. This is observed to be especially true in the case of alcoholics suffering from lobar pneumonia.—E. C. TOONE and J. L. BERKLEY. *Virginia Med. Monthly*, 66 (1939), 282; through *Abbott Abstract Service*, (1939), No. 507. (F. J. S.)

Antacids—Comparative Values of Some New and Old. After a general discussion of the commonly used gastric antacids the author mentions some of the undesirable properties of sodium bicarbonate when indiscriminately used for this purpose. He began to experiment with magnesium trisilicate as an antacid and has used it either alone or in combination with kaolin and aluminum hydroxide. The author enthusiastically agrees with the conclusions reached by Mutch and Mann. Mutch showed that magnesium trisilicate was an efficient base and also had absorptive properties; its administration brings about the neutralization of excess hydrochloric acid. Mann found that free hydrochloric acid cannot exist for any length of time in the presence of magnesium trisilicate. Further, there is no danger of alkalosis or of adverse systemic effects from the ingestion of magnesium trisilicate. The constipating and laxative effects which are seen with some other antacids are not troublesome when this substance is used.—H. I. GOLDSTEIN. *Med. Record*, 148 (1938), 417; through *Abbott Abstract Service*, (1939), No. 512. (F. J. S.)

Arthritis—Chronic, Treatment of, by Injection of Anesthetics. The thesis is advanced that chronic arthritis is exacerbated by the lack of motion imposed upon the joint by pain. The relief of this pain might be considered merely symptomatic treatment, but in the author's experience it is more than this; by allowing more motion in the joint, alkylosis is reduced and function tends to be restored. The relief of pain is accomplished by the injection of local anesthetic solutions. Usually, the treatment is started with aqueous solutions, and if the relief obtained justifies repetition, a longer-acting substance may be injected. For this, the author uses a solution of a local anesthetic in almond oil. The technic is special and must be learned by observation and supervised practice; it requires an extensive knowledge of anatomy. Above all, the injection treatment of arthritis is not considered a complete treatment in itself, but only as an adjunct to the accepted standard therapeutic methods commonly used to relieve cases of arthritis.—O. STEINBROCKER. *Ann. Internal Med.*, 12 (1939), 1917; through *Abbott Abstract Service*, (1939), No. 515. (F. J. S.)

Barbituric Narcosis. Massive intravenous infusions of isotonic glucose or saline solutions in volumes from one-fourth to three-fourths the body weight in cats and dogs produced shortening of the duration of narcosis from average anesthetic doses of sodium barbital and sodium phenobarbital to one-third to one-half that of controls doubling of the early elimination of these drugs in the urine. Under the effect of these massive infusions animals receiving two or three M. L. D.'s of sodium barbital have shown complete and permanent recovery. Massive intravenous infusions were of life-saving value in experimental poisoning with isobutylallyl barbituric acid and also in the case of isoamylethylbarbituric acid, though only in combination with metrazol. The mode of antidotal action of massive infusions is believed to be dependent upon the ability of the infused fluids to dissolve a part of the drug which otherwise would accumulate in toxic concentration in nervous tissues and distribute it among the tissues of the body not specifically affected by the drug. When the fluid is excreted by the kidneys, the urine contains barbiturates in higher concentrations than exist in any of the tissues of the body.—A. R. CUTTING and T. KOPPANYI. *Arch. intern. pharmacodynamie*, 60 (1938), 395. (W. H. H.)

Barbiturates in Suppository Form for Cyclic Vomiting. Among a group of brief therapeutic suggestions concerned with disorders of the gastrointestinal tract, the author reminds physicians that when they are confronted with a child with so-called cyclic vomiting, or with a woman having vomiting of a closely related character, the possibility of quieting the vomiting center with one of the newer barbiturates should be kept in mind. It may sometimes be forgotten that in many persons morphine or other opiates have as one of their side-actions as emetic effect, due to their influence on the vomiting center in the medulla. The 3-gr. suppositories of Nembutal which can be obtained in any drug store will sometimes be very helpful; alternative methods of administration are by intramuscular injection of other short-acting drugs of the same type. The Nembutal suppositories are also sometimes of help in the treatment of severe attacks of migraine when the attack has progressed to the point where vomiting is troublesome.—H. J. SIMS. *Am. J. Digestive Diseases*, 6 (1939), 140; through *Abbott Abstract Service*, (1939), No. 517. (F. J. S.)

Bismuth in the Treatment of Syphilis. Historical review together with a tabulation of therapeutic preparations classified as colloidal (8), water-soluble (23), oil suspensions (71) and oil-soluble (14) giving the name of the product, the patented name, manufacturer, percentage of bismuth content, dose and notes as to composition, etc. This partial list of 116 compounds appears to consist only of European preparations.—U. SANTI. *Boll. chim.-farm.*, 77 (1938), 665–668, 671–678; through *Chem. Abstr.*, 33 (1939), 1875. (F. J. S.)

Black Widow Spider Bite—Relief of the Pain of, by Calcium Injections. The author reports one case of a man 43 years of age who sustained a bite by a black widow spider on the dorsum of the glans penis and shortly thereafter began to suffer from the typical excruciating pains in the lower abdomen and thighs. Following the report of Gilbert and Stewart, the author injected 10 cc. of calcium chloride intravenously (15½ grs.). After 3 cc. of this solution had been injected, all pain was relieved and the patient began to complain of a burning sensation in the soles of the feet and the palms. The injection was temporarily stopped because of this reaction, which recurred several times when injection was slowly resumed. Following this first injection, complete relief from pain was obtained for about six hours. Then the pain recurred, and was relieved by another intravenous dose of calcium chloride. It was necessary to give more calcium on the following day; the gluconate was chosen. Its action was equally efficacious.—C. T. MASON. *Nebraska State Med. J.*, 23 (1939), 389; through *Abbott Abstract Service*, (1938), No. 407. (F. J. S.)

Burns—Treatment after Extensive. The injection, into burnt rabbits, of defibrinated blood, pure or diluted serum, or physiological solutions, prevented death during the course of the first days which often takes place following the burn. The reduction of blood volume by loss of liquids at the level of the burnt area alone often produced death. If one is able to compensate for this loss of liquid, the animal will be able to survive many days from the burn, but it sooner or later will succumb from other unknown troubles.—G. HELDERWEIRT, J. SCHIEVERS and A. SIMONART. *Arch, intern. pharmacodynamie*, 60 (1938), 462. (W. H. H.)

Cardiazol Treatment of Schizophrenia. Cardiazol is a valuable means of treatment. Of thirty-four patients, twelve have recovered and ten have improved; twelve have shown no improvement. Compared with other methods of shock treatment, cardiazol therapy is relatively safe. This is of particular importance in Indian patients, most of whom are weak and undernourished, and in whom insulin has a limited application. The following adverse effects have been noted. Vomiting and diarrhœa in all patients if cardiazol is given too frequently. Five patients were more than ordinarily susceptible, and in them even one injection produced severe diarrhœa. The convulsions are usually like epileptic fits; but atypical fits—delayed, recurrent, or continuous—were all observed. After a few fits, patients become apprehensive of further injections. The pupils, during the fit, in all cases were widely dilated; but in a considerable number they showed alternate contraction and dilation lasting for a maximal period of nearly three minutes. Three intelligent well-behaved patients described a curious feeling of lightness, of levitation, and that they felt they had no bodies at all. This feeling akin to depersonalization is worth notice. The improvement effected by cardiazol convulsions has been not only in frankly schizophrenic stupors but also in depressions and confusional states. In view of the tendency to natural remissions and spontaneous recoveries in these states, it appears that cardiazol is not a "specific cure" for any of these conditions. It is probable that its action is to hasten recovery. Cardiazol seems to exert maximal beneficial effect on early cases of mental disorder characterized by emotional and intellectual blocking and reduced psychomotor activity, but without severe destruction of nerve cells. Some patients have to live a "cardiazol life" for prolonged periods analogous to the insulin life of some diabetics.—M. V. GOVINDASWAMY. *Lancet*, 236 (1939), 506. (W. H. H.)

Cocarboxylase and Riboflavin—Beneficial Effects of. The administration of 10-mg. doses of synthetic cocarboxylase to 11 selected individuals suffering from nutritional polyneuritis brought about a prompt improvement in every case. This showed that thiamin pyrophosphate (cocarboxylase) possesses antineuritic properties in human beings and indicated that thiamin acts by being changed into cocarboxylase. In a different experiment it was found that the synthetic phosphoric acid ester of riboflavin could be used to relieve the symptoms produced by a diet deficient in riboflavin and moreover when the administration of this substance was stopped the symptoms returned. These patients were then successfully treated with synthetic riboflavin all of which showed the therapeutic effectiveness of the synthetic compound and supported the hypothesis that riboflavin acts in the body as the phosphate.—TOM D. SPIES. *Southern Med. J.*, 32 (1939), 618–619. (W. T. S.)

Colitis—Mucous, Vitamin B_1 in Treatment of. Trial of vitamin B_1 in the treatment of mucous colitis was suggested to the author by four types of observations: (1) The improvement in the diarrhœa of sprue, pernicious anemia and sometimes of pellagra. (2) The improvement in idiopathic diarrhœa seen during treatment of concomitant vitamin B_1 deficiency. (3) Improvement in a chronic diarrhœa during treatment for coexisting "beriberi heart." (4) The atonic condition of the bowel seen in monkeys with vitamin B_1 deficiency. Thirty-two patients with various types of colitis were treated with vitamin B_1, liver extract or a combination of the two. Diarrhœas of unknown etiology responded almost specifically to vitamin B_1, as did many cases of atonic constipation. The majority of cases of ulcerative colitis responded to parenteral liver extract during the first month of treatment. In many cases, however, the condition could not be considered to be permanently cured, inasmuch as relapses occurred shortly after the treatment was discontinued.—G. CHENEY. *Am. J. Digestive Diseases*, 6 (1939), 161; through *Abbott Abstract Service*, (1939), No. 539. (F. J. S.)

Dermatitis Due to Sunlight—Estrogenic Substance in the Treatment of. A certain type of dermatitis has been found to be brought about by exposure of the skin to the direct rays of the sun's light, and hitherto its treatment has been largely uncertain and unsatisfactory owing to the lack of knowledge of the remote cause. The immediate cause is known, being the action of the actinic light from the sun. Six cases of this type are described. The author decided to treat these patients with a preparation of estrogenic substance. The dose was two hundred International Units of the material in an aqueous solution, given on every third or fourth day. The total number of injections varied from three in some cases to four in others. In some cases, larger doses of an estrogenic substance in oil were given. These doses sometimes amounted to 2000 International Units. A considerable amount of benefit often seemed to result from the treatment, though the rationale of this mode of therapy has not as yet been satisfactorily explained.—A. H. LANCASTER. *Southern Med. J.*, 32 (1939), 495;

through *Abbott Abstract Service*, (1939), No. 502. (F. J. S.)

Estrogenic Hormone—Use of, to Control Photogenic Dermatosis. L. discredited previous reports that the photosensitizing substance, hematoporphyrin, is the etiologic agent in dermatosis caused by sunlight. A study of 6 cases did however indicate to L. that in the female there is a definite correlation between estrogenic hormone deficiency and photosensitivity. The administration of estrin was found to prevent photogenic skin eruptions and establish a tolerance to sunlight.—A. H. LANCASTER. *Southern Med. J.*, 32 (1939), 495–499. (W. T. S.)

Estrogenic Substances—Dosage of, in Various Conditions. The satisfactory application of the various preparations of estrogenic substances depends on an accurate understanding of dosage. These materials are offered as oily solutions, as aqueous injectable preparations, and in forms suitable for oral use. They are also incorporated in vaginal suppositories. The material is absorbed more slowly from the oily solutions; the duration of effect is thus longer than that obtained from aqueous preparations. In the treatment of gonorrheal vaginitis in children, the usual dose is one 1000 I. U. suppository daily until the discharge becomes acid and the symptoms disappear. In treating the menopause, injections are usually given; one series controlled by hormone assay and vaginal smears showed an average dose of 150,000 I. U. per month to be required for one patient. The induction of vaginal bleeding in amenorrhea requires much higher doses—of the order of 1 to 3 million I. U.; establishment of regular periods by this means is not likely.—EDITORIAL. *American Journal Obstetrics and Gynecology*, 36 (1938), 525; through *Abbott Abstract Service*, (1938), No. 382. (F. J. S.)

Estrone—Clinical Use of, in Amenorrhea and Menstrual Headache. In a general discussion of the application of various hormones to clinical practice, the author points out that some hope for effective treatment in amenorrhea is held out by estrogenic substances. It has always been held that there could be little rational basis for the use of estrone in treating amenorrhea due to ovarian deficiency because estrone does not stimulate ovarian function, but merely replaces one part of it. However, it does seem that in some cases a quantitative deficiency in the patient's own estrogen may be filled by the administration of estrone and thus an approximately normal interplay between the hypophysis and the ovary initiated. Futhermore, it is logical to believe that in some cases an underdeveloped endometrium may be sensitized by the administered estrone to become responsive to the patient's own hormones. Estrogenic substances frequently are successful in the treatment of headaches definitely associated with the menstrual period.—E. NOVAK. *Endocrinology*, 25 (1939), 423; through *Abbott Abstract Service*, (1939), No. 536. (F. J. S.)

Eumydrin (Atropine Methylnitrate)—Treatment of Pyloric Stenosis with. A series of twenty infants with pyloric stenosis treated with eumydrin is analyzed, sixteen being cured, three operated upon successfully after eumydrin had failed to relieve the vomiting and one dying during treatment with eumydrin. Diagnosis was made on a typical history, visible peristalsis and a palpable pyloric tumor. Radiography, either as an aid to diagnosis or as an indication of response to treatment, was of doubtful value. Dehydration and alkalosis were relieved by the subcutaneous injection of normal saline, before eumydrin was administered, and was continued so long as daily fluid intake was insufficient. Gradually increasing doses of a 1 in 10,000 solution of eumydrin were given twenty minutes before each feed, beginning with 1 cc. and reaching 4–6 cc. per feed. Gradually increasing feeds (of breast milk when possible) were given after an initial starve of twelve to eighteen hours beginning with two drachms two-hourly and only reaching full feeds after three or four days. An initial, and thereafter daily, stomach wash-out was given until the residue had become negligible. Infants were discharged as soon as vomits were adequately controlled, and treatment was thereafter continued in the home. Eumydrin was discontinued by gradual diminution of the dose at the end of six to twelve weeks, depending on the initial response to the drug. Operation was performed in two cases in which vomiting was not controlled by eumydrin, and in one other who was discharged and readmitted and in whom response was inadequate. Transient flushing in one case receiving 8 cc. of eumydrin per feed was the only observed symptom of atropine-like poisoning. Persisting constipation may have been due to eumydrin as may the condition of paralytic ileus, with subsequent death, in one child in whom the drug was administered before dehydration had been relieved.—R. H. DOBBS. *Lancet*, 236 (1939), 12. (W. H. H.)

Fractures—Compound, Use of Powdered Sulfanilamide in. The idea of packing infected wounds with antiseptics can be traced back to Lister's famous carbolic acid dressings, but in modern times antiseptics have not been generally used in wounds because of the realization that any agent which was likely to prove toxic to bacteria would also prove toxic to traumatized tissue. Sulfanilamide, however, is an agent which may be present throughout the body in concentrations sufficient to prove detrimental to bacteria, yet does not harm the tissues. The first case treated by the authors was a compound fracture in which mud had been driven into the ends of the bones. After careful cleansing and debridement, 5 Gm. of powdered sulfanilamide were placed in the wound which was closed tightly. The wound healed without drainage and a bone graft took six weeks later. 39 compound fractures have been thus treated since and 37 were healed without infection. Two cases were re-compounded and only then did they become infected.—N. K. JENSEN, L. W. LOHNSRUD and M. C. NELSON. *Surgery*, 6 (1939), 1; through *Abbott Abstract Service*, (1939), No. 537. (F. J. S.)

Gonococcal Vulvovaginitis—Chemotherapy of. Twenty-seven cases of gonococcal vulvovaginitis treated with M. & B. 693 are reported upon, and also thirty-one cases treated with prontosil album and six cases treated with uliron. Total, sixty-four cases. Tolerance to these drugs is children is shown to be good when suitable doses are employed for short periods. The results of treatment were: remained well for five to thirteen months, thirty-four cases; remained well for three to nineteen weeks, fourteen cases; immediate failures, ten cases; late relapses, six cases. The advantages of M. & B. 693 over sulfanilamide are shown in the shorter duration of drug treatment and omission of local treatment to the urethra, vagina and rectum. Comparison is made of sulfonamide treatment with the methods of local treatment and oestrin therapy as employed in the home in earlier years.—D. K. BROWN. *Brit. Med. J.*, 4076 (1939), 320. (W. H. H.)

Gonorrhea—Chemotherapy of. Of two hundred cases of acute gonococcal patients, one hundred were treated with prontosil album (immediate therapy), fifty with uleron (delayed), and fifty with M. & B. 693 (immediate therapy). Prontosil album shortens the duration of the disease prevents complications, and produces intolerance in 34% of cases, but the permanent-cure rate is only 46.3%.

Uliron, when given by the delayed method, also shortens the disease and is better tolerated than prontosil album. It achieves a permanent-cure rate of 56%, but owing to the delayed method of administration complications were met with in 20% in this series. The majority of these complications appeared toward the end of the second week—that is, before the administration of uleron. M. & B. 693 is well tolerated in the dosage given. It shortens the disease, prevents complications and produces a permanent-cure rate of 86% in the cases investigated. M. & B. 693 undoubtedly is superior to prontosil album and uliron in the treatment of acute gonococcal urethritis in the male sex.—R. MARINKOVITCH. *Brit. Med. J.*, 4076 (1939), 317. (W. H. H.)

Gout, a Disease Which Tends to Be Overlooked in Diagnosis. Gout is being increasingly recognized as one of the "forgotten diseases," and some justification for this view is found in statistics showing that the average length of time between the first acute attack of gout and the diagnostic identification of the disease is 15 years. The four outstanding characteristics of gout are given as podagra, high uric acid values in the plood, punched-out lesions in the joints, and tophi. The symptoms of the acute attack are familiar to all; the chronic form of the disease is often confused with other types of arthritis. In treatment of the acute attack, a vigorous laxative is recommended by the author. Following this, the patient should be placed on a purine-free diet and given colchicine, $^1/_{100}$ grain six to eight times daily for two or three days. Morphine or codeine may also be needed to control the pain. Later, cinchophen may be administered, with large fluid intake and alkalinization of urine (to prevent the formation of uric acid stones). Alcohol should be forbidden.—J. M. BOWERS. *Northwest Med.*, 37 (1938), 284; through *Abbott Abstract Service*, (1938), No. 389. (F. J. S.)

Grippe—Treatment of Laryngeal, Pharyngeal and Tracheal Infected. An alcoholic extract of garlic (*Allium sativum*) has been found to be effective in the treatment of feverish or inflamed mucous membrane of the upper respiratory tracts caused by grippe.—I. PAVLOVA and I. KAZANSKI. *Journ. Ushn. Gorl. Bol.*, 2 (1937), 161–163; through *Central Medical Reference Journal* (U. S. S. R.), 21 (1938), 117. (C. J.)

Hay Fever—Oral Administration of Ragweed Pollen in. Black-tested oral preparations of ragweed pollen upon forty of his patients who came to him within a week after the onset of the annual ragweed season. The initial dose of 500 units was increased by 500 units daily until symptoms subsided or until a total dose of 4000 units was reached. In giving the larger doses, 1000 units were given at a time, and as many of these doses were swallowed as were necessary to control the symptoms. The pollen was taken on an empty stomach. Only twelve of these patients reported good results; in six the results were poor, while eighteen patients showed no improvement. Two patients were forced to discontinue the treatment because of nausea and abdominal distress following the ingestion of the large doses. The percentage benefited was lower than would be expected with the injection treatment, and for this reason the author is of the opinion that oral treatment does not compare favorably with injection treatment in ragweed hay fever.—J. H. BLACK. *J. Allergy*, 10 (1939), 156; through *Abbott Abstract Service*, (1939), No. 458. (F. J. S.)

Isotonic Sodium Bicarbonate Solution in Diabetic Coma. Two cases of diabetic coma with severe acidosis are reported. Treatment with insulin did not rapidly bring about the expected improvement of the acidosis. Treatment with isotonic solution of sodium bicarbonate immediately relieved the coma.—E. KIRK. *Lancet*, 236 (1939), 505. (W. H. H.)

Mapharside—Clinical Study of. Mapharside is the derived name of the organic trivalent arsenical, *meta*-amino-*para*-hydroxy-phenal-arsine oxide, which is also the active clevage product of arsphenamine and neo-arsphenamine. After using mapharside in treating 1000 patients suffering from syphilis the authors claim certain advantages for it over neo-arsphenamine. Some chemical and physical properties of mapharside were given.—R. V. RAJAM and N. V. RAO. *Indian Med. Gaz.*, 74 (1939); through *J. Trop. Med. Hyg.*, 42 (1939), 121. (W. T. S.)

Menopause—Artificial, Prophylactic Use of Estrogens in. The author believes that in cases where a contemplated surgical procedure is expected to produce artificial menopause, benefit may be obtained by beginning the administration of estrogenic substances preoperatively. This has the merit of allowing an estimation of the approximate dose required for the individual patient before the onset of symptoms, though in certain cases the removal of the ovaries causes an increase in the requirement. A criterion is given for judging the adequacy of the dose: Three reactions may occur. (1) Total absence of effect within one hour after injection usually indicates that a deficiency exists and the dose has been inadequate. (2) Improvement or relief of symptoms within an hour means that a deficiency exists and that the dose should be continued. (3) Exaggeration of symptoms, extreme exhaustion, pain in the ovarian regions, etc., may mean either that no deficiency exists or that too large a dose was given for the slight deficiency.—P. F. SCHNEIDER. *Am. J. Obstet. Gynecol.*, 37 (139), 861; through *Abbott Abstract Service*, (1939), No. 504. (F. J. S.)

Metal Abietates—Therapeutic Compounds Containing. An essential oil solution of silver, bismuth, mercury, or zinc abietate is dispersed in a mixture of a lower alkyl ester of abietic acid and a petroleum hydrocarbon.—A. L. OMOHUNDRO and E. C. FANTO. McKesson & Robbins, Inc. U. S. pat. 2,070,915; through *J. Soc. Chem. Ind.*, 58 (1939), 105. (E. G. V.)

Metrazol in Complete Heart Block. Metrazol (cardiazol) was given to four patients with complete heart block and Adams-Stokes syndrome, both by injection, subcutaneously and intravenously, and orally. In two of the patients the usual remedies for heart block had been given without effect but cardiazol relieved the symptoms and increased the heart rate. In the two other cases large doses of cardiazol were ineffective, but there was a good response to atropine in one and to adrenaline in the other. The beneficial action of cardiazol is believed to depend on a stimulation of the vaso-motor and respiratory centers.—H. C. LUETH. *Am. Heart J.*, 16 (1938), 555; through *Brit. Med. J.*, 4076 (1939), 370D. (W. H. H.)

Migraine—Treatment of the Entire Patient in. As in many other disturbances of constitutional nature, the understanding of the relation of migraine attacks to the whole nature of the patient is of vital importance in successful treatment. The patient susceptible to migraine is compared to a trap ready to be snapped by the slightest disturbance; proper handling, arrangement of the environment and mild psychotherapy can lessen the tension and render the attacks less frequent. After an attack of headache has come on, anything which will lessen the pulsations of the intracranial vessels will tend to relieve the pain; this is the basis of treatment with ergotamine, which the author regards as the mainstay of palliative treatment. The vomiting center can be quieted with the barbiturates, given preferably in the form of suppositories or intramuscular

injections. It is useless to attempt to give these drugs by mouth after vomiting has begun, since they will neither be retained nor absorbed at that stage of the illness.—W. C. ALVAREZ. *Wisconsin Medical J.*, 38 (1939), 451; through *Abbott Abstract Service*, (1939), No. 528. (F. J. S.)

Mineral Oil and Agar Emulsion—Lack of Harmful Results from. A few observers have recently written at some length concerning the possible deleterious effects of mineral oil or mixtures containing mineral oil when these are taken orally for the relief of constipation. Jung and Isaacs investigated two of these possible dangers: the possibility of habituation and the production of a deficiency of fat-soluble vitamin A, said by some to be possible from the prolonged use of mineral oil. The experiments were carried out on 24 healthy subjects who took 2 tablespoonfuls of a mineral oil-agar emulsion daily for periods of 91 to 131 days. In some subjects, during the first week, unpleasant symptoms such as slight abdominal cramps and leakage of oil were noted, but these soon disappeared. Withdrawal of the medication did not result in constipation in any case, and dark adaptation tests, carried out before and after the experiment with a view to obtaining data on vitamin A deficiency, failed to disclose any abnormality.—F. T. JUNG, B. L. ISAACS. *Am. J. Physiol.*, 126 (1939), 549; through *Abbott Abstract Service*, (1939), No. 543. (F. J. S.)

Nicotinic Acid—Specific Action of, in Pellagra. Of 14 active pellagrins, being fed a standard basic diet, 13 promptly recovered when given parenterally 1.5 mg. (3 times the dog-curative dose) of nicotinic acid. Doses as high as 1 Gm. of nicotinic acid per day were toxic in normal individuals. R. and S. found that an associated vitamin B_1 deficiency in the pellagrin is not affected by the administration of nicotinic acid.—JULIAN M. RUFFIN and DAVID T. SMITH. *Southern Med. J.*, 32 (1939), 40. (W. T. S.)

Peritonitis Due to Bile—Mechanism of Severe Effects of. Though bile peritonitis is not common, it has a high mortality—around 50 per cent. By experiments on animals, the authors endeavored to determine the pathogenesis of the severe symptoms which accompany this condition. It was found that in dogs the soiling of the peritoneal cavity with bile furnished conditions which were extremely favorable for the development of an anærobic bacillus indistinguishable from *Clostridium welchii*, and at first this organism was considered as a possible cause for the intense toxemia. Other experiments tended to minimize this factor, but brought out the presence of a shock-producing mechanism consisting essentially of two factors. These were: primary injury to the peritoneum by the toxic bile salts followed by secondary shock due to the loss of fluid from the injured peritoneal surface. Intravenous isotonic colloidal solutions (such as acacia) were of value in combating the shock.—M. T. MANSON and C. T. EGLINTON. *Surgery*, 4 (1938), 392; through *Abbott Abstract Service*, (1938), No. 400. (F. J. S.)

Pneumonia—Lipoid, Occurrence of, in Infancy and Childhood. Lipoid pneumonia is a disease principally seen in infants and young children as a result of the accidental inhaling of oils placed in the nose or mouth. It is a low-grade chronic suppurative reaction due to the irritation set up by the oil particles. This condition could be eliminated if all those handling children were made aware of the mechanism of causation. The author recommends that infants should be fed cod liver oil only when awake and while held in a semi-erect or sitting position. Parents and nurses should be warned against forcing cod liver oils and other oils when the child refuses and resists; holding the nose to force swallowing is especially dangerous. The use of vitamin concentrates rather than larger doses of crude cod liver oil is a help in infants who vomit and in very young infants. Oily nose-drops are potentially dangerous during the first two years of life. Feeding of oils to debilitated patients requires the greatest precautionary care.—I. J. WOLMAN. *Pennsylvania Medical J.*, 42 (1939), 492; through *Abbott Abstract Service*, (1939), No. 449. (F. J. S.)

Pneumonia—Nicotinic Acid Adjunct to Sulfanilamide Treatment of. The authors present a preliminary report of their observations of the effect of nicotinic acid in decreasing some of the unwanted manifestations attending the treatment of pneumonia with sulfanilamide. When this treatment is carried out, it has been noted that there frequently occurs a black-dotted heavy furring of the tongue, resembling blacktongue in appearance. When this lesion is observed, it is often noted that consolidation of the affected portions of the lungs fails to resolve normally, even though the patient's temperature may be normal and no evidence of toxic effects from the infection are present any longer. In cases of this kind, nicotinic acid has been given in doses ranging from 10 mg. to 100 mg. The result is apparently a rapid clearing of the glossitis. This occurs first on the posterior portion of the tongue and proceeds forward. At the same time, consolidation resolves.—E. M. JOSEPHSON and G. KLEWAN. *Nature*, 143 (1939), 725; through *Abbott Abstract Service*, (1939), No. 524. (F. J. S.)

Pregnancy Toxemias—Use of Sodium Lactate Solution for Acidosis of. One of the generally accepted facts in the disturbed physiological condition of pregnancy toxemias is a lowering of the CO_2-combining power of the blood, and this plays an important part in the mechanism of fatal terminations of these disorders. Glucose is widely used in combating this acidosis, but in some cases its effect is not adequate; sodium bicarbonate solution intravenously has been used with benefit in these cases, but sodium lactate has certain advantages over this: it can be sterilized by autoclaving, whereas sodium bicarbonate is decomposed by heat above 80° C. The dose of sodium lactate was calculated for women with toxemia as follows: Dose in cc. of 1 molar sodium lactate = 0.3 × body weight (Kg.) × volume per cent desired increase in CO_2 combining power. In six cases where previous glucose administration had failed to raise the CO_2 combining power sufficiently, the lactate solution was able to do so. No deleterious reactions were observed following the lactate solution.—L. C. CHESLEY and F. H. VANN. *Am. J. Obstet. Gynecol.*, 36 (1938), 660; through *Abbott Abstract Service*, (1938), No. 385. (F. J. S.)

Psychosis—Convulsive Treatment of, with Picrotoxin. A variety of drugs have been used to produce convulsions since the therapeutic effect of the latter in certain mental diseases was discovered; the authors used picrotoxin for this purpose in a series of 38 psychotic patients. Cases of schizophrenia, manic-depressive insanity and psychopathic personality were included. The drug was injected intravenously in doses which had to be determined for each individual patient; the convulsions produced by picrotoxin were not preceded by the interval of acute terror which is often noted when certain other convulsant drugs are used. Nineteen cases of long-standing schizophrenia were treated, and of these five made a full recovery. The manic-depressive patients were restored to normal in eight instances quite promptly. Out of the whole series, 18 patients either had a full recovery or were socially recovered. None has relapsed during a follow-up period ranging from less than 3 months up to 5 months.—A. A. LOW, M. F. BLAUROCK, M. SACHS, C. WADE and E. ROSS. *Arch. Neurol. Psychiat.*,

41 (1939), 747; through *Abbott Abstract Service*, (1939), No. 501. (F. J. S.)

Quinine Bisulfate—Experience with, in the Treatment of Trachoma. C. cited 6 reports which were concerned with the quinine treatment for trachoma. The present report outlined a study extending over a period of 21 months in which C. used 10% quinine bisulfate solutions in treating 80 patients with trachoma. Of those receiving regular treatments about 25% were completely cured, 35% almost cured with only about 11% showing no improvements. The cases were tabulated to indicate the sex of the patient, the type of trachoma encountered and duration of treatment. The method used for applying the quinine solution was described along with some symptoms of hypersensitiveness to quinine which were observed by the investigator.—S. P. CHANG. *China Med. J.*, 55 (1939), 439–447. W. T. S.

Rocky Mountain Spotted Fever—Treatment of, with Metaphen. The author reports two cases of Rocky Mountain spotted fever occurring in Illinois because few general practitioners have had an opportunity to see such cases, and because the disease seems to be becoming endemic in the State. The first case was seen on the second day of the illness with high fever and a spotted macular eruption over the whole body, which resembled the early stage of chicken pox more than anything else. However, the macules failed to become vesicular, and took on a petechial character, suggesting meningococcemia. Diagnosis was made by the Weil-Felix reaction. The second case was a woman of 21, treated with sulfanilamide during the first seven days of the disease. At the end of this time she seemed desperately ill, and treatment with intravenous Metaphen was suggested by the consultant. Ten cubic centimeters of Metaphen 1:1000 solution were administered intravenously on five occasions over a period of 5 days. The patient recovered completely.—B. Q. DYSART. *Illionois Med. J.*, (March 1939); through *Abbott Abstract Service*, (1939), No. 498. (F. J. S.)

"Samudra Phena"—an Indigenous Medicine of India. "Samudra Phena," a common household drug among the Hindus and often prescribed in Ayurvedic medicine, was found on analysis to consist primarily of calcium carbonate along with about 5% of organic matter. Some of the actions which have been attributed to this drug could be explained on the basis of its composition. But the authors were of the opinion that it had little to offer over the purer and more definite calcium slats already being used in medicine.—R. N. CHOPRA, S. GHOSH and A. T. DUTT. *Indian J. Med. Research*, 26 (1938); through *J. Trop. Med. Hyg.*, 42 (1939), 154. (W. T. S.)

Scurvy—Intramuscular Injections of Vitamin C in. In certain patients, where the gastric acidity is low, or an insufficient absorptive surface exists in the intestine for the assimilation of vitamin C, the necessity of parenteral administration arises. If ascorbic acid is given intravenously the blood level quickly rises, but the material is rapidly excreted and the level in the blood falls again. If ascorbic acid is injected intramuscularly, a more prolonged effect is obtained, but plain ascorbic acid is too acid to be tolerated by the tissues, and produces sloughing. The sodium salt of ascorbic acid is tolerated by muscle tissue, but it is unstable and, if freshly prepared, requires careful neutralizing titrations. The author experimented with a stable salt of ascorbic acid and monoethanolamine (Abbott's Cenolate), and found that it produced a satisfactory rise in blood ascorbic acid after injection was made intramuscularly. This rise was lower but more sustained than that which is produced by ascorbic acid administered intravenously.—E. L. LOZNER, F. J. POHLE and F. H. L. TAYLOR. *New England J. Med.*, 220 (1939), 987; through *Abbott Abstract Service*, (1939), No. 508. (F. J. S.)

Silver Nitrate and Gentian Violet Treatment for Burns. Chen cited other reports to show that there are advantages and disadvantages in using simple and silver nitrate fortified solutions of tannic acid as well as solutions of certain dyes in the treatment of burns. The present report was concerned with a clinical and bacteriological study of the use of gentian violet, silver nitrate and a mixture of gentian violet and acriflavine in treating burns. The conclusions were that, in spite of certain drawbacks, a gentian violet and silver nitrate combination for the treatment of burns is sound since it serves to prevent infections, minimize pain and produce a good coagulum. The mixture of aniline dyes was advocated in those cases where there are infections due to gram-negative organisms. The technic employed for the bacteriological study and the procedure followed in the clinic were well outlined and in addition several typical cases were illustrated and described.—C. Y. CHEN. *China Med. J.*, 55 (1939), 409–426. (W. T. S.)

Sodium Baribtal-Sodium Amytal—Use of, in Sleep Therapy. The author distinguished hypnotic or natural sleep from narcotic or induced sleep and reviewed the effects of the latter in treating various types of psychosis. A study of 47 cases revealed that sleep induced by a sodium barbital-sodium amytal mixture was beneficial in the maniac-depressive but not in other types of psychosis. The technic employed and the complications encountered in the use of sleep therapy were discussed.—LEWIS BARBATO and STEPHAN WEISZ. *Southern Med. J.*, 32 (1939), 354. (W. T. S.)

Strophanthin—Use of, in the Treatment of Heart Failure. The value of full therapeutic doses of digitalis has been recognized for some time in the United States, but undesired side-effects, such as nausea and vomiting, extra systoles, etc., often interfered with their administration. These were considered to be unavoidable consequences of high doses, and indications that the doses should be reduced. In 1906, Fraenkel claimed to get successful results from intravenous strophanthin in cases where other digitalis-like drugs were inefficacious or were not tolerated. The question arises: Is there any difference between the digitalis bodies with respect to the maximum increase in myocardial tonus that can be obtained without reaching the toxic limit of myocardial excitability and depression of conductivity? The author believes that on pharmacological grounds there is a difference in favor of intravenous strophanthin; however, the more practical oral administration of digitalis is well suited to the routine, moderately decompensated case. Strophanthin has value in the severe case.—H. WEESE. *Therap. d. Gegenwart*, 80 (1939), 250; through *Abbott Abstract Service*, (1939), No. 526. (F. J. S.)

Sulfanilamide—Powdered, Treatment of Chancroid by the Local Application of. The authors made experiments to determine the effect of local application of two sulfonamide compounds on the evolution and clinical course of soft chancre. They divided the patients into five groups, which received, respectively: (1) Only local treatment with sulfonamide compounds. (2) Local treatment supplemented by oral administration of the same drugs. (3) Local chemotherapy and vaccines of killed Ducrey bacillus. (4) Sulfonamide by mouth and local treatment with common antiseptics. (5) Combined local treatment with sulfonamides, oral chemotherapy and vaccines. The first group compared so favorably with the others that the method was considered a success. Pain, if

present, disappeared in 24 hours, and healing took place in 4 to 20 days. Local treatment has the advantage of being free of all general systemic effects and toxic reactions—complications which often arise when sulfonamides are given orally. The powder is applied after washing the ulcer with warm water.—P. GUERRA and A. FUENTES. *Revista Medico-Farmaceutica Dominicana*, 6 (1939), 226; through *Abbott Abstract Service*, (1939), No. 523. (F. J. S.)

2-Sulfanilylaminopyridine (M. & B. 693)—Treatment of Pneumonia with. The results of treatment in 50 cases of pneumonia with M. & B. 693 are compared with the results in fifty cases which were given non-specific treatment. There were eight deaths in the control series, compared with one in the treated series. The course of the disease was considerably modified by the drug, and the pyrexial period was reduced in the treated group. In the small series under review it has been impossible to correlate clinical findings with different pneumococcal types. The drug appeared to be active against all types.—T. ANDERSON and R. M. DOWDESWELL. *Lancet*, 236 (1939), 252. (W. H. H.)

Sulfanilyl-Sulfanilamide Therapy in Sulfanilamide-Resistant Gonorrhea. From previous reports concerning the pharmacology of sulfanilamide and sulfanilyl-sulfanilamide it was concluded that the latter given parentally is more potent against certain cocci and far less toxic than the former. Of 40 acute cases of sulfanilamide-resistant gonorrhea in the male treated with 3-Gm. daily doses of sulfanilyl-sulfanilamide or its sodium derivative over a period of 10 to 14 days, 22 were promptly cured, 5 were improved and 13 were unimproved. In addition to providing the above clinical data this study confirmed the previous reports regarding the relative toxicity of sulfanilamide and its derivatives.—EDWIN P. ALYEA and WALTER E. DANIEL. *Southern Med. J.*, 32 (1939), 608–613. (W. T. S.)

Sulfapyridine—Excellent Results from, in the Treatment of Lobar Pneumonia. The authors referred to several studies which have been made on the use of sulfanilamide and related compounds in the treatment of pneumonia. Fifty patients of assorted ages suffering from one of the several types of lobar pneumonia were treated with an initial dose of 2 Gm. of sulfapyridine followed thereafter by 1-Gm. doses at stated intervals until 25 Gm. of the compound had been given. The majority of the patients responded promptly to the treatment and all recovered except one which results confirmed other favorable reports on the use of sulfapyridine in pneumococcic infections. The methods of diagnosis and treatment along with the results of the treatments were described in detail. The results of this study were compared to those of another study made during 1937–1938 in which 236 cases of pneumococcic infections in the same hospital were treated without the use of sulfapyridine.—ROBERT H. WILLIAMS and HUGH J. MORGAN. *Southern Med. J.*, 32 (1939), 601–608. (W. T. S.)

Testosterone Propionate—Effect of, on Spermatogenesis. A study of 8 cases revealed that the intramuscular administration of testosterone propionate in doses of 5 mg. 3 times a week generally increased the spermatozoal output in normal males while larger doses in the same individual reduced the sperm count. With no further treatment the sperm count returned to normal after several weeks. No increase in the size of the genital organs nor increase in crines pubis was observed. One patient displaying hypomotile sperm was materially benefited by testosterone therapy while results in other abnormal individuals were not so satisfactory.—H. S. Rubinstein and A. A. KURLAND. *Southern Med. J.*, 32 (1939), 499–503. (W. T. S.)

Testosterone Propionate—Use of, in Prostatic Hypertrophy. The administration of this male sex hormone was beneficial to the majority of 23 patients suffering from prostatism. The most striking results were obtained in those cases where the prostatism was not complicated by chronic infection or by other pathological conditions.—REX BOLEND. *Southern Med. J.*, 32 (1939), 154. (W. T. S.)

Therapeutic Material Suitable for Use in Tendon and Nerve Repair, Etc. A material suitable for use in surgery for promoting repair, with low irritation, of animal body tissues is formed of the amnionic or allantoic membrane (suitably in the form of sutures, patches, ribbons, etc.).—HERBERT L. JOHNSON. U. S. pat. 2,135,399, Nov. 1, 1938. (A. P.-C.)

Therapeutic Preparation—Production of Dry, Stable, Containing the Volatile Constituents of Freshly Gathered Plants. Fresh, moist plants (for example, hemlock, garlic, thuja leaves, fennel), and coarsely granular water-insoluble adsorbents (for example, silicon dioxide, loam, kaolin, fuller's earth, aluminum hydroxide) are ground together until a state of maximum dispersion is reached; the mixture is then dried.—G., F. and H. MADAUS. Brit. pat. 485,188; through *J. Soc. Chem. Ind.*, 57 (1938), 1503. (E. G. V.)

Therapeutically Efficacious Preparations—Concentrating or Purifying. Surface-active agents in drug extracts, body fluids, etc., are removed by frothing at an appropriate temperature, removing the froth and reconverting it into liquid state, for example, by centrifuging or adding a defrothing agent. The examples describe the concentration of respiration- and heart-stimulating principles from rabbit blood-serum, the concentration of antibody from immunity sera and the removal of saponin from digitalis extracts. Suitable apparatus for carrying out the processes is described.—F. SCHUTZ. Brit. pat. 498,643; through *J. Soc. Chem. Ind.*, 58 (1939), 666. (E. G. V.)

Tissue-Stimulating Substances—Experiments with New. Horticulturists have conducted extensive experiments in the search for substances which would stimulate the growth of plants, and some of these are applicable to the stimulation of tissue regeneration for surgical purposes. The authors experimented with two compounds: potassium naphthalene acetate and potassium indole butyrate. The effect of these chemicals was tested on experimental burns to see whether epithelization would take place more rapidly under their influence. After the production of two burns of the same extent and severity on the back of a rat, the chemicals, in a 5% concentration in a lanolin-vaseline base were applied to one burn, the other serving as a control. Burns so treated healed in about 35% shorter time than those left untreated. Potassium indole butyrate had a more marked effect than potassium naphthalene acetate. The latter had about the same stimulating effect as brilliant green. More extensive investigation is stated to be desirable.—J. K. NARAT and G. CHOBOT. *Surg., Gynecol. Obstet.*, 68 (1939), 63; through *Abbott Abstract Service*, (1939), No. 452. (F. J. S.)

Triazol 156 in Chronic Schizophrenia. A system of triazol dosage for intravenous and intramuscular injection is outlined, based on experience from the production of 254 convulsions. A proportion of chronic schizophrenics are benefited, and this would make the treatment worth while from the subsequent ease in the nursing of such patients. The danger of awakening latent pulmonary tuber-

culosis is illustrated by a case which ended fatally. Triazol is a valuable reliable convulsant for both intravenous and intramuscular use, a series of fits having been successfully induced in all of the cases tried. It is without danger in subjects free from organic disease, in whom no complications or sequelæ were noted.—I. ATKIN. *Lancet*, 236 (1939), 435. (W. H. H.)

Uliron. In proper doses properly applied uliron is a valuable therapeutic agent, although it cannot replace or render obsolete the usual measures necessary in the treatment of gonorrhea. Its chief value, however, lies in the fact that it can be used by the patient at home.—GÜNTHER. *Med. Klin.*, 34 (1938), 1562; through *Brit. Med. J.*, 4074 (1939), 256B. (W. H. H.)

Undulant Fever—Use of Nicotinic Acid with Foshay's Antigen in. In a complete and scholarly review of the literature on the treatment of chronic brucellosis, the author discusses various methods for the handling of cases of this disease. Experience has caused him to prefer injections of Foshay's antigen to other methods of therapy. This antigen is a specially prepared material extracted from strains of *Brucella* and subsequently oxidized to reduce its tendency to provoke reactions. It is given subcutaneously at daily intervals in doses which must be carefully regulated to approach but not to exceed the allergic tolerance of the individual patient. A curious effect noted in some cases was that the duration of the treatment could be considerably reduced by the intravenous administration of small doses of nicotinic acid. These varied from 6 to 12 mg. daily. The observation was made that oral administration of 300 to 600 mg. daily failed to duplicate this. Sulfanilamide has been found of little value.—R. M. CALDER. *South. Med. J.*, 32 (1939), 451; through *Abbott Abstract Service*, (1939), No. 533. (F. J. S.)

Urinary Tract Infections—Mandelic Acid in the Treatment of. It is stated that "mandelic acid is now universally recognized as a useful chemotherapeutic agent in the treatment of urinary tract infections." Bacteriologic tests with this substance have shown that *E. coli* and *Proteus vulgaris* are the organisms most easily killed by it. Streptococci require a more concentrated solution and *B. ærogenes* and *Ps. pyocyaneus* are even more resistant. In clinical practice, the alkalinizing effect of *Proteus vulgaris* is so strong that the necessary acid concentration for the bactericidal action of mandelic acid can rarely be attained. A series of 42 cases is reported, of which 4 were men. The patients who were extremely toxic on admission were first treated by forcing fluids, instituting catheter drainage and occasionally, by the intravenous injection of neoarsphenamine. After the toxic symptoms had subsided, mandelic acid was given in doses of 12 Gm. each day. The drug was found to be safe.—A. I. DODSON and P. W. ODEN. *Virginia Med. Monthly*, 66 (1939), 255; through *Abbott Abstract Service*, (1939), No. 496. (F. J. S.)

Vitamin A—Clinical Aspects of. Y. reviewed the newer clinical aspects of vitamin A deficiency paying particular attention to the pathological changes which occur in an individual suffering from a lack of this vitamin. The best means for diagnosing a mild or early deficiency of vitamin A were given along with the factors to be considered in administering adequate amounts of this vitamin.—JOHN B. YOUMANS. *Am. J. Trop. Med.*, 19 (1939), 229–241. (W T. S.)

Vitamin A—Theory of the Rôle of, in the Prevention of Blindness. The author opens his paper with the remark that the idea of vitamin A being of importance in the prevention of blindness may seem fantastic to his readers; however, he believes that he can demonstrate a definite connection. The argument is based on observations made in an agricultural experimental station in Texas, where sows were kept on a vitamin-A poor ration during pregnancy; all the pigs in the litters were blind, and some of them had no eyes at all. This the author believes, shows that vitamin A deficiency has a strong influence on the development of the eyes *in utero*, and gives a possible explanation as to why certain infants infected with the gonococcus will progress to complete panophthalmitis and destruction of the eye, whereas others, for no apparent reason, will have only a mild conjunctivitis which readily responds to treatment. The resistance of the ocular tissues is probably the reason and this, he believes, is closely related to vitamin A. —J. L. NOVAES. *Hora Medica*, 11 (1939), 84; through *Abbott Abstract Service*, (1939), No. 522. (F. J. S.)

Vitamin B. Deficiency—Diagnosis of. A clinical study of the symptoms of vitamin B_1 deficiency with particular reference to the rôle of edema, neuropathy, circulatory and gastro-intestinal disorders in the diagnosis of this deficiency.—GEORGE CHEEVER SHATTUCK. *Am. J. Trop. Med.*, 19 (1939), 207–217. (W. T. S.)

Vitamin K in the Treatment of Intestinal Disorders. Hitherto the main application of vitamin K has been the control of hemorrhagic conditions associated with diseases or obstructions of the biliary tract; the present discussion widens the applicability of the new agent somewhat by including other disorders of the intestinal tract (chiefly of a surgical nature) in which the absorption of the vitamin is defective. It is pointed out that a number of steps are required before vitamin K is available for use in the body: it must be present in the diet; adequate bile must be available in the intestinal tract; fat must be properly digested; a sufficient amount of normal intestine must be present to absorb properly; and, apparently, a fairly normal liver must be present. Several cases of intestinal short-circuiting operations are reported, in which a hemorrhagic diathesis developed. These were adequately controlled with vitamin K and bile salts, and were put in much better condition for surgery which they required.—R. L. CLARK, C. F. DIXON, H. R. BUTT and A. M. SNELL. *Proc. Staff Meet. Mayo Clinic*, 14 (1939), 407; through *Abbott Abstract Service*, (1939), No. 509. (F. J. S.)

Vitamin K—Relation of, to Hemorrhage in the Newborn. In normal infants there develops during the first days after birth a K-avitaminosis which usually subsides within a week. This usually causes a hypoprothrombinemia which must be held responsible for the commonly occurring slight hemorrhagic diathesis of the newborn. The condition is not dependent on the presence of icterus neonatorum. The pathogenesis of this avitaminosis K is considered to be a defective absorption. In some cases of icterus, anemia or hydrops in the newborn the lowering of prothrombin is very marked, and since the administration of vitamin K to a few of these cases resulted in a prompt increase in the prothrombin content of the blood, one is justified in concluding that the cause of hypoprothrombinemia was a lack of vitamin K. In the rarer cases where a complete absence of prothrombin can be demonstrated within 24 hours after birth, some other factor besides the lack of vitamin K must also be causally related to the condition.—H. DAM, E. TAGE-HANSEN and P. PLUM. *Ugeskrift for Laeger.*, 101 (1939), 896; through *Abbott Abstract Service*, (1939), No. 531. (F. J S.)

NEW REMEDIES

SYNTHETICS

Acidum Nicotinicum, or pyridine-*beta*-carboxylic acid, is an oxidation product of nicotine. It may be obtained from liver extract and is also made synthetically. In liver it occurs as the amide. It is used in the treatment of black tongue in dogs and pellagra in humans. Perhaps a relative of nicotinic acid, possibly an identical compound, is the antipellagra factor of vitamin B-complex. The largest dose given is 200 mg. per day.—*Pharm. Weekblad,* 76 (1939), 99. (E. H. W.)

Calcium Eudiral (Amsterdamsche Chininefabriek) is Salicylas Calcicus cum Theobromino-Calcio, obtainable in powder or in 500-mg. tablets. It is used in dropsy and in kidney affections. Dose 1 tablet 3 times a day.—*Pharm. Weekblad,* 76 (1939), 100. (E. H. W.)

Camandeline (Nederlandsche Dieetzoutfabriek) is mandelic acid (calcium) in granulated form so that it may be used as an effervescent salt.—*Pharm. Weekblad,* 76 (1939), 101. (E. H. W.)

Clinestrol (Glaxo Laboratories Ltd., Greenford, Middlesex, Eng.,) is synthetic oestrogen; stilboestrol tablets; stilboestrol dipropionate ampuls. It is used in cases of menopause, disorders following ovariectomy, senile vaginitis, pruritus and kraurosis vulvæ, secondary amenorrhea, dysmenorrhea, vulvovaginitis in children, inhibition of lactaliva. The dose should be as ordered by the physician. It is supplied in bottles of 25 tablets, 0.5 mg.; 1.0 mg. and 5 mg.; ampuls, 1.0 mg., box of 6 x 1 cc.; 50 mg. box of 1 x 1 cc. and 6 x 1 cc.—*Australasian J. Pharm.,* 20 (1939), 804. (A. C. DeD.)

Cormed (Dr. Rudolf Reiss' Rheumasan-en Lenicet-Fabriek) is a 25% solution of pyridine-β-carbonic acid-diethylamide. It is a stimulant for the respiration and an analeptic to the brain. It is found on the market in ampuls and drops.—*Pharm. Weekblad,* 76 (1939), 101. (E. H. W.)

Desibyl Capsules contain in each, desiccated bile equivalent to about 2.5 cc. of fresh bile in a readily soluble form similar to fresh bile in therapeutic activity. Desibyl is administered as a cholagogue or choleretic when the bacteriostatic and digestive actions of bile are required, and to replace bile lost through fistulæ. Bile also promotes the absorption of vitamins A and D, and is of value in the treatment of steatorrhea, cholecystitis, cholelithiasis, migraine and peptic ulcer. The usual dose is 2 or 3 capsules three times daily after meals. When taken on a full stomach the gastric distress associated with the presence of bile in the stomach is obviated. Desibyl capsules are supplied in bottles of 50.—*Quart. J. Pharm. Pharmacol.,* 12 (1939), 318. (S. W. G.)

Dibexin Capsules contain in each, 1 mg. (333 International Units) of vitamin B_1 and 40 Sherman units of vitamin B_2 (riboflavin) together with the other recognized components of the B complex, B_3, B_4, B_5, B_6 and nicotinic acid (the pellagra-preventive factor) and are thus suited for the treatment of vitamin B_1 and B_2 deficiency, and to supplement diets lacking in these vitamins. It is indicated also in beri-beri, neuritis, polyneuritis, anorexia of dietary origin, and for securing optimum growth in children. The dosage as a supplement to the dietary is 1 to 3 capsules daily; during pregnancy and lactation, for ill-nourished children, in atonic constipation and anorexia of dietary origin, degenerative cardiovascular disease, general debility and asthenia, and in pyrexia 2 to 6 capsules daily; and in beri-beri or other severe vitamin deficiency 6 to 10 capsules daily for ten days to two weeks after which the dose may be reduced to 2 to 6 capsules daily. Dibexin capsules are supplied in bottles of 25 and 100.—*Quart. J. Pharm. Pharmacol.,* 12 (1939), 318. (S. W. G.)

Diukal (Nordmarkwerke, Hamburg) is a 23% solution of potassium glutaminic acid. It is used as a diuretic in doses of one dessertspoonful.—*Pharm. Weekblad,* 76 (1939), 101. (E. H. W.)

Eggopurine (Kon. Pharm. Brocades-Sthеeman & Pharmacia Amsterdam) contains various mandelic acid preparations used as urinary antiseptics particularly in infections with the coli group. Mandelic acid only acts as a bactericide in the urine when the latter is strongly acid. At a p_H of 5, a concentration of only 0.25% is necessary. For this purpose ammonium chloride is prescribed to precede the mandelic acid. Later ammonium amygdalate was extensively used but because of its bitter taste was less willingly taken. The calcium mandelate that is found on the market under the name **Eggopurine Granulat** is a granular powder which serves better. The property of acidifying the urine is similar and the calcium component serves to combat inflammation. The dose of Eggopurine Granulat is 14–15 Gm. per day in 3–4 doses. Eggopurine for injection is found on the market in 20-cc. ampuls. These contain 6 Gm. sodium amygdalate, 6 Gm. hexamethylenetetramine, dissolved in 20 cc. aqua bidestillata. Eggopurine Granulat is found on the market in 70-Gm. bottles.—*Pharm. Weekblad,* 76 (1939), 101. (E. H. W.)

Ethamolin is an aqueous solution of ethanolamine oleate (5%) with 2% of benzyl alcohol, intended for the injection treatment of varicose veins, being a highly effective and particularly safe sclerosing agent which cannot cause allergic reactions, muscular cramps or pains, and which will not cause sloughing if the solution escapes into the surrounding tissues. It may be used in all cases of varicosity of the saphenous vein system, often even in the presence of the Trendelenburg sign. The normal amount for the individual injection is usually about 1.0 to 2.0 cc., but the exact dose and the frequency of treatment must be adjusted for each individual case. Ethamolin is supplied in 2-cc. ampuls and in 15- and 30-cc. rubber-capped bottles.—*Quart. J. Pharm. Pharmacol.,* 12 (1939), 319. (S. W. G.)

Eudiural is the name given by the Amsterdam Quinine factory to sodium salicylate with sodium theobromate, occurring in powder and in tablets. The tablets of 0.5 Gm. are sold in tubes of 20 and in larger sizes. They are used as a diuretic in dropsy and kidney affections, in asthma, angina pectoris, etc. Dose, 1 tablet 3–4 times a day.—*Pharm. Weekblad,* 76 (1939), 101. (E. H. W.)

Flavogel is a jelly containing 1 in 1000 of acriflavine in a water-soluble base which eliminates the inefficiency of emulsions and oil-creams, and promotes prolonged contact between the acriflavine and the tissues. Flavogel also possesses an exosmotic effect which reduces swelling round the wound and relieves tension. It is indicated for use on all wounds, whether septic or not, as a protective dressing for ulcers, abscesses and boils, and in all other septic skin conditions. It should be applied directly to the affected part in a thin layer and covered with a dressing; Flavogel prevents dressings from adhering to the injured surface. It is supplied in tubes of 1.5 ounces.—*Quart. J. Pharm. Pharmacol.,* 12 (1939), 319. (S. W. G.)

Jodarine (D. Riedel—E. de Haen A. G., Berlin) is a 27.5% solution of methyltriethanolammonium iodide. It contains 0.135 Gm. of iodine per cc. and is used for parenteral iodine therapy.—*Pharm. Weekblad,* 76 (1939), 102. (E. H. W.)

Magnesium Resorpta (Gehe & Co., Dresden) is an organic salt containing magnesium and saponin

components and is used in magnesium therapy.—*Pharm. Weekblad*, 76 (1939), 102. (E. H. W.)

Mersagel consists of phenylmercuric acetate, 1 in 750, in a colorless water-soluble jelly base, and is a powerful fungicide which may be applied to the skin in the treatment of mycotic skin diseases. The application is soothing and non-irritating and is directly indicated in tinea of the groin and foot and as an antiseptic for wounds and abrasions. Mersagel should be applied lightly to the affected part and covered with a dressing, and reapplied daily. It is supplied in tubes of 1.5 ounces.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 319. (S. W. G.)

Nicamide is nicotinic acid diethylamide, prepared as a 25% solution for oral administration, and in ampuls as a 25% solution for intravenous or intramuscular injection. It is indicated as a powerful respiratory and cardiac stimulant, for use in all conditions associated with shock, and depressed circulatory and respiratory states. Nicamide oral solution is supplied in bottles of 15 and 100 cc. For injection it is supplied in 2 and 5 cc.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 319. (S. W. G.)

Oestroglandol Oestrone (Roche Products Ltd., Welwyn Garden City, Herts, Eng.) is natural standardized oestrone. The ointment (1000 units per Gm.) is used for percutaneous application in pruritis vulvæ and acne vulgaris in girls. It is supplied as an ointment, 20 Gm.; ampuls, 6; oral tablets, 20.—*Australasian J. Pharm.*, 20 (1939), 704. (A. C. DeD.)

Ormalon Tablets (Dr. Riedel—E. de Haen, Berlin) contain chloroxyquinolinesulfonic acid sodium. They are used orally and as clysmas in colitis, amoebic dysentery and in bacterial diarrheas.—*Pharm. Weekblad*, 76 (1939), 102. (E. H. W.)

Parmanil contains in oily suspension a methylglucamide of auro-thio-diglycollic acid, which is soluble in water and has a gold content of about 50%. It is used for the gold therapy of tuberculosis and other diseases of infectious origin when a gold preparation is required which is of marked therapeutic activity, capable of being slowly absorbed and completely detoxicated. The dosage in rheumatoid arthritis is 0.5 cc. of the 5% suspension increasing to 2 cc.; the average course consists of 12 injections, 12 cc. in all, at the rate of one injection weekly. In tuberculosis rather larger doses in the same general scheme are given, and in lupus erythematosus a longer course of the same order as in rheumatoid arthritis is used. Parmanil must be given by intramuscular injection. It is supplied in 5-cc. bottles of 2% suspension, and 10-cc. bottles of 5% suspension.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 320. (S. W. G.)

Physolactin is a preparation of the lactogenic hormone derived from fresh pituitary, and contains in aqueous solution 60 Riddle-Bates units of prolactin in 1 cc.; the activity is also clinically controlled. It should be administered to all primiparæ in whom the milk supply is not satisfactory by the sixth or seventh day, and to mothers of twins or large robust babies to provide for the increased demand for milk. It has been successfully employed up to the sixth week after parturition. Physolactin should be given by intramuscular injection into the thigh, 5 cc., 5 cc., 2 cc., 2 cc. and 1 cc. being given on five successive days to initiate secretion. To stimulate a failing supply all five doses may not be necessary. The effect is usually obvious within twenty-four to thirty-six hours of the first injection. Physolactin is supplied in 15-cc. rubber-capped bottles.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 320. (S. W. G.)

Sestron (Fabriek Promonta, Hamburg) is bisphenylpropylethylamine. It is sold in ampuls containing 0.04 Gm. per cc., in suppositories containing 0.08 Gm. and longettes also containing 0.08 Gm. It is used in ulcer pains, cardio- and pylorospasms, colitis, dysmenorrhea, bronchial asthma and angina pectoris.—*Pharm. Weekblad*, 76 (1939), 102. (E. H. W.)

Silandine (C. F. Boehringer and Sons Mannheim) is a magnesium hydrosilicate with strongly absorptive properties. It is used in flatulescence and in stomach and intestinal intoxications.—*Pharm. Weekblad*, 76 (1939), 103. (E. H. W.)

Solantoin (Glaxo Laboratories Ltd., Greenford, Middlesex, Eng.) are tablets of sodium diphenylhydantoinate. It is used for epilepsy. The dose for adults and children above 6 years is one tablet (0.1 Gm.) three times a day. For infants and children up to 5 years: 1–2 (0.1 to 0.2 Gm.) per day. It is supplied in bottles of 25, 100 and 500.—*Australasian J. Pharm.*, 20 (1939), 804. (A. C. DeD.)

Suprifen (Bayer Pharma Pty. Ltd., Sydney) is *p*-oxy-phenyl-methyl-amino-propanol chlorhydrate. It is a well-tolerated circulatory and cardiac stimulant for oral and paternal use. It is also used in the treatment of circulatory hypotonia; collapse due to medical conditions or surgical interference; X-ray sickness, etc. It is supplied in 10-cc. dropbottles; 2-cc. ampuls; in boxes of 5.—*Australasian J. Pharm.*, 20 (1939), 704. (A. C. DeD.)

Surfen (Bayer Products Ltd., London, W. C. 2) is bis-2-methyl-4-amino-quinolyl-6-carbamide hydrochloride. It is used for prophylactic antisepsis, moist dressing of wound surfaces, antisepsis of the abdominal cavity, puerperal infections, furunculosis. It is marketed in bottles of 5 and 10 Gm.—*Australasian J. Pharm.*, 20 (1939), 804. (A. C. DeD.)

Syntropan (Roche Laboratories Ltd., Welwyn Garden City, Herts., England) is synthetic atropine analogue. It is antispasmodic in various conditions, dysmenorrhea. It is marketed as tablets, 20 and 100; ampuls, 1 cc., 6 and 50; suppositories, 6.—*Australasian J. Pharm.*, 20 (1939), 705. (A. C. DeD.)

SPECIALTIES

Acriflex (Allen and Hanburys Ltd., London and Sydney) is acriflavine, glycol and perfume in a stearate cream. It is used for the treatment of wounds by applying the cream on gauze or lint. It is supplied in tubes of three sizes.—*Australasian J. Pharm.*, 20 (1939), 704. (A. C. DeD.)

Amandacide (N. V. Sociëtiet voor chemische Industrie, Katwijk) is a granulated calcium amygdalate, which contains 57 Gm. amygdalic acid, 18.75 Gm. calcium carbonate, 0.75 Gm. sweetener and 7 drops Oleum Citri. The preparation contains no ammonium chloride, which is often given with it when the acidity of the urine obtained is not satisfactory. Amandacide is given in doses of three teaspoonfuls at a time, 3 times a day for adults. It serves to sterilize the urine and to give it satisfactory acidity.—*Pharm. Weekblad*, 76 (1939), 100. (E. H. W.)

Anæroben Serum "Asid" (Anhaltisches Serum-Institut, Deassau-Berlin), is a horse serum obtained with the important anærobic bacteria pathogenic to man. It is a combination of gasœdem-serum and antitetanus-serum. It is used in the treatment of wounds and as a prophylactic for these anærobic infections.—*Pharm. Weekblad*, 76 (1939), 100. (E. H. W.)

Antipyogeen (Behringwerk, Marburg) contains specially prepared antigens whose action is enhanced by a not specific lipoid albumen. Antipyogeen increases the general and local defense against

pathogenic elements and their toxins.—*Pharm. Weekblad*, 76 (1939), 100. (E. H. W.)

Apicosan (Dr. Aug. Wolff, Bielefeld) is a preparation obtained from bee poison, biologically investigated and offered in standardized strengths. It contains the albumen-like body "apitoxine," considered by various investigators as the active constituent. On the supposition that rhematism is an allergy phenomenon, the action of Apicosan should not be considered a stimulating action, but rather as with formic acid, the action follows the increased agglutiniter. Apicosan is found on the market in ampuls of various strengths. The treatment is begun with Apicosan N of which a trial injection of a 10% solution is used after which the undiluted contents of the whole ampul are used. Following this, Apicosan 1, 2 and 3 are used. A course of treatment contains 3 ampuls Apicosan N, one ampul Apicosan 1 and 2, and two ampuls Apicosan 3.—*Pharm. Weekblad*, 76 (1939), 100. (E. H. W.)

Argotone contains natural levorotary ephedrine hydrochloride 0.9, argyrol 1.0 and normal saline solution to 100. It is a stable solution, and is recommended for the treatment of acute rhinitis, colds, asthma, hay fever and similar conditions. It can be used as drops, 4 to 6 drops being instilled in each nostril 3 to 5 times a day, or as a spray, to be applied at least 5 times a day.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 317. (S. W. G.)

Bronchopneumonia Vaccins (Behringwerke, I. G. Farbenindustrie) contains the germs of pneumococcus type 1–3 and of group 10, the most frequently occurring influenza bacilli, streptococci, staphylococci, catarrhal micrococci. It is used for colds, grippe and measles while developing and for bronchial pneumonia.—*Pharm. Weekblad*, 76 (1939), 100. (E. H. W.)

Campoferron is a preparation of the liver extract campolon, combined with a small quantity of iron and a trace of copper for oral administration. It is recommended to be given to maintain the red cell count, in cases of pernicious anemia after a normal blood picture has been obtained by a course of injections. Alternatively it can be used to increase the interval between injections, or to obviate the necessity of injections during holidays. A bottle of 100 cc. would last about a week in a moderate case. Campoferron is supplied in 100- and 1000-cc. bottles.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 317. (S. W. G.)

Cholperos (Behringwerke, I. G. Farbenindustrie) is a cholera vaccine in dragees for oral immunization. The dragees contain the antigens of the bacilli and are perfectly harmless. They also cause no fever or other reactions. They are used in general prophylaxsis.—*Pharm. Weekblad*, 76 (1939), 101. (E. H. W.)

Cofron Elixir contains in each fluidounce the equivalent of fresh liver 40 Gm. ($1^1/_3$ ounces); iron, 66 mg. (1 gr., equivalent to 6 grs. of iron and ammonium citrate B. P.); and copper 2.66 mg. ($^1/_{25}$ gr). It is recommended for the treatment of mild anemias, the anemias of children and for non-specific conditions in which hemoglobin production is subnormal. For adults the dose is 3 tablespoonfuls, for children 3 teaspoonfuls or more daily. Cofron elixir is quite palatable and is equally acceptable to children and adults. It is supplied in 4-ounce, 12-ounce and 80-ounce bottles. **Cofron Liver Concentrate Capsules** contain the equivalent of liver 10 Gm. ($^1/_3$ ounce); iron 7 mg. ($^1/_{10}$ gr.); copper 0.27 mg., which is about twice as much liver extract as the elixir in proportion to the copper and iron content. The capsules are recommended for the treatment of more severe secondary anemias. The adult dose is 3 to 5 capsules three times daily; for children 1 to 2 capsules three times daily. Cofron capsules are supplied in bottles of 50, 100 and 500.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 317. (S. W. G.)

Destinol (Destin Products Ltd., London) contains crude cod liver oil 28 parts, soft paraffin 72. It is used for wounds, surgical dressing, burns, osteomyelitis, eye injuries, gynæological special purposes. It is supplied in small and large collapsible $^1/_2$, 1 and 2 lb. tins.—*Australasian J. Pharm.*, 20 (1939), 804. (A. C. DeD.)

Ivax (Boots Pure Drug Co., Ltd., Nottingham) contains ext. malorum, sucrose and aq. dest. It is used for giving the Moro-Heiser diet for infantile and children diarrhœa, colitis, dysentery, etc. The dose is 2–3 fl. oz. daily for infants, mixed with food; $^1/_2$–1 fl. oz. every two hours for children over one year of age. It is supplied in 6 fl. oz. bottles.—*Australasian J. Pharm.*, 20 (1939), 704. (A. C. DeD.)

Joodcalcium Eudiural (Amsterdamsche Chininefabriek) is a combination of calcium salicylate with calcium theobromate 500 parts and potassium iodide 100 parts. It is sold in tablets of 600 mg. Dose 1 tablet three times a day as a diuretic in hypertonicity, angina pectoris and asthma cardiale.—*Pharm. Weekblad*, 76 (1939), 102. (E. H. W.)

Kapeloid Kaolin Poultice (Evans, Sons, Lescher and Webb Ltd., London and Liverpool) is an antiseptic poultice, with iodine. It is supplied in seamless metal containers, 4 and 8 ounce, and 1 and 5 pounds.—*Australasian J. Pharm.*, 20 (1939), 804. (A. C. DeD.)

Keturex (Evans, Sons, Lescher and Webb Ltd., Liverpool and London) is elixir ammonium mandelate. It is used for urethritism cystitis, ureteritis and pyelitis. The dose for adults is one tablespoonful in water three or four times daily; children, one or two teaspoonfuls, according to age. It is supplied in bottles of 8 and 40 fl. oz.—*Australasian J. Pharm.*, 20 (1939), 804. (A. C. DeD.)

Marmite (The Marmite Food Extract Co.) is a medicinal and dietetic product. At the time marmite was placed on the market it was desired to prepare an extract of yeast and plant products to replace meat extract. With the present conception of vitamins it was thought that this food might also serve as a medicament in such cases where vitamin B is required. Thus marmite serves as a tasty and economical substitute or adjunct for the vitamin B preparations which are found on the market as injections or tablets. **Supermarmite** is a specially prepared product containing considerably less salt (5%). Both marmites contain practically all the B-vitamins of yeast.—*Pharm. Weekblad*, 76 (1939), 102. (E. H. W.)

Optacid is a preparation of buffer substances (monosodium phosphate and monosodium sulfate) intended to maintain the acidity of the gastric juice within the normal limits of p_H 1.5 and 3, and indicated in disturbances of the gastric p_H. It is contraindicated in renal disorders, acute ulcer, recent abdominal operations and pernicious anemia. The dosage is 5 Gm. per day taken in five portions of 1 Gm. each during breakfast, lunch and dinner; in severe hyperacidity, 1 Gm. at breakfast, 3 doses of 1 Gm. each in half a glass of water at mid-day and in the evening, total daily dose 7 Gm. Optacid is supplied in 2-ounce bottles and in 1 pound quantities for dispensing purposes.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 319. (S. W. G.)

Passicarbone Granules contain purified animal, vegetable and activated vegetable charcoals together with crataegus, willow and passion flower, and are intended for the treatment of disturbances

of the vegetative nervous system, nervous dyspepsias and gastric, intestinal and hepatic affections. The dose is 1 to 2 teaspoonfuls after meals mixed with a little water.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 320. (S. W. G.)

Reductyline Dragees (Dr. Georg Henning, Berlin) are used in the treatment of lipomatosis. Each dragee contains 5 mg. muskeladenosinephosphoric acid and 0.1 Gm. Pulv. Gland. Thyroideæ.—*Pharm. Weekblad*, 76 (1939), 102. (E. H. W.)

Rhodaan-Calcium Eudiural (Amsterdamsche Chininefabriek) is a combination of calcium salicylate and calcium theobromate 500 parts and rhodanetum potassium 100 parts, sold in tablets of 600 mg. It is used as a diuretic in doses of 1 tablet three times a day.—*Pharm. Weekblad*, 76 (1939), 102. (E. H. W.)

Spastretten is the new name for the gastretten of Troponwerke.—*Pharm. Weekblad*, 76 (1939), 103. (E. H. W.)

Tannol (Clay and Abraham Ltd., Liverpool, Eng.) is 10% tannic acid in acriflavine emulsion. It is used in the treatment of burns and scalds. It is supplied in two sizes, 1/6 and 2/6.—*Australasian J. Pharm.*, 20 (1939), 705. (A. C. DeD.)

Testoviron (Schering Ltd., London, W. C. 1) is used for controlling the vitality and functional power of the prostrate and seminal vessels used for the treatment of castrates, eunuchoids, premature senility and undescended testes. The dose is one tablet twice weekly. It is supplied in bottles of 25 and 100 tablets.—*Australasian J. Pharm.*, 20 (1939), 705. (A. C. DeD.)

Thyrogan (The British Drug Houses Ltd., London, N. 1) is a thyroid-stimulating hormone. It is used for lowered metabolic activity, especially associated with obesity; also indicated in Simmonds's disease. It is administered by intramuscular injection. It is issued in dry-filled ampuls (containing 50 guinea pig weight units), six in box, with six 1-cc. ampuls of sterilized distilled water, containing 0.5% of phenol for the preparation of fresh solutions.—*Australasian J. Pharm.*, 20 (1939), 804. (A. C. DeD.)

Trivaline (Merz and Co., Frankfurt). This preparation previously contained 0.01935 Gm. morphine isovalerianate, 0.0037 Gm. caffeine isovalerianate and 0.00506 Gm. cocaine isovalerianate. In the new form the cocaine has been replaced by atropine methyl nitrate which eliminates the undesirable side action of the morphine. It contains only 0.001 Gm. atropine methyl nitrate. Trivaline is found on the market in solution in 10-cc. bottles; in ampuls containing 1.1 cc. and in tablets. It is used postoperatively, in colic, acute pain, etc.—*Pharm. Weekblad*, 76 (1939), 103. (E. H. W.)

Vitabene (J. C. Eno Ltd., London, W. L.) contains alkalizing agents, calcium, phosphorus, copper and manganese salts, kola powder, in which the active principles are stabilized. It is used as a tonic, mental stimulant, lessens fatigue, promotes circulatory efficiency, helpful in secondary anemias. It is marketed as tablets and in bottles (a fortnight treatment).—*Australasian J. Pharm.*, 20 (1939), 705. (A. C. DeD.)

BACTERIOLOGY

Azochloramide New Chlorine-Containing, Wound-Disinfecting Compound. Azochloramide is active in such low concentrations that its toxic effects are negligible. Serum does not seriously interfere with its activity.—A. WINKLER. *Zentr. Bakt., Parasitenk., I Abt., Orig.*, 143 (1938), 70–79; through *Chem. Abstr.*, 33 (1939), 1879. (F. J. S.)

Bactericidal Power of Solutions Used in Preparation of Aseptic Injection Medicines. The bactericidal activity of dilutions in water or alcohol of about 30 preparations of various chemicals used in injection solutions prepared according to the Dan. Phar. or Disp. Dan. was determined. Both simple solutions (aqueous or alcoholic) and the finished medicaments were examined and their activity tested against micrococci, spore-forming bacteria and highly resistant soil spores. In most of the solutions micrococci (*M. aureus*) died within 48 hours at room temperature. If the infecting material was *B. anthracis* (with spores) or the highly resistant soil spores, heating was necessary to obtain sterility.—E. JENSEN. *Dansk Tids. Farm.*, 13 (1939), 1. (C. S. L.)

Black Widow Antivenin Production in Rabbits. Rabbits produce black widow antivenin which, taking into account the shorter injection period and relatively small number of spiders necessary, compares well with that produced in sheep.—DONN SMITH and FRED E. D'AMOUR. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 686. (A. E. M.)

Bordet-Wassermann Reaction—Deviation of Complement to Photoelectric Cell with Application of. A procedure is recommended in which the action between the complement and the serum is measured by use of a photoelectric cell. The following conclusions are given. The method proposed for the serologic study of a suspected has the following advantages: (1) Based on the same principles as the Bordet-Wassermann reaction it guards the significant developments. (2) It is carried out under conditions that are much more rigorously defined than those given for the Bordet-Wassermann procedure. (3) The results are expressed by figures that are comparable when more than one serum is being considered. (4) The technic is simple, enabling the operator to feel safe in the interpretation of the results. (5) A very small volume of blood is required, and may be obtained by simple puncture of a finger. This permits repeated tests and expands the field of application. (6) The only inconvenience is the necessity of replacing the colorimeter by a photoelectric cell.—E. LASAUSSE, L. FROCRAIN and C. POLLES. *Bull. sci. pharmacol.*, 46 (1939), 61–72, 108–121. (S. W. G.)

Calamine Lotions—Action of, on the Bacterial Flora of the Skin. Calamine lotion (A) was prepared with natural zinc carbonate, (B) with prepared zinc oxide and (C) was a modification consisting of cuticolor calamine powder (Fantus) 15.0 Gm., bentonite solution (2.5% to 100 cc.). The technic employed is described in detail and the results show that all three lotions reduced markedly the bacterial flora of the skin.—ESTHER MEYER. *Bull. Natl. Formulary Committee*, 7 (1938), 48. (H. M. B.)

Calomel Ointment—An Improved. A lengthy study with the object to determine the basis of the antiseptic power of calomel and to devise an ointment with a greater antiseptic power. By means of conductivity experiments the presence of ionic material was shown and the concentration of mercurious ions in the filtrate of such a suspension was found to possess the antiseptic power equivalent to that of a 1:10,000 solution of bichloride of mercury; also mercuric ions are present in exceedingly small amounts (15 parts per 100,000,000). Length of particles in recently purchased lots of U. S. P. calomel varied from 2–50 microns and in old samples 110 microns. A new calomel with particles of 0.5 micron or less was prepared. In F. D. A. agar plate tests for inhibition action, the official ointment gave clear zones varying from 0.5–2.0 mm.; an ointment of the new calomel displayed zones

from 7–11 mm. The official calomel ointment has an antiseptic value equivalent to 1:10,000 mercuric chloride ointment; the new calomel ointment which is stable is equivalent to 1:100 mercuric chloride ointment. Aqueous suspensions of the official and the new calomel showed little difference in antiseptic action.—E. E. VICHER, R. K. SNIDER and E. N. GATHERCOAL. *Bull. Natl. Formulary Committee*, 7 (1939), 192–199. (H. M. B.)

Calomel Ointment—Antiseptic Test for. Three calomel ointments (N. F. V., N. F. VI, and a new one containing 18% colloidal calomel) and three ointments of mercuric chloride (1:100, 1:1000, 1:10,000) were tested for their antiseptic power using (1) the agar plate method, (2) the agar-cup method, (3) the "glass ring" method and (4) the "glass syringe" method. The technic used in each case is described in detail. Results show the colloidal calomel ointment possesses an antiseptic action lying between that of the 1:1000 and the 1:100 bichloride ointments.—E. E. VICHER. *Bull. Natl. Formulary Committee*, 7 (1939), 203–205. (H. M. B.)

Calomel Ointment—Bacteriocidal Effectiveness of the Improved. Four calomel ointments were prepared in various ways—one from colloidal calomel (A) and three from U. S. P. calomel. The ointment containing A showed increased antiseptic action due to a greater availibility of water containing mercurous ions. The presence of gelatin in the formula favors an oil-in-water dispersion resulting in a condition whereby water is less firmly held.—F. W. Schiller. *Bull. Natl. Formulary Committee*, 7 (1939), 202–203. (H. M. B.)

Disinfectants—Activity of Common. The following phenol coefficients were determined according to the U. S. Food and Drug Administration method (1) for typhus bacillus, (2) for *Staphylococcus aureus*, (3) as in (2) with 10% of human serum: alka-lysol 2.2, 1.0, 0.9; bacillol, 2.2, 1.8, 0.9; bactol, 3.6, 1.3, 0.7; cellocresol, 0.7, 0.3, 0.1; creolin, 4.3, 0.9, 0.4; herboform, less than 0.1; cresol soap solution (30%), 1.0, 0.6, 0.2; lavasteril, 6.0, 2.5, 1.0; lysoform, less than 0.1; lysol, 2.2, 1.8, 1.0; phobrol, 13.2, 8.0; sagrotan, 4.4, 2.2, 0.7; ufinol, 7.8, 5.0; zephirol, 20.1, 15.0, 4.2; caporite, 80.0, 40.0, 0.1; chlorina, 40.0, 66.0, 10.0; mianin, 40.0, 70.0, 10.0 (the last three are chlorine-compounds).—E. MAIER and E. MULLER. *Fortschr. Ther.*, 12 (1936), 204–211; through *J. Soc. Chem. Ind.*, 57 (1938), 1509. (E. G. V.)

Distilled Water—Physico-Chemical and Bacteriological Study of. The authors conclude that for pharmaceutical uses water that has been distilled from copper or tin stills is to be preferred over water distilled from all-glass stills. They state that the low concentration of metal ions inhibit bacterial growth and that it is better to inject the electrolytes rather than bacteria into the blood stream. For certain preparations, *i. e.*, arsenobenzenes, colloidal sols, and serologic preparations, where the electrolytes might react unfavorably, glass-distilled water should be used. In scientific research glass-distilled water that meets all the necessary requirements must be used.—A. SARTORY, J. MEYER and F. FISCHER. *Bull. sci. pharmacol.*, 46 (1939), 49–60. (S. W. G.)

Ethyl Alcohol—Bacteriological Behavior of, and Preparation of Sterile Alcohol with Filtration. Literature on the bactericidal power and sterility of alcohol is reviewed. Studies were made of alcohol pressure filtered through a Seitz filter. In 109 tests of 93% alcohol before filtration 3 showed growth. in 198 tests of sterile filtered alcohol growth was found in 2 tests. In 49 tests of alcohol from apothecaries' shops 2 showed growth. The organisms were gram negative cocci, except in one instance. The cocci were *Streptococcus hemolyticus*. Growths were obtained in meat peptone bouillon, none on half liquid agar, none in meat peptone bouillion with added meat under sterile paraffin oil, none on malt agar.—A. T. DALSGAARD, *Arch. Pharm. og Chemi*, 46 (1939), 33, 64. (C. S. L.)

Graminæ Pollens—Specificity of, as Evidenced by Precipitin Reactions. Sera of guinea pigs sensitized with extracts of certain graminæ pollens contained specific precipitins only for the antigen used. The antigen structure of the graminæ pollens appears to be specific. These experiments justify the use of a specific pollen therapy.—ALBERT H. ROWE and JACOB FONG. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 570. (A. E. M.)

Hemolysis Determinations—Means of Increasing the Sensitiveness of. Graphical representation of immunity reactions (hemolysis, agglutination) never gives straight lines, but always S-shaped curves, whatever be the variables used for studying the phenomenon. The only method which permits of titrating accurately several solutions of a given antiserum consists in determining the dilutions to which the initial solutions must be brought so that the time-hemolysis curves obtained with each of them shall be perfectly superposable. For the tests a fresh guinea pig serum, kept in hypertonic solution for less than 8 days, was used. The amount used must be three of four times greater than the minimum dose required. The corpuscles used as antigens must have been recently collected, washed two or three times and used at the rate of 0.2 cc. per tube. Instead of keeping the tubes in the incubator at 37° C. for the whole duration of the test, they are allowed to remain in the incubator until the hemolysis has started, and the reaction is then allowed to proceed at room temperature. Hemolysis commences after 10 or 15 minutes in the incubator and is completed in 20 or 30 minutes at room temperature. —M. LOURAU. *Compt. Rend. Soc. Biol.*, 126 (1937), 1143–1146; through *Chimie & Industrie*, 40 (1938), 471. (A. P.-C.)

Homeopathic Dilutions and Compounds—Experimental Studies in Vitro and in Vivo on the Question of the Activity of. Mercurius Cyantus Oligoplex contains ammonium bromide, tincture of echinacea, hydrochloric acid, tincture of baptisia, tincture of spongia, nitric acid and mercuric cyanide in varying dilutions. The author studied the individual constituents and the mixture for their activity on diphtheria toxin *in vitro* on infected animals. The mixture produced instantaneous detoxification, and showed 150 times greater activity than the most active individual substance present. Toxin-poisoned animals could be kept alive longer with certain concentrations of the preparation. Some of the animals could be cured. Surgical diphtherial infection could still be cured 3 hours after the infection in the summer time. Eye diphtheria of guinea pigs could be cured by the means of oligoplex. The activity of the mixture may be increased by the use of manganese, potassium and magnesium chlorides and hydrochloric acid. Manganese chloride alone has no anti-diphtherial action. Considering the individual components: spongia, baptisia, echinacea and ammonium bromide are active in 24 hours; nitric acid and mercuric cyanide act in 6 hours; a mixture of the two most active constituents is no more active than either alone. Echinacea and baptisia together act within 7 hours whereas individually they act in 24 hours. The oligoplex acts within 2 minutes.—K. W. MÜLLER. *Hippokrates*, 9 (1938), 857; through *Scientia Pharm.*, 9 (1938), 102. (M. F. W. D.)