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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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Vitamin B Complex—Biological Methods for Determining Components of. A brief discussion of recent work, particularly as regards methods for the biological assay for vitamin B_1.—O. L. KLINE. *J. Assoc. Official Agr. Chem.*, 22 (1939), 662–664. (A. P.-C.)

Vitamin B—Crystalline. Alcoholic extract of rice polishings were treated at p_H 5 and again at p_H 8 with lead acetate. The vitamin was adsorbed from the filtrate, after removal of lead with hydrogen sulfide, on acid clay (Japanese) at p_H 2.5 to 4, eluted with decinormal barium hydroxide, again adsorbed on animal charcoal, part eluted with alcohol and the larger part with ammoniacal aqueous acetone. The two eluates were treated similarly. Evaporation in vacuum, extraction of the syrupy residue with alcohol and addition of saturated alcoholic solution of mercuric chloride left the vitamin in the alcoholic solution. Concentration of the alcohol, freed from mercury, gave a crystalline mixture which was washed with ether and acetone and fractionated with alcohol. The active crystals melt with decomposition at 209° to 210° C.; they have a composition corresponding to the formula $C_8H_{12}NO_3Cl$ and are active in daily doses of 5 to 10γ. The basal diet for rats was: sucrose 69%, alcohol-treated fish protein 20%, McCollum salt mixture 5%, Crisco 2%, soybean oil 2%, cod liver oil 2%, with supplements of 20γ of vitamin B_1 and 40γ of lactoflavin.—A. ICHIBA and K. MICHI. *Sci. Papers Inst. Phys. Chem. Research*, 34 (1938), 788–793; through *Chimie & Industrie*, 41 (1939), 528. (A. P.-C.)

Vitamin B_1. A review with 26 references.—ANON. *Bull. soc. sci. hyg. aliment.*, 27 (1939), 1–15. (A. P.-C.)

Vitamin B_1 and Detoxicating Function of Liver. Vitamin B_1 given together with carbohydrates increases the content of glycogen in the liver. This in its turn improves a number of hepatic functions, including the detoxicating function. Vitamin B_1 in combination with glucose was therefore tried in seventeen cases of extensive burns. The treatment resulted in a relief of the pain and in a more rapid healing of the wounds.—H. BLOTEVOGEL and E. TONUTTI. *Klin. Wochschr.*, 18 (1939), 471; through *Brit. Med. J.*, 4091 (1939), 1164A. (W. H. H.)

Vitamin B_1 Deficiency in Chick and Rat. The mold degenerative changes in the myelin sheaths of chicks on a diet deficient in vitamin B_1 were prevented by adequate extra doses of vitamin A and of riboflavin. There were no pathological changes in the axis cylinders in either B_1 avitaminosis or inanition. Similarly rats showed normal myelin in uncomplicated vitamin B_1 deficiency. Hence it is concluded that uncomplicated beriberi is not accompanied by peripheral nerve degeneration. The nerve degeneration in human beriberi is probably due to a lack of dietary factors other than vitamin B_1.—R. W. ENGEL and P. H. PHILLIPS. *J. Nutrition*, 16 (1939), 585; through *Brit. Med. J.*, 4094 (1939), 1316H. (W. H. H.)

Vitamin B_2. A review with 136 references.—ANON. *Bull. soc. sci. hyg. aliment.*, 27 (1939), 16–45. (A. P.-C.)

Vitamin B_2—Deficiency of. Cases of eczema of the scrotum and stomatitis at the Singapore gaol are not curable by nicotinic acid but are curable by yeast or marmite, as described in an earlier paper. They appear to be caused by a deficiency of a portion of the vitamin B_2 complex which is not nicotinic acid. Certain signs of classical pellagra, however, appear to be curable in Malaya as elsewhere by nicotinic acid.—J. V. Landor. *Lancet*, 236 (1939), 1370. (W. H. H.)

Vitamin C—Determination of, in Foodstuffs. Ascorbic acid is determined in fruits, etc. by extraction with 5% aqueous acetic acid under reflux in a current of carbon dioxide, neutralization of the extract with calcium carbonate, clarification with lead acetate and titration with dichlorophenol-indophenol in presence of acetic acid or with iodine in presence of sulfuric acid. The ascorbic acid contents of many fruits and vegetables are tabulated. In the case of potatoes the extraction is carried out with metaphosphoric acid in the cold so as to avoid pasting of starch. Several methods of treating milk are compared. The ascorbic acid content of honey varied from 1–15 mg. %, the darker samples having the higher values.—J. WERDER and J. ANTENER. *Mitt. Lebensm. Hyg.*, 29 (1938), 339–349; through *J. Soc. Chem. Ind.*, 58 (1939), 433. (E. G. V.)

Vitamin C—Estimation of, in Foodstuffs. The previous method of estimating ascorbic acid in foodstuffs after heating the aqueous suspensions in H_2S (SEN-GUPTA and GUHA, *J. Indian Chem. Soc.*, 14 (1937), 95) has been modified by the introduction of treatment with ascorbic acid oxidase which appears to give more accurate values for "total, true" ascorbic acid. Values obtained by this method are higher than those obtained by the Tillmans-Harris method. The stability of ascorbic acid oxidase has been investigated.—PRATUL NATH SEN-GUPTA and B. C. GUHA. *J. Indian Chem. Soc.*, 16 (1939), 549. (F. J. S.)

Vitamin C Nutrition—Effect of, on Anaphylaxis. Some authors have stated that the state of vitamin C nutrition was able to influence the manifestations of anaphylaxis in animals. Diehl made numerous experiments on guinea pigs to confirm this theory, and found that there was some correlation between the two phenomena. In mild avitaminosis anaphylactic shock is much more severe than in normal animals and terminates fatally more often. However, a paradoxical reversal of effect is seen if animals are so fed as to produce a severe deficiency of vitamin C. When suffering from such a severe deficiency, the animals are much less subject to anaphylaxis than normal animals, and when shock is induced it is not so severe. An attempt is made to correlate these findings with the state of reticulo-endothelial system. It is assumed that in mild avitaminosis the reticuloendothelial system is able to produce only a small amount of antibody, while in severe avitaminosis it produces practically none at all.—F. DIEHL. *Klin. Wochschr.*, 18 (1939), 956; through *Abbott Abstract Service*, (1940), No. 609. (F. J. S.)

Vitamin C—Possibility of Obtaining, from Some Citrus By-Products. In considering the foods which are rich in vitamins and minerals the author doubts whether there is a cheaper source of vitamin C available in South Africa than concentrated orange juice. He called attention to the fact that citrus by-products are a nutritional asset which has been overlooked in the past and suggests that

they be added to the diet of the poorer and industrial classes. Such a step would add the vitamins A, D and C as well as minerals to the diet of this class of people which would prove most helpful in this and future generations.—D. J. COGHILL. *Official J. Dept. of Commerce and Industries* (Pretoria, S. A.), 1 (1939), No. 2, 29–39; through *J. Trop. Med. Hyg.*, 42 (1939), 275. (W. T. S.)

Vitamin C—Very Sensitive Reaction for. To 1 cc. of the solution to be tested is added 0.5 cc. of 0.6% potassium ferricyanide solution and 0.5 cc. of 10% solution of trichloroacetic acid. After mixing thoroughly, 1 cc. of 2.5% solution of ammonium molybdate in $5N$ H_2SO_4 is added. The color is observed in 2 or 3 minutes. Vitamin C reduces the potassium ferricyanide to the ferrosalt which produces a dark red-brown precipitate with the molybdate solution. The reaction is sensitive to 20γ of vitamin C in 1 cc. of solution. Substances such as cysteine, glutathione, tannin and pigments which interfere with the reaction, may be removed by preliminary treatment with mercuric acetate.—K. VENKATA. *Giorn. Mikrochemie*, 23 (1938), 283–4; through *Wien. Pharm. Wochschr.*, 71 (1938), 238. (M. F. W. D.)

Vitamin C—What Is the Human Requirement for? An address.—*Deut. Med. Wochschr.*, 64 (1938), 1382–1385; through *Chem. Abstr.*, 33 (1939), 2186. (E. G. V.)

Vitamin D Carriers—Biological Methods for Assay of. Further collaborative study again demonstrated the basic soundness of the tentative A. O. A. C. method by the fact there are quite definite increases in tibia calcification with increased vitamin D intake. As the individual variations in all groups of chicks were large, it is considered that the most important problem to be studied for improving the accuracy of the method is that of reducing these variations, and until these individual variations within each group can be minimized it seems desirable to increase the size of the groups.—W. B. GRIEM. *J. Assoc. Official Agr. Chem.*, 22 (1939), 656–660. (A. P.-C.)

Vitamin D—Determination of. Data are presented on the determination by the method of Brockmann and Yun Hwang Chen, based on the colorimetry of a mixture of chloroform solutions, of vitamin D and of antimony trichloride. The reagent solution must be prepared 24 hours before use. Measurement is carried out in a Pulfrich photometer, using filter S50, when the color has reached maximum intensity.—L. K. WOLFF. *Z. Vitaminforsch.*, 7 (1938), 277–279; through *Chimie & Industrie*, 41 (1939), 527. (A. P.-C.)

Vitamin D Determinations—Photography of the Line Test in. At the end of the assay period the bones are fixed for 48 hours in 4% formalin, this is replaced for 1 day by spiritus concentratus, Dan. Phar., then for 1 day by spiritus alcoholisatus and for a third day in absolute alcohol. They are then split. The treatment makes splitting easier and evener. The split bones are then set 1 day in spiritus alcoholisatus, one day in spiritus concentratus and 1 day in distilled water. The sections are then placed for 3 minutes in 1.5% silver nitrate solution, removed and washed with distilled water. They are placed in a "Hansen chamber" and given a 40-second exposure to a 100-watt daylight lamp at 15 cm. distance. After exposure the chamber is filled with distilled water and covered with a cover glass to prevent drying. A camera microscope with objective 2X and ocular 5X was used for taking the pictures. The chamber was lighted by a microscope lamp 10 cm. over the object so stopped as to give a light area of the diameter of the chamber (18 mm.). Exposure was $^1/_5$th second with Afga Isopan plates. Sample microphotographs are depicted.—P. F. BECH. *Dansk Tids. Farm.*, 13 (1939), 253. (C. S. L.)

Vitamin D—Report on the Determination of. A discussion of the present status of the use of the tentative A. O. A. C. method (based on feeding non-vitamin D milk with reference oil).—WALTER C. RUSSELL. *J. Assoc. Official Agr. Chem.*, 22 (1939), 468–470. (A. P.-C.)

Vitamin Deficiency. The requirements of these accessory food factors seems to vary with the diet and the species of the animal under consideration. For instance, the guinea pig is very susceptible to a vitamin C deficiency while the rat is able to synthesize this vitamin when it is absent from the diet. However, repeated depletions of vitamins A, B or B_2 result in a definite reduction of vitamin C in the organs. Hence it was thought significant that one vitamin aids in maintaining another of an entirely different structure and action. The question is raised as to whether it would not be well to treat any vitamin deficiency disease with a diet rich in all known vitamins.—ANON. *Southern Med. J.*, 32 (1939), 1073–1074. (W. T. S.)

Vitamin Therapy in Diseases of Inner Organs and Nerve System. The simultaneous application of vitamins B_1 and C increased the carbohydrate tolerance in diabetes. Good results were also obtained in various diseases of the stomach and intestines and disorders of the nervous system.—I. MOLNAR. *Orvosi Hetilap*, 82 (1938), 967–971; through *Chem. Abstr.*, 33 (1939), 2186. (E. G. V.)

Vitamins. A review of the vitamins and the knowledge of their action and structure.—M. DIENER. *Schweiz. Apoth.-Ztg.*, 76 (1938), 727–732. (M. F. W. D.)

Vitamins in 1937 and 1938—New Results of Researches on. A continuation of a review dealing with industrial treatment including drying, preservation in containers, refrigeration, hardening, bleaching and extraction of fats, the addition of preservatives, artificial addition of vitamins, storage, influence of fertilizing and growth processes, and treatment on boiling.—DILLER. *Deut. Apoth.-Ztg.*, 54 (1939), 771–773, 784–786, 809–810. (H. M. B.)

Vitamins—Report on the Determination of. An inventory of the accomplishments of the associate referees on vitamins of the Association of Official Agricultural Chemists, and a brief review of progress of other organizations in the development of methods.—E. M. NELSON. *J. Assoc. Official Agr. Chem.*, 22 (1939), 463–465. (A. P.-C.)

Yeasts in the Production of Alcohol from Wood. Yeast (the plant mash cultured 4 v) which is added to the hydrolyzate of the wood very soon shows signs of poisoning and is replaced by smaller forms of yeast by means of which the hydrolyzate is fermented. The fine yeast is a separate form belonging to *Saccharomyces exignus*. If several races of the yeast separated, No. 2 was the predominant kind. It ferments the hydrolyzate rapidly and multiplies rapidly, but is not sufficiently stable. The yeast 4 v belongs to *Saccharomyces cerevisiæ*, it resembles the race XII, but its fermenting power is small. It is unsuitable for the production of alcohol from wood material. The yeast of the race L was separated from the vats of continuous fermentation in which mineral salts are added to the hydrolyzate. It resembles *Saccharomyces chevalieri* Guill. In contrast to the yeast No. 2 it yields an insignificant percentage of dead cells during prolonged cultivation in the hydrolyzate. It is intermediate in rate of fermentation.—I. A. MAZILKIN. *Microbiology* (U. S. S. R.), 7 (1938),

No. 5, 611–681; through *Chem. Abstr.*, 34 (1940), 1123. (F. J. S.)

ANALYTICAL

Acetylorthocresotinic Acid. The following tests for identity and purity are recommended: A white, odorless (or slightly acetic odor), crystalline powder, slightly soluble in water, soluble in 1.5 parts of alcohol, in 6 parts of ether, soluble in chloroform, difficultly soluble in petrolatum, m. p. 114–115°. For identification and differentiation from acetylsalicylic acid: Place 0.03 Gm. of sample in a tube, add 3 cc. of sulfuric acid containing 1 drop of nitric acid in 20 cc. A solution is formed which in the cold is brown changing to olive-green, and on heating in a water bath an orange-red color is formed. Aspirin gives a yellow solution in the cold and darkens a little on heating. Add 10 cc. of sodium hydroxide solution to 0.3 Gm. of acetylcresotinic acid and boil for three minutes, cool, acidify with diluted sulfuric acid, filter. The filtrate has an acetic odor. The precipitate is washed until free from sulfate then dried in an oven. The cresotinic acid thus obtained melts at 163–164°. Shake 0.01 Gm. of the above product with 10 cc. of water and filter. Add a drop of ferric chloride solution to the filtrate; a violet color appears. Place 0.5 Gm. of acetylcresotinic acid in a tube; stopper the tube after attaching a piece of moistened blue litmus paper to the stopper. The litmus paper should not turn red after fifteen minutes. An alcoholic solution of the acid gives no violet color with ferric chloride solution. Shake 1 Gm. of the acid with 20 cc. of water for 5 minutes, then filter; the filtrate gives no precipitate with hydrogen sulfide and no turbidity with silver nitrate or barium nitrate solution. Dissolve 0.388 Gm. of the acid in 5 cc. of alcohol; the solution requires between 19.8 to 20.2 cc. of 0.1*N* sodium hydroxide to neutralize it to phenolphthalein. Keep acetylcresotinic acid in a well-closed container.—I. KATZ. *J. pharm. Belg.*, 21 (1939), 382–383. (S. W. G.)

Acidimetric Solutions—Standardization of. A collaborative study was made of the standardization of decinormal hydrochloric acid (1) using crystalline sodium tetraborate as primary standard, (2) using sodium carbonate as primary standard and (3) by precipitation as silver chloride. The results showed that both sodium tetraborate and sodium carbonate have considerable merits as primary standards. Results by the silver chloride method were not satisfactory; the procedure has certain inherent errors, due principally to solubility of the silver chloride, and further study of this method is unwarranted.—R. L. VANDAVEER. *J. Assoc. Official Agr. Chem.*, 22 (1939), 563–567. (A. P.-C.)

Adrenaline—Reaction of, with Mercuric Sulfate, and Application to Assays of Medicinals. The various procedures already published are reviewed critically, and the following method is recommended. (*a*) *Preparation of Extractive Solution.*—Extract a convenient weight of the sample with 0.05*N* sulfuric acid. (*b*) *Defecation.*—Transfer the following with constant stirring into a small beaker: extractive solution 10 cc., water 9 cc., nitro-mercuric reagent (BAUDOUIN and LEWIN, *Bull. soc. chim. biol.*, 9 (1927), 280) 0.5 cc., 1*N* sodium hydroxide 0.5 cc. Filter after one minute, using an ashless filter. The rose filtrate has a p_H about 3. The amount of oxidation that occurs is sufficient to cause the appearance of the rose color but is negligible with respect to the final result. (*c*) *Determination.*—Transfer the following, in the order given, into a tube: 12.5% solution of sodium acetate 9.5 cc., 0.1*N* sulfuric acid 0.5 cc., filtrate from above 2.5 cc., solution of mercuric nitrate (1.5 Gm. mercury per 100 cc.) 3 drops. Mix. The color which develops attains its maximum intensity after five minutes and does not fade. The p_H is about 6.9 and the liquid is clear. (*d*) *Preparation of Standard.*—The following are mixed: adrenaline 0.002 Gm., 0.05*N* sulfuric acid 10 cc., water 9 cc., nitro-mercuric reagent 0.5 cc., 1*N* sodium hydroxide 0.5 cc. The mixture is filtered. Two cc. of the filtrate contains 0.2 mg. of adrenaline. The standard is prepared using the same reagents employed in the assay. If the color reagent is added alone, the results obtained are about 2.5% higher than when the clarification procedure is followed; therefore this must be done in the case of the standard. The procedure is applied to the determination of adrenaline in 1:1000 solution (Codex 1937), injectable extracts of suprarenal glands, powdered suprarenal glands and fresh suprarenal glands.—P. BOUVET. *J. pharm. chim.*, 29 (1939), 481–503. (S. W. G.)

Adsorption Indicators. In recent years a number of organic dyestuffs have been brought forward for use in this connection. For example, chlorides can be determined with silver nitrate solution, using fluorescein as the adsorption indicator. The fluorescein is added to the chloride solution and titrated with standard silver solution in the usual way. No change of color is observed until all the chloride is precipitated, when the slightest of silver nitrate causes the precipitate to become pink. Fluorescein is not a suitable indicator for use unless the chloride solution is neutral, and not weaker than *N*/100. For bromides, eosin is more reliable than fluorescein. The color change is very distinct, the magenta precipitate being easily observed in the red liquid. Eosin is also suitable for the titration of iodides, but di-iododimethylfluorescein is often preferred. There are a number of other adsorption indicators available for various purposes. Silver, for example, may be determined by standard chloride solution, using tartrazine as the indicator.—S. J. HOPKINS. *Pharm. J.*, 142 (1939), 133. (W. B. B.)

Airol—Determination of Iodine in. The author discusses the methods of the Netherlands and the Swiss pharmacopœias for the determination of iodine in airol and suggests the following as a better method: Dissolve about 200 mg. airol in 5 cc. of 4*N* sodium hydroxide in a 300-cc. flask. Add 80 cc. of water, 10 Gm. borax, 10 cc. saturated potassium permanganate solution, a little talc or coarsely powdered pumice; place a funnel in the flask and boil for 15 minutes. Add (by dropping) 2 cc. of alcohol to the hot liquid and continue boiling for a few minutes; allow to settle, filter hot and wash the flask and filter with about 100 cc. of hot saturated sodium sulfate solution. Add 10 cc. *N* potassium iodide and 25 cc. 4*N* sulfuric acid to the collected filtrates and titrate the iodine with 0.1*N* thiosulfate using starch solution as an indicator at the end of the titration. A table of results is given.—G. H. WAGENAAR. *Pharm. Weekblad*, 76 (1939), 63. (E. H. W.)

Amaranth—Identification of, in Soft Drinks and Methods for Its Detection in the Presence of Natural Pigments (Anthocyanins). Amaranth (I) is identified in soft drinks by boiling the solution with aluminum hydroxide and filtering. To the red filtrate 1 drop of 1% copper sulfate is added. The yellow color, changing to red, on acidification indicates that I is present.—I. S. ROIZMAN and S. G. POKHES. *Voprosy Pitaniya*, 7 (1938), No. 3, 140–149; through *Chem. Abstr.*, 33 (1939), 2605. (E. G. V.)

Aminopyrine—Determination of, in the Presence of Antipyrine and Caffeine. Antipyrine and caffeine can be separated quantitatively from aminopyrine by extracting with chloroform from a 3.5 to 5%

(by weight) sulfuric acid solution; the aminopyrine can then be recovered from the acid solution by rendering ammoniacal, extracting with chloroform, evaporating and drying for 10 minutes at 80° to 100° C. If the original solution is saturated with anhydrous sodium sulfate, the limits of acid strength necessary for quantitative separation are raised and broadened. The aminopyrine residues obtained generally have a melting point within the U. S. P. range (107° to 110° C.). The same method might presumably be applied to other mixtures containing aminopyrine.—F. C. SINTON and F. A. ROTONDARO. *J. Assoc. Official Agr. Chem.*, 22 (1939), 678–680. (A. P.-C.)

Arsanilic Acid in Tryparsamide—Estimation of Small Quantities of. The monograph on tryparsamide in the Addendum to the B. P. 1936 describes a limit test for arsanilic acid. It is desirable to modify this limit test in order to obtain quantitative results for small amounts of arsanilic acid as this would enable the process of purification to be followed with greater accuracy. The method suggested for this modification is as follows: Weigh accurately 0.5 Gm. and 1.0 Gm. of tryparsamide into two test-tubes and dissolve in 6.0 cc. of distilled water. Cool each tube below 5° C. in an ice bath and add 2.5 cc. of 4% w/v sodium nitrite solution followed by 5 cc. of dilute hydrochloric acid B. P. The solutions are mixed after each addition of reagent. Pour the contents of each tube into 10 cc. of previously cooled solution of β-naphthol. Mix the diazotized solution and alkaline β-naphthol by pouring from one tube into the other and place in the 1-cm. cell of the Lovibond tintometer. Match the color and record the red units. The quantity of arsanilic acid present is determined by reference to the graph. The curve was obtained by using a solution of pure atoxyl, 1 cc. of which was equivalent to 0.1 mg. of arsanilic acid. Various volumes of this solution were taken, adjusted to 6 cc. with distilled water and the technic described was followed. The color in terms of red units was plotted against mg. of arsanilic acid. It is concluded that the pharmacopœial limit test for arsanilic acid is satisfactory provided that the sample contains mere traces of arsanilic acid. When a sample of tryparsamide contains more than traces of arsanilic acid, it is not possible, by the pharmacopœial test alone, to determine whether the sample may be said to satisfy the requirements of the Pharmacopœia or to be very much over the limit.—C. A. MCDONALD and J. G. REYNOLDS. *Pharm. J.*, 143 (1939), 222. (W. B. B.)

Arsenic—Colorimetric Toxicological Determination of. Destroy organic material by Denigès' method, add 100 cc. of water, neutralize with concentrated sodium hydroxide solution, add 40 cc. of concentrated hydrochloric acid, 0.5 Gm. of potassium bromide and 0.5 Gm. of hydrazine sulfate; distil, collect the distillate in 10 cc. of distilled water until 120 cc. has passed over; neutralize the distillate with sodium hydroxide, using phenolphthalein indicator, acidify slightly with a few drops of hydrochloric acid, add 0.01 Gm. of lead acetate, let stand 24 hours in an atmosphere saturated with hydrogen sulfide, filter, wash with water saturated with hydrogen sulfide; place the precipitate and filter in a flask, add 3 cc. of concentrated nitric acid and 1 cc. of concentrated sulfuric acid to destroy organic material, add 0.1 Gm. of hydrazine sulfate, heat to reduce arsenic acid to arsenious acid and remove sulfur dioxide; add 5 cc. of boiling distilled water, 3 cc. of concentrated hydrochloric acid, 2 cc. of a 1% aqueous gelatin solution and 1 cc. of water saturated with hydrogen sulfide. Compare the color with those obtained with similarly treated standard arsenic solutions.—F. Gaudy. *Anales asoc. quim. argentina*, 26 (1938), No. 133, 13–20; through *Chimie & Industrie*, 41 (1939), 461–462. (A. P.-C.)

Arsenic—Determination of Traces of, by Electrolytic Hydrogenation. The electrolytic method as recommended by Hefti (*Inaug. Dissertation*, Zurich 1907) based on the work of Bloxam (*Z. anal. Chem.*, 1 (1862), 483) and Thorpe (*Proc. Chem. Soc.*, 19 (1903), 183), was compared with Sanger and Black's modification (*Am. Chem. J.*, 13 (1891), 431) of the Gutzeit test. It is concluded that the electrolytic method is more reliable for determining 0.01 to 0.1 mg. of arsenic than the usual Gutzeit test, particularly when more than 1 Gm. of neutral salt is present. Neither procedure depending upon mercuric chloride stains can be regarded as quantitative, and reliable results can be obtained only when the standards from known quantities of arsenic are prepared in exactly the same way in which the analysis is made.—H. GRIFFON and J. THURET. *Bull. soc. chim. France*, 5 (1938), 1129–1142; through *Chimie & Industrie*, 41 (1939), 431–432. (A. P.-C.)

Arsenic Poisoning—Chronic, Toxicological Determination of. Determination of arsenic by Gabriel Bertrand's method is very sensitive, but the least variation from the technic may result in important losses of arsenic. The use of Kohn-Abrest's apparatus, though less sensitive, is preferable because the results are more constant. Causes of error in the determination of arsenic are discussed.—L. TRUFFERT. *Arch. Malad. Profess.*, 1 (1938), 221–242; through *Chimie & Industrie*, 41 (1939), 680. (A. P.-C.)

Asclepias Syrica L.—Phytochemical Study of. Amyrin acetate, propionate (m. 178° C.), trichloracetate (m. 168–170°, 204° C.), benzoate and stearate (m. 45° C.) are prepared and described. The hydrocarbon also occurring in the follicle walls was found to contain hydrogen 13.08% and carbon 96.4% corresponding to $C_{29}H_{52}$ or $C_{30}H_{54}$.—ALFRED E. RHEINECK. *Pharm. Arch.*, 10 (1939), 93–96. (H. M. B.)

Ash of Mineral Oil—Chemistry of. A spectroscopic examination of the ashes of five German crude oils, direct from the borings, has been made. The residue is only 0.01–0.05% of the original oil. The most abundant elements in the ash were iron, calcium, magnesium and aluminum, accounting together for more than 90% of the ash. The quantities of these metals, however, vary considerably from one oil to another. Barium, copper, sodium, silicon and tin occurred to the extent of 1% and cobalt, chromium, gallium, manganese, nickel, lead, titanium, vanadium and zinc to about 0.1%. Beryllium and cadmium were the most important metals at concentrations less than 0.1%, and did not occur in all samples. Arsenic, germanium, lithium, molybdenum and phosphorus were found in traces. Silver, gold, ruthenium, rhodium, palladium, osmium, iridium, bismuth, cesium, mercury, indium, columbium, rhenium, antimony, tantalum, tellurium, thallium, tungsten and zirconium could not be detected.—F. HEIDE. *Naturwissenschaften*, 26 (1938), 693; through *J. Soc. Chem. Ind.*, 58 (1939), 9. (E. G. V.)

Benzoic and Cinnamic Aldehydes—Determination of, as 2-4-Dinitrophenylhydrazones. Application to Assay of Preparations of Cherry Laurel and Cinnamon. *Benzoic Aldehyde.*—Reagent: 2-4-Dinitrophenylhydrazine 1 Gm., sulfuric acid 10 cc., distilled water 90 cc. Dissolve the hydrazine in a mixture of the acid and 10 cc. of water, make up to 100 cc., and filter. Method: Place the following in an Erlenmeyer flask in the order given: sample 10 cc., distilled water 50 cc., sulfuric acid 6 cc., reagent 25 cc. Stopper the flask and place it in a refriger-

ator for one hour. Transfer the precipitate to a 10G4 Schott filter, wash the flask with three 10-cc. portions of distilled water, and wash the stirring rod with 1 cc. of distilled water, passing all the washings through the filter. Finally wash the precipitate with 10 cc. of distilled water, or until the filtrate is no longer acid to Pottier's paper (a mixture of methyl red, bromothymol blue and dimethylaminoazobenzene solutions absorbed on paper and dried). Dry the precipitate for twenty-four hours over sulfuric acid in a vacuum desiccator and then for twenty minutes in an oven at 80°. The weight of the precipitate multiplied by 0.37 gives the amount of benzoic aldehyde in the sample. This procedure was tried as an assay for cherry laurel water but was not effective, probably because of the stability of the phenylglycolic nitrile in the presence of the acid concentration required to keep the reagent in solution. *Cinnamic Aldehyde in Hydroalcoholic Solutions (20% Alcohol).*—Reagent: As above. Method: Place 20 cc. of the sample in an Erlenmeyer flask, dilute with 50 cc. of a hydroalcoholic mixture containing 12 cc. of alcohol and 38 cc. of water. Add 7 cc. of sulfuric acid and then 10 cc. of the reagent. Continue as under benzoic aldehyde. The conversion factor is 0.423. *Essence of Cinnamon.*—Weigh about 0.1 Gm. of the essence in a tared dry flask. Add 25 cc. of 95% alcohol, mix; add 25 cc. of a mixture containing 10 cc. of 95% alcohol and 15 cc. of water, then add 5 cc. of sulfuric acid and finally 30 cc. of reagent. Continue as above. *Cinnamon Water.*—Dilute 5 cc. of the water with 75 cc. of water, then add 8 cc. of sulfuric acid and then 20 cc. of the reagent. Continue as above. The author claims that this procedure is better than the sodium bisulfite procedure for Essence of Cinnamon.—M. MOUTON. *Bull. sci. pharmacol.*, 46 (1939), 148–159. (S. W. G.)

Boron—Colorimetric Microdetermination of. Place an aliquot of a plant ash extract, containing from 0.5 to 8.0 micrograms of boron in a porcelain evaporating dish. Render the extract alkaline by adding 5 cc. or more of a 0.10*N* calcium hydroxide suspension and evaporate to dryness at full heat on a water bath. Remove the dish and allow to cool to room temperature, at the same time cooling the water bath to 55° ± 3° C. To the cooled residue add 1 cc. of the solution containing 80 cc. of a saturated solution of oxalic acid and 20% hydrochloric acid, and 2 cc. of a 0.10% extract of curcumin or 1% turmeric. Rotate the dish so that the reagents come into contact with all the residue and evaporate to dryness on the water bath at 55° C. Continue heating for 30 minutes at this temperature, then remove the dish and allow to cool. Extract the residue with 95% ethyl alcohol and transfer with a policeman to a filter or to a 15-cc. centrifuge tube. Filter and wash thoroughly with ethyl alcohol or throw down the solid phase with the centrifuge (about 10 minutes at 1500 r. p. m.) and dilute the liquid phase to constant volume; 25 cc. is convenient when using a 20-cc. cell with a colorimeter. Compare these solutions with standard solutions similarly prepared. The range of concentrations for the standards which have been used is 0.02 to 0.32 p. p. m. of boron in a 25-cc. volume or 0.5 to 8.0 micrograms of boron diluted from a standard containing 1 p. p. m. of boron.—J. A. NAFTEL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 407–409. (E. G. V.)

Cacotheline—Analytical Application of. The lilac color obtained in the brucine test with cacotheline is due to the formation of a reduction product of the latter. A similar test is obtained with divalent tin, trivalent titanium, trivalent uranium, trivalent rhodium, and lower oxides of molybdenum, tungsten and columbium. The test can also be obtained when the acids of arsenic, antimony and tellurium are treated with zinc and hydrochloric acid, but not with selenous acid. Hydrogen selenide, cuprous chloride and mercurous chloride in the presence of hydrochloric acid also give the color, and the same is true of finely divided mercury, ferrous sulfate in the presence of phosphoric acid or fluoride and potassium cobalticyanide. Numerous organic compounds also give the test. Nevertheless the reaction is often of value in distinguishing between certain substances, such as tin from molybdenum, or cysteine from glutathione.—L. ROSENTHALER. *Mikrochimie Acta*, 3 (1938), 190–192; through *Chimie & Industrie*, 41 (1939), 656. (A. P.-C.)

Calcium Oxalate Monohydrate as a Weighing Form for Calcium. Prepare a solution of calcium salt containing the equivalent of 0.2 to 0.5 Gm. of calcium carbonate in 175 to 200 cc. of solution, add 5 cc. of concentrated hydrochloric acid, and heat nearly to the boiling point. Add 1.0 Gm. of ammonium oxalate monohydrate dissolved in approximately 20 cc. of hot water (no precipitate should form) and then 5.0 Gm. of reagent quality urea dissolved in a similar volume of cold water. After mixing, heat at 80° to 90° C. until the solution is distinctly basic to methyl orange (over night). Cool the solution and collect the precipitate in a porous porcelain sintered-glass or Gooch crucible which has been weighed after standing 10 to 15 minutes in the air. Wash the precipitate with small portions of cold water and then with three or four 2-cc. portions of reagent quality acetone. Draw air through the crucible for 5 to 10 minutes and weigh. It is well to let the crucible stand on the balance pan for 10 to 15 minutes after the first weighing, and then to reweigh to be certain that the weight is constant. In the presence of appreciable amounts of sodium or magnesium the first precipitation of calcium oxalate may be made by the ordinary method, and after washing with dilute ammonium oxalate solution the precipitate may be dissolved in hydrochloric acid and reprecipitated as described; in this case the amount of ammonium oxalate added in the final precipitation need not be more than 0.2 to 0.3 Gm.—E. B. SANDELL and I. M. KOLTHOFF. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 90–93. (E. G. V.)

Calcium—Quantitative Determination of, by Means of Loretine. The red calcium salt of loretine (7-iodo-3-oxy-quinoline-5-sulfonic acid) is well known. Utilizing this salt, the author proposes the following method for the determination of calcium and the solution for analysis should not contain over 2% calcium; it may be neutral, slightly acid or slightly alkaline: 2.5 cc. of the solution are placed in a 50-cc. flask for the determination; 2.5 cc. of acetate buffer are added and the mixture warmed on the water bath, 25 cc. of $^1/_{10}$ molar meditrane (the mono-sodium salt of loretine) is heated to boiling in another flask and then mixed with the previous mixture. The flask is then covered with a watch glass and heated for a quarter of an hour longer on the water bath after which it is allowed to cool slowly and set aside until the next day. The crystalline precipitate is then collected on a filter crucible 3G3 and washed twice with 3 cc. of the reagent ($^1/_{10}$ mol. meditrane), twice with strong alcohol and finally with 3 cc. of acetone, after which the precipitate is air dried and weighed. Various points of technic and precautions and limitations are thoroughly discussed.—N. SCHOORL. *Pharm. Weekblad*, 76 (1939), 620. (E. H. W.)

Cannabis Indica—New Color Reaction of. The following new color reactions for *Cannabis indica* and its preparations are described: (1) Three drops of perhydrol and 10 drops of concentrated H_2SO_4 produce a blood-red color; this reaction is not suffi-

ciently characteristic to be used for a colorimetric analysis. (2) One drop of Dèningés' reagent produces a rose color when warmed on a water bath with a sample to be tested; the same reaction is also given by *m*-phenylenediamine. (3) The residue from a cannabis preparation when shaken cold with 2 cc. of an alcoholic solution of acetaldehyde (5%), 0.03 Gm. vanillin and 1 to 2 cc. of concentrated hydrochloric acid gives a transient green color, which rapidly changes to a slate-gray, then to an indigo-blue and finally to a violet. This reaction may be used for a colorimetric determination. The following reagent may be prepared and stored in a small glass-stoppered bottle: 0.4 Gm. vanillin and 0.06 Gm. acetaldehyde dissolved in 20 cc. of 95% alcohol. *Cannabis indica* or its preparations is completely extracted with petroleum ether, the solvent removed on a water bath, and the residue shaken with 2 cc. of the reagent and 1 cc. of concentrated HCl. The color is compared after 10 minutes with that given by a standard cannabinol solution under the same conditions.—P. DUQUÉNOIS and H. N. MOUSTAPHA. *J. Egypt. Med. Assoc.*, 21 (1938), 224; through *Wien. Pharm. Wochschr.*, 71 (1938), 239. (M. F. W. D.)

Carbon Tetrachloride—Reactivity of. Carbon tetrachloride as solvent is reactive under normal conditions. The reaction is of a photochemical nature and strongest in ultraviolet light. Various products were isolated from the reaction with aniline. Reactions also occurred with mineral oil products and with oils from the same source the reaction increased from gas oil to cylinder oil. Thorough treatment with sulfuric acid removed the reactive groups from the oils and no reaction takes place with white oil. The reactions with carbon tetrachloride introduce errors in quantitative determinations. Data and eight references are given.—HANS-JOACHIM HOFMANN. *Angew. Chem.*, 52 (1939) 96–99; through *Chem. Abstr.*, 33 (1939), 2883. (F. J. S.)

Carbonyl Compounds—Determining the Aldehydic or Ketonic Nature of. The method is as follows: Dissolve 1 to 4 Gm. of carbonyl-containing compound in 17 to 20 cc. of absolute alcohol in a flask provided with a reflux condenser; add 1.7 to 2 Gm. of sodium in small successive portions; when the reaction has subsided heat on the water bath, finally adding a little alcohol to dissolve the remaining sodium; add 100 cc. of water, acidify with 6 cc. of acetic acid, saturate with sodium chloride and extract successively with 50 cc. of ether, 15 cc. of ether + 15 cc. of pentane, and 10 cc. of ether + 10 cc. of pentane; wash the combined extracts with 5% sodium bisulfite solution, dry the solution over anhydrous sodium sulfate, concentrate on the water bath, transfer quantitatively to a tared flask, heat to constant weight at 50° to 100° C. (according to the nature of the alcohol) under moderate vacuum, and note the weight of the product (B). Acetylate 0.2 to 1.5 Gm. of B for 1 hour on the water bath with 5 cc. of acetylating mixture under the conditions indicated by Delaby and Sabetay (*Bull. Soc. Chim. France*, 2 (1935), 1716); calculate the degree of reduction as cc. of half normal potassium hydroxide x $P/20p$ (if the carbonyl-containing compound has one or more double bonds, P is taken as the molecular weight of the completely saturated alcohol). Tritylate 0.2 to 1 Gm. of B as specified by Sabetay in *Compt. rend. acad. Sci.*, 203 (1936), 1164, titrate the liberated hydrochloric acid (collected in silver nitrate solution) with thiocyanate, and calculate the degree of tritylation as cc. of decinormal silver nitrate x $P/100p'$; P is taken as above, and p' is p multiplied by the degree of reduction obtained by acetylation. A degree of tritylation of 60% or more indicates that the compound is an aldehyde; if it is less than 25% the compound is a ketone. The method can probably be adapted to the quantitative determination of aldehydes in presence of ketones.—SÉBASTIEN SABETAY and MME. SÉBASTIEN SABETAY. *Rev. Marques parfum. France*, 17 (1939), 141–142. (A. P.-C.)

Cerium—Microchemical Determination of. A small test tube (4 cm. long) is filled 1/3 with the solution to be tested for cerium, an equal volume of alcoholic solution of dimethylglyoxime added, 1 or 2 drops of 0.1% solution of ferric chloride and then water added to the top. A few drops of strong ammonia solution are added, the contents mixed by inverting the tube and the tube tightly stoppered so that no air bubbles remain. After standing for some time the tube is centrifuged to throw down the precipitated hydroxides. In the presence of 1γ or more of cerium, the supernatant liquid will be colored red. Cerium does not give the reaction if alkali carbonate is used whereas vanadium does. Manganese interferes.—G. BECK. *Pharm. Acta Helv.*, 13 (1938), 304. (M. F. W. D.)

Colorimetric Determination—Accuracy of. A critical review of the various types of colorimetric methods with mathematical expressions to show the probable error.—A. RINGBOM. *Z. anal. Chem.*, 115 (1939), 332–343; through *Chem. Abstr.*, 33 (1939), 2839. (F. J. S.)

Copper and Iron—Traces of, in Alcohol. A spectrum of the residues from raw alcohols showed the elements Al, Ca, Cu, Fe, K, Na, Mg, Mn and Si. The Fe lines exceeded those of Cu in intensity. For the Cu determinations neutralize 25 cc. of raw alcohol with NaOH, mix with 25 cc. H_2O add 5 cc. of a diphenylcarbazide reagent (0.1 Gm. of diphenylcarbazide in 50 cc. EtOH and 50 cc. C_6H_6), dilute to 100 cc. with C_6H_6, shake and allow the mixture to stand quietly for several hours. Remove the colored C_6H_6 layer and compare it to a $Cu(NO_3)_2$ in EtOH solution containing 0.00145–0.00029 mg. Cu per cc. In 9 specimens of raw alcohol prepared in Czechoslovakia the Cu content ranged from 0.2 to 5.2 mg. per liter. Refined alcohol contained 0.001 mg. Cu per liter. For the Fe determinations take 25 cc. of neutralized raw alcohol, add 0.25 cc. of concentrated HCl, 0.25 cc. of concentrated HNO_3 and 5 cc. of a 10% KCNS, dilute to 100 cc. with water, and allow to stand for 1 hour. Compare the colored solution with a standard $FeCl_3$ solution containing 0.002 mg. Fe per cc. In 8 specimens of raw alcohol prepared in Czechoslovakia the Fe content ranged from 0.7 to 42.9 mg. per liter. Refined alcohol contained 0.02 mg. Fe per liter. The presence of Fe in the ratio Fe:Cu::5:1 did not interfere with the Cu determinations. Electrical conductivity determinations confirmed the analyses. In the residues from 9 different distilleries the Cu content ranged from 7 to 21 mg. per liter and the Fe content ranged from 3 to 12 mg. per liter, the Cu content exceeding that of Fe in all residues. The method enables a study of the corrosion of stills and an evaluation of the keeping qualities of motor fuel, *i. e.*, catalytic effect of Fe and Cu upon the formation of resins and unsaturated hydrocarbons.—J. KNOP and J. MALCHER. *Chem. Obzor*, 14 (1939), 209–212; through *Chem. Abstr.*, 34 (1940), 1123. (F. J. S.)

Copper and Nickel—Separation and Determination of, by Salicylaldoxime. Hydrogen-ion concentration is an important factor in the use of salicylaldoxime as an analytical reagent. Copper salicylaldoxime complex starts to precipitate from pure solutions in quantitative amounts at a p_H of 2.6. Nickel salicylaldoxime complex starts to precipitate from pure solutions at a p_H of 3.3. The amount is quantitative at a p_H of 7.0. The p_H range of separation of copper from nickel by the use of the reagent

is 2.6 to 3.1. This range is not appreciably different from that predicted by results obtained with pure solutions. Very little entrainment of the nickel complex by the copper complex was found. The presence of the copper precipitate dos not appreciably affect the solubility of the nickel complex. Entrainment of the iron complex occurs over the entire range of hydrogen-ion concentration studied. It is not due to adsorption alone. The amount decreases with increase of p_H. Salicylaldoxime affords a rapid, simple, accurate and fairly cheap method for the separation and determination of copper and nickel in various mixtures.—L. P. BIEFELD and D. E. HOWE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 251–253. (E. G. V.)

Copper—Iodometric Determination of. In a study of the reaction between copper sulfate and potassium iodide in buffer solutions of acetic, propionic, formic, and hydrofluoric acids, propionates, formates and fluorides lower the activity of the cupric ions in much the same manner as acetates. At a given initial concentration of copper and of iodide the lowering of the per cent of copper reduced is not governed so much by p_H as by the concentrations of acid and of salt, especially of salt. In the iodometric determination of copper in the presence of iron and arsenic at the concentrations of copper and of iodide commonly used, satisfactory end-points in buffer solutions of these acids with a p_H between 3.2 and 4.0 can be obtained without the use of thiocyanate if the maximum concentrations of the salt do not exceed 0.1 to 0.2*M* for acetic and propionic acids, 0.6 to 0.7*M* for formic acid and 1.0 to 1.7*M* for hydrofluoric acid. In solutions in which iron is present alone or with arsenic, ammonium bifluoride solutions are the most suitable. In iron-free solutions containing arsenic and in solutions free from iron and arsenic in which it is desired to work at a p_H between 2 and 3, formic acid has an advantage over acetic and propionic acids.—W. R. CROMWELL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 159–161. (E. G. V.)

Cosmetics—Report on the Analysis of. A suggested technic is described for the determination of water-soluble and dilute hydrochloric acid-soluble barium in lipsticks, cream rouges and lake dyes. A collaborative study of these methods on 10 samples of these products gave rather widely varying results. —ELMER W. CAMPBELL. *J. Assoc. Official Agr. Chem.*, 22 (1939), 517–519. (A. P.-C.)

Desoxycholic Acid—New Color Reaction of. With benzaldehyde and 75% sulfuric acid, desoxycholic acid gives a red color; on addition of glacial acetic acid the mixture turns green. The latter reaction is specific for desoxycholic acid.—K. KAZIRO and T. SHIMADA. *Hoppe-Seyler's Z. physiol. Chemie*, 254 (1938), 57–60; through *Chimie & Industrie*, 41 (1939), 659. (A. P.-C.)

Ergot—Powdered, Chemical Assay of. A new method is described of assaying powdered ergot by shaking at room temperature with acetone and solution of ammonia for half an hour. Five grams of the sample was mechanically shaken with 49 cc. of acetone A. R. and 1 cc. of 10% solution of ammonia for thirty minutes. The acetone extract was filtered through a No. 1 Whatman paper in a closed apparatus to avoid loss of acetone by evaporation. Forty cubic centimeters of the filtrate was mixed with 80 cc. of anesthetic ether and shaken with four separate 10-cc. portions of aqueous 1% tartaric acid solution. Separation took place readily without the slightest trace of emulsification. The combined tartaric acid extracts were warmed to remove acetone and ether, cooled, made up to 50 cc. with tartaric acid solution and assayed. This method, when applied to six samples examined showed an average efficiency of 93% which is considerably higher than the corresponding efficiencies of Hampshire and Page's or the pharmacopœial method. Re-extraction of the marcs yielded total figures for the assays agreeing within the limits of experimental error with the total figures obtained by continuing the pharmacopœial method to exhaustion, and it was, therefore, concluded that the two methods carried to exhaustion by a single re-extraction both measure the total alkaloids completely.—C. DAGLISH and F. WOKES. *Pharm. J.*, 143 (1939), 133. (W. B. B.)

Ferrous Iron—Oxidation of, with Potassium Iodate. If a solution of 0.5–0.75 Gm. of Mohr's salt in 4*N* hydrochloric acid is treated in an atmosphere of carbon dioxide with potassium iodate and the electromotive force is measured against a calomel cell, the potential difference rises steadily upon the addition of potassium iodate and makes a sharp lump at the equivalence point. The results from such titrations were accurate to within 0.5 mg.— B. SINGH. *J. Indian Chem. Soc.*, 15 (1938), 615; through *Chem. Abstr.*, 33 (1939), 2841. (F. J. S.)

Fluorine in Drinking Water and Goiter—Does Any Relationship Exist between the Content of? The problem was studied on the basis of 64 samples of drinking water, taken from places in which endemic goiter was known to prevail. It was established that where this endemia was low the water was always low in fluorine; but strong endemia can occur both in places where much fluorine is present in water and also in those where little fluorine is found. A final conclusion can be drawn only after the drinking water as well as food has been examined for the content of fluorine. The method of fluorine determination especially in water, developed by the author previously, was revised and it is described in detail.—T. VON FELLENBERG. *Mitt. Lebensm. Hyg.*, 29 (1938), 276–290; through *Chem. Abstr.*, 33 (1939), 2631. (F. J. S.)

Fluorine—Microdetermination of, by Thorium Titration. The microdetermination of fluorine by titration in aqueous solution with thorium nitrate according to Armstrong's latest technic did not give the high degree of accuracy obtained by Armstrong. The recovery of fluoride added to bone ash in 50.0 to 100.0-microgram quantities varied about ±5.0 micrograms from the total added. Duplicate samples of bone and tooth ash agreed within 2.0 to 6.0 micrograms of total fluorine, where a total of 50.0 to 100.0 micrograms of fluorine were determined, the size sample equaling not more than 0.5 Gm. of ash. An attempt to apply the method to the analysis of a material such as milk powder containing less than 1.0 p. p. m. of fluorine was not successful. The necessity of avoiding glass or porcelain containers in evaporation of alkaline fluoride distillates, previous to titration with thorium nitrate, is indicated. A method for the prevention of volatilization of chloride, by precipitations with silver sulfate added to the distilling flask, was found satisfactory.—F. J. MCCLURE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 171–173. (E. G. V.)

Fumaric and Maleic Acids—Estimation of.—S. G. GANGULI. *J. Indian Chem. Soc.*, 15 (1938) 611–614; through *Chem. Abstr.*, 33 (1939), 2846. (F. J. S.)

Haschish—Detection and Determination of, in Sensorial Drugs and in Viscera. It is confirmed that the Beam reaction for cannabinol is not absolutely specific; but it nevertheless is of considerable value as a preliminary test on account of its simplicity. Ghamrawy's reaction (*J. Egypt. Med. Assoc.*, 20 (1937), 193) is better than Beam's, being obtained with haschish preparations that give a negative Beam test; it is very delicate and practically specific. The following test has been developed: extract the drug to be examined with cold petroleum ether (boiling 35° to 50° C.), filter, evapo-

rate on the water bath, while the residue is still warm add 2 cc. of reagent (vanillin 0.40 Gm., acetaldehyde 0.06 cc. (about 4 drops), 95% alcohol 20 cc.), stir, when solution is complete add 2 cc. of concentrated hydrochloric acid; in presence of haschish there appears a fugitive water-green coloration, changing to slate grey, then to indigo which persists for about 15 minutes, darkens slowly and finally becomes a very stable violet. The ratio of change of color may vary with operating conditions. The test was applied to a large number of organic compounds containing various functional groups, alkaloids, glucosides, essential oils and drugs after extracting the active principle. The only substance found which gave violet as a final color was phloroglucinol, which could not interfere with the test for haschish as it is practically insoluble in petroleum ether. The test can be used for the quantitative colorimetric determination of cannabis resin, but comparison must be made with a standard prepared simultaneously from the drug; a definite colored solution (*e. g.*, aniline violet) cannot be used owing to the change with time of the shade from indigo to violet. The colorimetric reading is practically proportional to the resin content. In presence of certain impurities, a somewhat pinkish tint is obtained, which is readily eliminated by interposing a cobalt blue glass. A study of various methods of separation of cannabinol from viscera for toxicological analysis showed that the most satisfactory consisted in absorption of the proteins by mineral colloids, described in Kohn-Abrest's "Treatise on Toxicology." The chopped organs are macerated for 12 hours at 60° C. with 2 to 3 times their weight of 95% alcohol acidified with a little tartaric acid. The liquid separated by pressure and filtration is placed in a large crystallizing dish, and sheet aluminum (activated by dipping for 3 minutes in 1% mercuric chloride solution and washing with distilled water) is immersed in the alcoholic solution for 24 hours. The aluminum hydroxide formed entrains lipids, pigments and impurities in general, but not the active principle of Indian hemp. The liquid is maintained neutral or slightly acid by addition of small quantities of tartaric acid if necessary. After filtration, treatment with aluminum may be repeated if necessary. The alcohol is recovered by distilling under reduced pressure, and after removal of all the alcohol evaporation is continued without, however, reaching the point of a syrupy consistency. The material is treated once or twice with absolute alcohol, and after evaporation of the alcohol the residue is treated with the aldehyde-vanillin reagent and the color compared with that obtained by similar treatment of the residue of evaporation of 10 cc. of a standard solution. The method gave 75 to 80% of theoretical recovery.—PIERRE DUQUÉNOIS and HASSAN NEGM. *Ann. méd. légale criminol. police sci.*, 18 (1938), 485–506. (A. P.-C.)

Hydrogen Peroxide—Determination of, and Some Related Peroxygen Compounds. The analysis of solutions of peroxygen compounds by titration, decomposition and colorimetric methods has been discussed. The permanganate titration is recommended for determining active oxygen in solutions containing neither organic matter nor other reducing substances. The ceric sulfate titration should be used for solutions containing organic matter or other reducing substances, although some analysts will prefer the iodine-thiosulfate titration which is satisfactory if the organic matter does not contain unsaturated compounds. A colorimetric method should be used for determining traces of peroxides The titanium trichloride method is recommended. A decomposition method may be used for determining active oxygen in highly colored solutions where color changes cannot be detected accurately. A simpler method for use under these conditions, based on potentiometric titration with sodium nitrate, has been developed. The methods recommended for hydrogen peroxide can also be used for determining active oxygen in solutions of sodium peroxide, sodium perborate, barium peroxide, calcium peroxide, magnesium peroxide and zinc peroxide.—J. S. REICHERT, S. A. MCNEIGHT and H. W. RUDEL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 194–197. (E. G. V.)

Iodine and Thiosulfate Solutions—Standardization of. The standardization of iodine solutions by means of direct weighing and by the use of U. S. Bureau of Standards standard sample of arsenic No. 83 should agree within 1 part in 2000. The technic of the procedure is described in detail. The normality of sodium thiosulfate solutions determined against unpurified analytical grade potassium iodate does not agree with the normality determined against iodine. It would appear the potassium iodate contains some impurity that liberates a larger amount of iodine than would be liberated by a corresponding amount of potassium iodate; after two recrystallizations from water, the amount of impurity seems to be greater rather than less. It is probably sodium iodate. It is concluded that analytical grade of potassium iodate is not a satisfactory primary standard for the standardization of sodium thiosulfate.—KENNETH L. MILSTEAD. *J. Assoc. Official Agr. Chem.*, 22 (1939), 567–571. (A. P.-C.)

Iron and Copper—Method for Determining Colorimetrically in Biological Material. The dipyridyl method for estimating available iron is useful when applied to acid extracts of leaf tissues only when a photoelectric colorimeter is used. The presence of iron in leaf tissue extracts also interferes with the carbamate method for determining copper. By the use of a combination of these tests the authors have described a method whereby iron and copper may be determined simultaneously even though one metal is present in large excess. Both metals may be colorimetrically determined since ferrous dipyridyl is unionized and insoluble in isoamyl alcohol. The solution containing both metals was treated with dipyridyl and carbamate. The copper complex was extracted with isoamyl alcohol and therein determined, while the iron remained quantitatively in the aqueous layer.—W. E. PARKER and E. P. GRIFFIN. *Can. J. Research, Sec. B*,. 17 (1939), 66–70. (W. T. S.)

Lead—Determination of, by Dithizone. The following modifications and improvements have been made in the dithizone method for the determination of lead in biological material described by Hubbard: The use of hydroxylamine in the initial extraction prevents the oxidation of the dithizone and permits the elimination of the second extraction step of the Hubbard method. Washing the first chloroform extract removes extraneous entrained salts and improves the test for bismuth. Filtrations through cotton and through paper have been eliminated from the procedure without the loss of accuracy, and with a resultant saving of time and decrease of opportunities for contamination. The addition of the standard dithizone solutions and the development of the mixed color in all the samples of a series before the photometric readings are made save time and do not affect the accuracy of the analyses. Purification of reagents and elimination of contamination have made possible a blank of 0.1 microgram, which is believed to be the lowest yet reported.—K. BAMBACH. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 400–403. (E. G. V.)

Lead—Microchemical Detection and Determination of. Place a drop of hydriodic acid solution (prepared by introducing hydrogen sulfide into a mixture of iodine and water) on a filter paper which

has been soaked with the solution to be tested, and allow to dry in the air or in the oven. Compare the stain thus obtained with a series of standard stains obtained with solutions of known lead contents.—N. D. COSTEANU. *Mikrochimie Acta*, 3 (1938), 236–238; through *Chimie & Industrie*, 41 (1939), 656. (A. P.-C.)

Lead—New Microchemical Test for. As little as 0.02γ lead in a dilution of 1:40,000 can be detected by the formation of $2Pb(NO_3)_2.11CS(NH_2)_2$. The compound can be formed by evaporating the nitric acid solution containing lead to dryness, moistening the perfectly dry residue with one drop of 2*N* nitric acid and sprinkling some granules of thiourea over it. By the direct test made in this way, positive results were obtained when 0.2% of lead was present in an alloy. If, however, the nitric acid solution is subjected to electrolysis and the anodic deposit of lead dioxide taken for the test, as little as 0.05% lead can be detected in an alloy.—C. MAHR. *Mikrochemie*, 26 (1939), 67–71; through *Chem. Abstr.*, 33 (1939), 3289. (F. J. S.)

Lithium—New Sensitive Test for. The test is based on the formation of a yellow precipitate or turbidity with an alkaline solution of ferric periodate. The reagent is prepared by dissolving 2 Gm. of potassium periodate in 10 cc. of freshly prepared twice normal potassium hydroxide, diluting with water to about 50 cc., adding 3 cc. of a 10% ferric chloride solution, and making to 100 cc. with twice normal potassium hydroxide.—O. PROCKE and R. UZEL. *Mikrochimie Acta*, 3 (1938), 105–107; through *Chimie & Industrie*, 41 (1939), 879. (A. P.-C.)

Magnesium—Volumetric Determination of. Magnesium is precipitated as magnesium ammonium phosphate; the precipitate is separated, washed with 95% ethyl alcohol, dried at 45–50°, suspended in water and titrated to methyl orange with 0.1*N* sulfuric acid. The method is applicable to the determination of the phosphate ion.—G. DONATELLI. *Ann. chim. applicata*, 28 (1938), 122–125; through *Chem. Abstr.*, 33 (1939), 3289. (E. G. V.)

Mercurial Ointments—Assay of Some. The assay method used for Strong Ointment of Mercuric Nitrate by saponification in presence of zinc dust, has been extended to Oleated Mercury B. P., Dilute Ointment of Mercuric Nitrate B. P., Ointment of Red Mercuric Iodide B. P. C. and Oleated Mercury B. P. Comparative assays of Oleated Mercury B. P. showed (*a*) B. P. method, 20.36%; (*b*) saponification method, 20.25, 20.28%. The method recommended for Ointment of Red Mercuric Iodide B. P. C. is as follows: Treat 2 to 5 Gm. of the ointment in a 250-cc. conical flask with 2 Gm. of zinc filings, 5 Gm. of potassium hydroxide pellets and 50 cc. of ethyleneglycol monoethylether. Boil under a reflux condenser for ten minutes, add 50 cc. of water through the condenser, boil for a further ten minutes and then add down the condenser 3 cc. of solution of formaldehyde. Allow to cool, filter through a paper pulp filter, wash the amalgam with warm 5% potassium hydroxide solution, washing the filter with a little industrial methylated spirit if necessary, transfer the paper pulp to the flask, connect to the condenser, add 20 cc. of water, followed cautiously by 20 cc. of nitric acid. When the zinc has dissolved, heat to dissolve the mercury and remove nitrous fumes, cool, oxidize with permanganate, decolorize with a drop of solution of hydrogen peroxide and titrate with *N*/50 ammonium thiocyanate. From 99.2 to 99.5% of $HgCl_2$ was recovered. The recommended assay method for Dilute Ointment of Mercuric Nitrate B. P. is as follows: Treat 2 Gm. of the ointment in a 250-cc. conical flask with 2 Gm. of zinc dust, or preferably filings, 5 Gm. of potassium hydroxide pellets and 50 cc. of ethyleneglycol monoethylether. Boil under a reflux condenser for ten minutes, allow to cool somewhat, pour down the condenser 50 cc. of water and boil for a further ten minutes. Allow to cool for a few minutes; remove the flask from the condenser and add 50 cc. of toluene. Filter through a paper pulp filter, washing the amalgam by decantation with alternate portions of 5% potassium hydroxide solution and of toluene. Transfer the paper pulp to the flask, connect the latter to the condenser and complete the assay as for Ointment of Red Mercuric Iodide, using *N*/50 ammonium thiocyanate for titration. With the dilute ointment the quantity of mercury found varied from 1.42 to 1.43% (calculated 1.34%), and with the strong ointment 5.90 to 7.22% (calculated 7.21%). Ointment of Oleated Mercury B. P. may readily be assayed by the method described for Dilute Ointment of Mercuric Nitrate. Duplicate assays of a sample of Ointment of Oleated Mercury gave 4.73 and 4.76% of HgO. The final titration is carried out with *N*/10 ammonium thiocyanate.—G. J. W. FERREY. *Pharm. J.*, 143 (1939), 104. (W. B. B.)

Mercury—Determination of, in Organic Compounds. A critical study of the methods of determining mercury in organic compounds. The electrolytic method with gold cathode is the only one that can be recommended. The solution resulting from the destruction of organo-mercuric compounds by chlo.ination cannot be electrolyzed directly. The emergent portion of the electrode is rapidly attacked; but this can be avoided by attaching the gold sheet to a platinum wire so that the gold is completely immersed in the solution.—R. JACQUEMAIN and MELLE. G. DEVILLERS. *Bull. soc. chim. France*, 5 (1938), 1338–1340; through *Chimie & Industrie*, 41 (1939), 881–882. (A. P.-C.)

Mercury—Microchemical Detection and Determination of. The method is colorimetric and is based on the reaction of mercury with hydriodic acid. A set of standards is prepared by adding a drop of hydriodic acid solution on a series of strips of filter paper impregnated with solutions of known concentration of mercurous and mercuric salts. The same procedure is followed with the solution to be analyzed, and the strip is compared with the standards. The valence of the mercury in the solution is ascertained at the same time.—N. D. COSTEANU. *Mikrochimie Acta*, 3 (1938), 136–140; through *Chimie & Industrie*, 41 (1939), 879. (A. P.-C.)

Mercury—Microdetermination of, and Its Application to Sanitation and Medical Problems. The method consists in isolation of the mercury as a droplet, and measuring its diameter under the microscope. Separation is carried out electrolytically in weakly hydrochloric acid solution in presence of copper; the cathode is a thin copper spiral, the anode is of platinum. Mercury is chiefly a respiratory poison; absorbed in the form of vapor through the respiratory system, it is considerably more harmful than when introduced into the digestive system. —A. STOCK. *Suomen Kemistilehti (A)*, 11 (1938), 108–112; through *Chimie & Industrie*, 41 (1939), 886. (A. P.-C.)

Metaldehyde—Method for the Determination of. A technic is described for the determination of metaldehyde in insecticides or in products which have been treated. It consists essentially in treating the material with acid (to convert the metaldehyde into acetaldehyde) at 50° to 60° C., entraining the acetaldehyde with a current of air for 1 hour and absorbing in a bisulfite solution, oxidizing the uncombined bisulfite, neutralizing with a slight excess of sodium bicarbonate and titrating the liberated bisulfite with decinormal iodine.—S. CHÖNBERG. *Compt. Rend. 18me Congr. Chim. Ind., Nancy*, Sept.–Oct. 1938, 647–649. (A. P.-C.)

Microvolumetric Analysis. I. Acidimetry. Theoretical.—O. ISISAKA. *J. Pharm. Soc. Japan*, 59 (1939), 67–83; through *Chem. Abstr.*, 33 (1939), 3719. (E. G. V.)

N. F. Preparations—Adaptation of Assay Methods for Some. IV. Ointment of Mild Mercurous Chloride. The following adaptation of the U. S. P. XI method for the assay method of mild mercurous chloride is offered: Place about 2.5 Gm. of the ointment in a 250-cc. tared, glass-stoppered flask and weigh accurately. Add 100 cc. of chloroform, stopper and shake gently until the ointment base is dissolved. Filter the mixture and wash the residue with several small portions of chloroform. Place the filter paper and contents in the glass-stoppered flask, add about 25 cc.water and mix well. Add 50 cc. 0.1*N* iodine and 5 Gm. potassium iodide dissolved in 10 cc. water. Stopper the flask, allow the mixture to stand with occasional shaking until complete solution has taken place, and then titrate the residual iodine with 0.1*N* sodium thiosulfate using starch T.S. as an indicator. Each cc. 0.1*N* iodine is equivalent to 0.02361 Gm. HgCl. It is recommended that the following standard be prescribed for the ointment in the N. F.: It contains not less than 29% and not more than 31% HgCl.—ROBERT TZUCKER and WILLIAM B. BAKER. *Pharm. Arch.*, 10 (1939), 85–87. (H. M. B.)

Nipagin and Nipasol—Contribution to the Differentiation and Colorimetric Determination of. Ten milligrams of yellow mercuric oxide are suspended in 1 cc. concentrated sulfuric acid and 20 mg. of nipagin or nipasol added. The tube is allowed to stand in a boiling water bath for 5 minutes and the solution diluted with 5 cc. of water. Nipagin gives a clear, practically colorless solution while nipasol gives a dirty, violet, turbid solution. When 5 cc. of Ehrlich's Diazo reagent is added to 1 cc. of the nipagin dilution, a yellow dye is formed while nipasol gives an orange dye. The color is very intense and is sufficiently constant and proportional for colorimetric estimation.—P. AUFSCHNAITER. *Scientia Pharm.*, 9 (1938), 125. (M. F. W. D.)

Nitrates—Detection of, in Distilled Water. The pharmacopœial test for the nitrate ion in distilled water had been criticized by K. Seiler (*Schweiz. Apoth.-Ztg.*, 76 (1938), 589). Thomann has further investigated the test and has shown that the amount of brucine used in the test has a distinct bearing on the results. He recommends a modified method using diphenylamine reagent and saturated sodium chloride. It is possible to detect 0.0005 mg. NO_3 ion per cc. of water by this method.—J. THOMANN. *Schweiz. Apoth.-Ztg.*, 76 (1938), 685. (M. F. W. D.)

Nitric Acid and Nitrates—New Specific Reaction for. If the sample to be tested is solid, place several particles in a tube, add 12 drops of concentrated sulfuric acid and 2 drops of benzene. Mix to suspend the benzene in the acid then place the tube in a boiling water bath for three minutes. If the sample is a solution, 1 to 2 cc. of the neutralized liquid is evaporated to dryness on a water bath in a small dish. Cool for several seconds then add sulfuric acid and benzene as above and place on a water bath for three minutes. In both cases, cool for several minutes, then add 5 to 8 cc. of acetone, transfer the liquid to a tube and add 3 cc. of about 5% sodium hydroxide solution. The acetone layer is turbid because of the sodium sulfate formed, but vigorous shaking causes the salt to dissolve in the alkali solution leaving the acetone solution clear, and as soon as the acid is completely neutralized it takes on an extremely intense violet color. For a sample containing 0.005 to 0.01 Gm. of nitrate, the violet color will be observed only after dilution with 10 cc. of acetone. The addition of water and ethyl alcohol causes the color to change to red. If the sulfuric acid–benzene–nitrate mixture is heated above 100° over a direct flame the reaction goes on with the formation of trinitrobenzene which condenses with the acetone to give a red color. In this case the color obtained after action of the acetone and alkali varies from violet red to blood red. The reaction is sensitive to 0.0005 Gm. of potassium nitrate in 1 cc. of liquid, giving a definite violet rose color. Nitrites give a yellowish solution, which becomes colorless on addition of alkali. The following variation using nitrobenzene is given: Place several particles of the sample in a well-dried tube, add 10 to 12 drops of a 1:10 solution of nitrobenzene in sulfuric acid. Let stand 2 to 3 minutes, then add 5 to 8 cc. of acetone and 3 cc. of sodium hydroxide solution diluted with an equal volume of water. Mix well and note the violet or violet-red color which appears in the acetone layer.—M. PESEZ. *J. pharm. chim.*, 29 (1939), 460–465. (S. W. G.)

Nitrous Acid—Two New Tests for Nitrous Acid. 1,2,4-Tolylenediamine (3% in 5% acetic acid) or *m*-toluidine (in acetic acid diluted 1:1) added to neutral solution containing nitrites gives a red or orange-red color, intense and persistent. The coloring matter is soluble in ethyl ether. The ferric ion and other oxidizers give similar tests but in this case the color is not soluble in ethyl ether. The second test fails in the presence of chromic acid, halogens, etc.—A. CASOLARI. *Chim. ind. agr. biol.*, 14 (1938), 294; through *Chem. Abstr.*, 33 (1939), 3292. (F. J. S.)

Nucleic Acid of Yeast—Colorimetric Reactions and Determination of. A number of colorimetric tests are given. The following procedures for the determination of nucleic acid are given: (*a*) *Reagents.*—1. Diazotizing agent: Mix 1 drop of 10% sodium nitrite solution with each 5 cc. of solution of *p*-nitroaniline (dissolve 0.5 Gm. of *p*-nitroaniline in 100 cc. of distilled water and add 0.5 cc. of sulfuric acid). 2. Hydrochloric acid (50%). 3. Sodium hydroxide (30%). 4. Sulfuric acid (50%). *Method.*—Heat 0.1 Gm. of the acid with 20 drops of 50% hydrochloric acid and mix until a clear solution forms. Dilute with 10 cc. of distilled water then transfer quantitatively to a 100-cc. volumetric flask and make up to the mark with distilled water. Mix well, then place 1 cc. to 6 cc. of the hydrolyzed mixture, respectively, in six similar colorimetric tubes. Make up to equal volumes with distilled water; mix, then add to each tube 3 cc. of the *p*-nitroaniline reagent; mix, then add to each tube 5 drops of 30% sodium hydroxide solution then mix well. A scale of unstable red colors is formed, but addition of 5 drops of 50% sulfuric acid gives a series of stable yellow colors which may be compared to a set of standards prepared with known amounts of nucleic acid and using the same reagents. (*b*) *Reagents.*—1. Standard solution of nucleic acid (0.1 Gm. in 100 cc. of 50% sulfuric acid). 2. Solution of morphine hydrochloride (1%) in 50% sulfuric acid. 3. Sulfuric acid. 4. Sulfuric acid (50%). *Method.*—Pour 0.1, 0.2, 0.3, 0.4 and 0.5 cc. of the standard solution into five colorimetric tubes and make up the first four to 0.5 cc. by adding 50% sulfuric acid. Add to each tube 0.5 cc. of the morphine reagent, mix, add to each tube fifty drops of sulfuric acid, mix and heat in a water bath at 70° for five minutes. Prepare a solution of the sample in 50% sulfuric acid, making the concentration equal to that of the standard. Transfer 0.2 cc. and 0.5 cc. of this solution to two colorimetric tubes, add the reagents as above and compare the intensities of the colors obtained with those in the series obtained with the standard.—J. A. SANCHEZ. *J. pharm. chim.*, 29 (1939), 529–544. (S. W. G.)

Organic Solvents in Flavors—Determination of. A method is described for determining isopropyl

alcohol. It consists essentially in oxidizing with potassium dichromate, distilling the acetone formed, and determining the latter by the U. S. P. XI method. A qualitative test for acetone is first made by distilling a portion of the sample, adding to the first 2 cc. of distillate 5 cc. of a 5% alcoholic solution of *o*-nitrobenzaldehyde and 1 cc. of 10% sodium hydroxide solution, mixing and shaking with a little chloroform, a blue color in the chloroform indicating acetone; if present, the latter is removed by preliminary treatment with paraformaldehyde. The method gave encouraging results when applied to isopropyl alcohol–ethanol–acetone–water mixtures, and it is believed it can be extended to commercial samples containing isopropyl alcohol if appropriate extraction and distillation prodedures are used.—R. D. STANLEY. *J. Assoc. Official Agr. Chem.*, 22 (1939), 594–596. (A. P.-C.)

Phenol Ointment—Assay of. Emulsification still causes some difficulty in the extraction process of Phenol Ointment and some investigators have used distillation on this account. The distillation process when carried out on numerous samples, is rapid, but when isolated samples are being analyzed an extraction process has advantages, and the following is a description of one which has been found satisfactory: Dissolve about 0.5 Gm. of ointment in approximately 10 cc. of light petroleum. Extract this solution with four successive quantities of 10 cc. each of a solution of 7 cc. of concentrated hydrochloric acid and 33 cc. of water, shaking for two minutes on each occasion. Collect the extracts in a Wijs iodine flask, add 20 cc. of *N*/10 bromate–bromide, and complete the anlysis in the usual way. There is enough acid in the extracting liquid for the remainder of the process. Emulsions, if formed, are coarse and cause no trouble. A quantity of ointment was made by using a stoppered bottle, so that the ointment contained 2.57% of phenol. Two analyses, as described, gave results 2.56 and 2.59, equivalent to 99.6% and 100.8% of the theoretical amount.—R. M. SAVAGE. *Pharm. J.*, 143 (1939), 105. (W. B. B.)

Photographic Developers—Modern. The practical result of a large volume of research has been the introduction of many new photographic developers, which, for convenience, may be divided into five main groups: (1) Low-alkali developers, (2) low-energy developers, (3) "physical" development, (4) Leitz "two-bath" system and (5) solvent developers. Each of these developers are discussed, and formulæ are given which demonstrate each class of developers.—D. G. SHELDON. *Pharm. J.*, 143 (1939), 51. (W. B. B.)

Potassium Persulfate and Alkyl Iodides—Kinetics of the Reaction between. I. Influence of Solvents, Acids and Salts. The solvent effect of alcohols, acids and the corresponding esters on the kinetics of the persulfate-alkyl iodide reaction, alternates in ascending the homologous series. This effect runs parallel with their dipole moments. A quantitative relationship between the specific catalytic effect of the cations, H, K, NH_4 and Na and their transport numbers is suggested. The chloride-ion influences the kinetics much more than the corresponding SO_4 or NO_3. Among the mineral acids (HNO_3, HCl, H_2SO_4 and H_3PO_4) the order of catalytic influence runs parallel with that of their ionization constants although the parallelism is by no means quantitative.—M. S. TELANG and V. V. NADKARNY. *J. Indian Chem. Soc.*, 16 (1939), 536. (F. J. S.)

Qualitative Separation on a Micro Scale. Separations in the Alkaline Earth Group. The procedure of Noyes and Bray for the separation and analysis of the alkaline earth group has been applied on a micro scale. The quantities of the reagents have been chosen so as to permit the analysis of 1.2 mg. of nonmetallic materials or 0.6 mg. of metals and alloys. The perchloric ion, introduced by the use of perchloric acid as solvent, is removed before precipitation of the alkaline earth group.—A. A. BENEDETTI-PICHLER, W. R. CROWELL and C. DONAHOE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 117–120. (E. G. V.)

Salicylic Acid—Bromometric Determination of. A critical examination was made of four methods. Good results are obtained if the bromide-bromate mixture is stirred only for a short time after hydrochloric acid is added but not shaken during the formation of tribromophenol, and if the concentration of hydrochloric acid in the bromide mixture is not greater than four-tenths normal. In 40 determinations, deviations were less than 0.3%.—A. KÄLIN. *Pharm. Acta Helv.*, 13 (1938), 48–53; through *Chimie & Industrie*, 41 (1939), 521. (A. P.-C.)

Schryver-Fosse Reaction and Its Analytical Applications. The Schryver-Fosse reaction has been adapted to the identification and microdetermination of the oxalate ion, to the identification of ascorbic acid, to the identification of tartaric acid, and to the establishment of the lability of uric acid in alkaline solution. To determine oxalates: Shake 2 cc. of the solution for 30 minutes with 1 cc. of normal hydrochloric acid and pure zinc foil; heat 2 cc. of the solution on a boiling water bath for 2 minutes with 2 drops of 1% phenylhydrazine hydrochloride, cool in an ice bath and treat with 1.8 cc. of concentrated hydrochloric acid and 2 drops of water; after 10 minutes in the dark, compare the color with that of a standard. The method easily detects 0.002 mg. of oxalate ion. Sodium, potassium, ammonium, lithium, barium, scandium, calcium, manganese, iron and zinc do not interfere with the reaction. This same technic can be used to detect ascorbic acid after oxidation with potassium permanganate to give oxalate: allow 1 cc. of solution (containing 0.1% of ascorbic acid) to react with 2 drops of concentrated sulfuric acid and 2 drops of 3% potassium permanganate solution for 2 minutes and then decolorize with hydrogen peroxide; add zinc foil and after 15 to 30 minutes determine the oxalate as above. Under these conditions of oxidation, tartaric acid yields glyoxylic acid, oxalic acid and 2,3-dioxobutanedioic acid (dioxosuccinic acid). The Schryver-Fosse reaction thus permits a new color reaction for tartaric acid. In alkaline solution uric acid is transformed into allantoic acid which gives the Schryver-Fosse reaction.—M. PAGET and R. BERGER. *Compt. rend. acad. sci.*, 207 (1938), 800–802; through *Chimie & Industrie*, 41 (1939), 885. (A. P.-C.)

Sodium Thiosulfate—Standardization of, by Copper, Using Perchloric Acid. To a 0.60 to 0.65 Gm. sample of copper in a 100-cc. volumetric flask add 6 to 8 cc. of concentrated perchloric acid (about 11*M*); heat to boiling (hood). Boil gently until solution is complete, continue boiling for a few minutes, then cool slightly. Add an equal volume of water and boil for two minutes to drive off any chlorine that may be present. After cooling dilute to volume. To 10-cc. portions add 5 cc. of 1*N* potassium iodide. Let stand for a few minutes and titrate with sodium thiosulfate until the yellow color is nearly discharged. Add 5 cc. of starch solution and titrate to near the end-point. Add 1.5 to 2.0 Gm. of potassium thiocynate and titrate to the disappearance of the blue color. The end-point should be checked by the addition of 0.025*N* iodine, since at the end-point the titration mixture is not white but flesh colored.—J. J. KOLB. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 197. (E. G. V.)

Spot Tests for the Examination of Pharmaceuticals. V. The "mustard oil test" for aromatic

amines can be used for the microdetection of these substances. Two molecules of amine react with one of carbon disulfide to form a symmetrical disubstituted thiourea and hydrogen sulfide. Hitherto the test has been based on the odor of the hydrogen sulfide formed; but it is better to detect this gas with moist lead acetate paper. To carry out the test, mix a little of the sample with 20 drops of alkaline carbon disulfide solution and test the escaping gas. From 0.001 to 0.005 mg. of amine can be detected.—O. FREHDEN and K. FÜRST. *Mikrochimie Acta*, 3 (1938), 197–200; through *Chimie & Industrie*, 41 (1939), 954. (A. P.-C.)

Sulfur and Chlorine—Determination of, in Albichthol. Albichthol has several advantages over ichthyol, in place of which it is used. It is transparent, almost colorless, has a specific odor, is easily soluble in alcohol, lanolin, petrolatum, and vegetable and mineral oils, and forms a fine emulsion with water. Its therapeutic action is greater than that of ichthyol. During refining it is treated with chlorinated lime and, therefore, contains about 2–3% of chlorine. The content of sulfur is 9–15%. Sulfur and chlorine are determined according to the method of Wirth and Stross (*Chem. Abstr.*, 27, 2288).—E. I. CHUKHINA. *Farmatsiya*, No. 6, (1938), 21–23; through *Chem. Abstr.*, 34 (1940), 1129. (F. J. S.)

Tetraphenylarsonium Chloride as an Analytical Reagent. Tetraphenylarsonium chloride is useful as a reagent for determining mercuric, stannic, cadminum, zinc, perrhenate, periodate, perchlorate and other ions. Periodate, perchlorate, permanganate, perrhenate, fluoride, bromide, iodide, thiocyanate, molybdate, chromate, tungstate and large amounts of nitrate interfere by forming insoluble salts with the reagent. Mercury, tin, cadmium, zinc, platinum, gold, bismuth and iron, the complex halide ions of which form insoluble compounds with the reagent, and all ions that can oxidize iodide or reduce iodide interfere. Interference by copper, iron, cadmium, zinc, bismuth and tin may be eliminated to some extent. The reagent may be standardized potentiometrically with standard iodine, the reaction producing a rusty-orange precipitate of tetraphenylarsonium periodide. The total volume to be titrated should be about 100 cc. of neutral or slightly acid solution saturated with sodium chloride just before the end-point is reached.—H. H. WILLAN and G. M. SMITH. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 186–188. (E. G. V.)

Thiourea—Bromatometric Determination of. To 35 cc. of the neutral solution to be analyzed add 1 Gm. of powdered potassium bromide, followed by 20 cc. of fuming hydrochloric acid, heat to 40° or 50° C., add 1 cc. of a 0.1% solution of gold trichloride and titrate the solution with decinormal potassium bromate to a persistent yellow color corresponding to that of a standard prepared as follows: dissolve 1 Gm. of potassium bromide in 35 cc. of water, add 20 cc. of fuming hydrochloric acid followed by 1 cc. of 0.1% gold trichloride solution.—L. SZEBELLEDY and W. MADIS. *Z. anal. Chem.*, 114 (1938), 253–256; through *Chimie & Industrie*, 41 (1939), 881. (A. P.-C.)

Trace Analysis—Spectrographic Methods of. The field of application for the quantitative and qualitative analyses of materials for traces of metals and metalloids has been considerably enlarged in recent years by the development of improved technic. These methods have been applied to the analyses of heavy and organic chemicals, pharmaceuticals, and biological, geochemical and metallurgical materials. The sensitivity and accuracy of these methods have been increased by the use of spectral sources of excitation particularly adapted to the analyses of different materials and by the use of well-tested means of photographic photometry. The following sources have been found to be appropriate for the indicated analyses: the high-voltage, alternating current arc for inorganic chemical products; the direct current arc for metallurgical specimens; the cathode layer of the direct current carbon arc for geochemical samples; the direct current condensed spark and the high-voltage, alternating current arc for organic and biological materials. The speed and adaptability of spectrographic methods have contributed materially to their usefulness for research and control analyses.—J. S. OWENS. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 59–63. (E. G. V.)

Valerian Root—Chemical Evaluation of the Preparations from the. The quality of valerian root was determined from the amount of acids present. To 10 Gm. of sample add 50 cc. of distilled water and distil with steam for 1.5–2 hours. Titrate the distillate. For the determination of the combined acids, after the titration add 20 cc. of a 0.1*N* alkali, evaporate to 20–30 cc., transfer to a flask, add 20–30 cc. of 70° alcohol, heat on a sand bath for 1 hour and titrate excess alkali. To prepare a concentrated infusion, add 50 cc. to 100 Gm. of the finely cut root, let stand for 1–2 hours, transfer to a percolator and percolate (according to the pharmacopœia) with an amount of water sufficient to give 400 cc. of percolate. Distil the residue with steam to a 100-cc. volume of the distillate. Add the distillate to the previously obtained 400 cc., filter through cotton and sterilize. The amount of the acids in the concentrated infusion is 2.5–2.7%.—S. E. BABICH. *Farmatsiya*, No. 4 (1938), 7–11; through *Chem. Abstr.*, 34 (1940), 1128. (F. J. S.)

Vitamin Preparations—Vacuum Distillation of, from Cod Liver Oil, Etc. Hormones, sterols and vitamin D are separated from oils containing them by adding to the oil a liquid substance having a boiling point near that of the hormone, sterol or vitamin D (*e. g.*, tripelargonin), and subjecting the mixture to molecular distillation (suitably at temperatures of 70° to 250° C. under a pressure of less than 0.1 mm. with condensation of the vapors at a distance from the evaporative surface of less than the mean free path of the molecules of residual gas). Substances such as fatty acids, esters, mineral oil fractions, terpenes, essential oils, aliphatic phthalates, benzyl phthalate, β-phenylethylphthalate and diglycerol propionate may be used as additions.—KENNETH C. D. HICKMAN, assignor to DISTILLATION PRODUCTS, INC. U. S. pat. 2,146,894, Feb. 14, 1939. (A. P.-C.)

Zinc in Biological Materials—Determination of. 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 8 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% ammonium cyanate indicates the presence or absence of iron. The precipitate is treated with 2.4 cc. of 3*N* hydrochloric acid, the solution is diluted to 10 cc. and 1 cc of 2% potas-

sium ferrocyanide 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.)

PHARMACOGNOSY

VEGETABLE DRUGS

Atropa Belladonna Linn.—Flower of. The flower of belladonna is now included as an integral part of the official drug "Belladonnæ folium" and although a partial description of its gross morphology is given in the British Pharmacopœia, the official monograph gives no description of its histology. Because other accounts of the histology of the flower of this drug were considered inadequate, the authors prepared an adequate histological description. The flowers of belladonna are solitary, hermaphrodite and complete; they are arranged in a modified cincinnus and the pedicels are curved, inclining the flowers in a slightly downward direction. The floral construction conforms to the type characteristic of the *Solanaceæ*. Detailed points are noted concerning the calyx, the corolla, the stamens, the ovary and the style. The powdered flowers were also considered. The following tissues are the most diagnostic of the flower and distinguish it from the leaf; they are arranged in the order of their relative importance: (1) fibrous layer of the anther wall, (2) pollen grains, (3) fragments of the upper part of the corolla with papillose inner epidermis, (4) thickened and pitted epidermal cells from near the base of the corolla and (5) groups of chloroplasts from the epidermis of the anther. Cross section illustrations are given of the various parts of the flower.—T. E. WALLIS and R. BUTTERFIELD. *Pharm. J.*, 143 (1939), 135. (W. B. B.)

Capsicum (Capsicum Frutescens L.) from Italian Somaliland. Two types of capsicum are generally recognized: the annual, *Capsicum annuum* L., and the perennial, *Capsicum frutescens* L. Somaliland furnishes the perennial. Its therapeutic properties are equal to those of imported varieties.—CARLO ALBERTI. *Ann. chim. applicata*, 29 (1939), 392–402; through *Chem. Abstr.*, 34 (1940), 1128. (F. J. S.)

Chemical Properties of Some Chinese Herbs. A review of 24 important herbs used in medicine.—HENG-PI CHU. *Natl. Med. J. China*, 25 (1939), 15–54; through *Chem. Abstr.*, 34 (1940), 1127. (F. J. S.)

Colors in the U. S. P. and N. F. Monographs—Scientific Naming of. Recommended color names or terms offered by the National Formulary Committee on Color Names on Botanical Monographs are listed for 97 powdered drugs.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 8 (1939), 17–21. (H. M. B.)

Crude Drugs—Evaluation of. V. Microscopical Examinations. The use of glycerol, chloral hydrate solution, phloroglucinol solution and hydrochloric acid, Sudan red or tincture of alkanet, alkaline solution of corallin and ruthenium red solution, respectively, for the examination of a powdered drug is discussed and the general diagnostic microscopical characters are given of powdered drugs belonging to different groups.—T. C. DENSTON. *Chem. Products*, 2 (1939), 146, 161–163; through *Chem. Abstr.*, 34 (1940), 1131. (F. J. S.)

Dehydrating Agents to Replace Unslaked Lime. Unslaked lime, the drying agent prescribed by the (Netherlands) pharmacopœia for the preservation of various drugs has two undesirable properties: (1) due to the increase in volume it yields a disagreeably fine powder and (2) it is not simple to regenerate the CaO. Drierite ($CaSO_4.{}^1/_2H_2O$) is discussed and found to be insufficiently effective to replace unslaked lime because of the slow absorption of water. Blauw-gel (silica-gel) has several advantages over unslaked lime; it is neutral in reaction; its form and volume change upon the absorption of water is small and it may be regenerated upon heating to 150–200°. A list of drugs official in the Netherlands Pharmacopœia to be preserved over unslaked lime is given together with a discussion of the advantages and disadvantages of the use of silica-gel.—N. SCHOORL. *Pharm. Weekblad*, 76 (1939), 576. (E. H. W.)

Fructus Cynosbati. Rose hips were once employed in medicine but they have dropped out of use. With the recent discovery that they are so rich in vitamin C and, as a result, a good material for the technical preparation of ascorbic acid, they have again come into use. Strohecker has shown that the ascorbic acid content increases with growth of the hips, reaching a maximum when they are fully ripe and red (0.29% ascorbic acid). The ascorbic acid is in the walls of the receptacle and not in the seeds. Fructus Cynosbati is described by Thoms as the dried floral receptacles of *Rosa canina*, freed from the fruits. They should be dried at room temperature to retain the ascorbic acid. The ash content is 2.4–4.0 %. The seeds constitute a separate drug, Semen Cynosbati, and the galls found on the rose bushes (caused by *Rhodites rosæ*) constitute another drug, Fungus Cynosbati.—W. BONDESON. *Farm. Revy*, 38 (1939), 517. (C. S. L.)

Galeopsis—Herba Galeopsidis and the Confusion and Adulteration of the Species of. Six species are described in detail and a table of distinctive features as well as a proposed monograph of the herb are offered.—H. WILL. *Deut. Apoth. Ztg.*, 54 (1939), 831–834. (H. M. B.)

Gum Benzoin in Perfumery. The gum exudes through incisions in the bark and hardens, usually over a period of 3 months. Siam consists of three classes: (1) Sua—large, clean lumps; (2) Smaller, unclean lumps; and (3) Musi—soiled, fine, small pieces. Sumatra is classified as "almonds"—yellowish white to light reddish yellow—and "blocks"—hard, brittle masses, whitish or reddish tears imbedded in a grayish brown to reddish brown matrix. Sumatra contains 20–30% free balsamic acids, not over 60% total free and combined balsamic acids. It usually contains 10–15% benzoic acid and about 20% cinnamic acid (mostly as esters). Siam contains no cinnamic acid and is chiefly used in perfumery. The chemistry of the resinous material is discussed.—V. FOURMAN. *Am. Perfumer*, 40 (1940), No. 1, 32–34. (G. W. F.)

Hamamelis Species—Pharmacognostic Study of the Leaves of. II. The tannic acid content of the leaves of *Hamamelis* species ranged from 2.27 to 9.47%.—YUTAKA YOSIDA. *J. Pharm. Soc. Japan*, 59 (1939), 656–659 (in German, 246–247); through *Chem. Abstr.*, 34 (1940), 1130. (F. J. S.)

Italian Ephedras. A study of the ephedras of Sardinia and Sicily showed that *E. vulgaris, fragilis, altissima* and *procera* have low alkaloidal content (0.36, 0.03, ——, 0.12%) and that they contain predominantly the pharmacologically inactive pseudoephedrine. The problem of using *E. vulgaris* as a national source of ephedrine resolves itself into devising methods for the economical extraction of the alkaloid and its conversion to ephedrine.—CARLO ALBERTI. *Boll. chim.-farm.*, 78 (1939), 477–481; through *Chem. Abstr.*, 34 (1940), 1127. (F. J. S.)

Juniper Berries—Constituents of. Drug of the best quality gathered in 1936 was used. The ber-

ries were successively extracted with petroleum ether, ether and absolute alcohol. The petroleum ether extract yielded the wax, melting at 72° described in the literature. Since this compound has been investigated, it was not further studied. There was also obtained the resin described in the literature. This resin was separated into 3 fractions which resembled each other closely, which were composed chiefly of resin acids, and which could not be crystallized as such, as salts or as esters. The ether extract yielded juniperin described in the literature. Investigation of the product showed that it was not a glucotannin but rather a mixture of a tannin with a sugar or sugars. Precipitation of aqueous extracts with lead acetate left glucose in the filtrate and the precipitate was free of carbohydrates. The unusually bitter taste of aqueous juniperin solutions is not in accord with a mixture of only sugars and tannin. Aqueous juniperin solutions on treatment with emulsin become levorotatory. Emulsin must be added frequently since hydrolysis products apparently inactivate the enzyme. The ether extract yielded two new crystalline substances. The one was obtained in only small amounts as small yellow needles from alcohol. The compound is insoluble in water, soluble in ammonia or sodium hydroxide yielding yellow solutions. An alcoholic solution of the compound is acid and gives a green color with ferric chloride. The compound is probably a phenolcarbonic acid, decomposing without melting, and was not further investigated because of the limited amount available. The second compound crystallized from either acetone or alcohol in pale yellow clusters of crystals melting at 72°. It was insoluble in chloroform and benzene, soluble in cold pyridine and hot acetone or alcohol. It was optically inactive, neutral and did not decolorize permanganate. The Zerewitinoff determination indicated the presence of two alcoholic hydroxyls. Saponification with alcoholic potassium hydroxide yielded glycerin and three molecules of acid. The mixture of acids was shown to be composed of two parts of 15-hydroxypentadecoic acid which melted at 84° (identified as the acetyl ester melting at 59°) and of one part of noncrystalline acid melting at 47°. The molecular weight determinations of the glyceryl ester showed that two of the hydroxyls were esterified with the 15-hydroxypentadecoic acid and the third with a saturated C_{18} acid. The acid found was not λ-isostearic acid. The alcohol extract of the berries yielded a resin already described in the literature, *l*-malic acid invert sugar and potassium salts.—P. CASPARIS and W. FREUND. *Pharm. Acta Helv.*, 13 (1938), 307–316. (M. F. W. D.)

Juniperus Sabina L.—Toxicological Detection of, in Abortefacient Preparations. A detailed description of the detection of the drug by microscopical examination of disintegrated pills and of thin sections of pills previously impregnated with chloral solution.—G. CHESSA. *Chimica*, 14 (1938), 136–137; through *Chimie & Industrie*, 41 (1939), 723. (A. P.-C.)

Kœmis Kœtjing. This article includes an excellent color plate of the plant *Orthosiphon stamineus*. This plant is used to a considerable extent in Javanese medicine and references are made to phytochemical work.—VAN DER WIELEN. *Pharm. Weekblad*, 76 (1939), 170. (E. H. W.)

Peru Balsam. Its Production, Use and Commercial Significance. A discussion.—KARL DOPF. *Riechstoff Ind. Kosmetik*, 14(1939), 159–162. (H. M. B.)

Pilocarpus Pennatifolius Lem. from Sicily. An extensive study was carried out on the leaves of *Pilocarpus pennatifolius* Lem. cultivated in Sicily. The total alkaloids and pilocarpine content of the extract of the leaves were lower than those of leaves obtained from their original habitat (Brazil). The pilocarpine content, expressed as nitrate, was 0.052 to 0.053% for the fresh leaves and not over 0.002% for the dried leaves.—A. IMBESI. *Arch. farmacol. sper.*, 65 (1938), 113–152; through *Chimie & Industrie*, 41 (1939), 523. (A. P.-C.)

Pirolaceæ—Arbutin Content of Some Austrian. The following plants native to Austria were investigated: *Pirola uniflora*, *P. chlorantha*, *P. rotundifolia*, *P. secunda* and *Monotropa hypophega*. The presence of arbutin was shown histochemically and the per cent of arbutin was determined by the method of Zechner. A new reagent for detecting arbutin histochemically was used. Two mg. of titanium sulfate is boiled with 3 cc. water and 1 cc. concentrated sulfuric acid and then 1.8 cc. concentrated sulfuric acid added. Arbutin gives with this reagent a dark red-brown, whose intensity varies with the amount of arbutin. The reagent showed that arbutin is distributed throughout the entire leaf. A table gives the results of the quantitative determination of arbutin for the plants mentioned. Arbutin is present in the leaves of all of the *Pirolaceæ*. The glucoside is present in largest amounts in the mature leaves, the chlorophyll-poor plant organs have less and the chlorophyll-free *Monotropa hypophega* contains no arbutin.—K. DRAHTSCHMIDT and L. ZECHNER. *Scientia Pharm.*, 9 (1938), 137. (M. F. W. D.)

Rauwolfia Heterophylla—Identification of a Colombian Plant, Pinque-Pinque, as. From botanical, chemical and pharmacodynamic investigations, Pinque-Pinque, a Colombian plant, used against the bites of serpents and malaria has been identified as the same as *Rauwolfia heterophylla*, the Chalchupa of Guatemala.—MAURICE-MARIE JANOT and RAMON MENDOZA. *Compt. rend.*, 209 (1939), 653. (G. W. H.)

Root Drugs in Germany—Cultivation of. The growing of *Angelica archangelica* L., *Valeriana officinalis* L. and *Althæa officinalis* L. is discussed.—WALTER VOCKING. *Die Deut. Heilpflanze* (November 1939), 47–48; through *Deut. Apoth. Ztg.*, 54 (1939), 1162. (H. M. B.)

Rosaceæ—To the Knowledge of Native Medicinally Used. A historical review is given. The constants of the oils of the seeds of nine plants of this family—*Pyrus communis* L., *Sorbus aucuparia* L., *Cratægus oxyacantha* L. (A), *Rubus idæus* L., *R. fruticosus* L., *Fragaria vesca* L., *Rosa canina* L., *Prunus domestica* L. and *P. cerasus* L.—are tabulated. Extensive monographs for A and for *Potentilla anserina* L. are presented.—HEINZ HARMS. *Die Deut. Heilpflanze* (November 1939), 45–47; through *Deut. Apoth. Ztg.*, 54 (1939), 1162. (H. M. B.)

Soy Bean—Cultivation of, in Northern Poland. The density of the population in Europe has intensified the search for sources of protein other than milk and meat. Early experiments with the soy bean in Poland were unsuccessful. Following the World War, experiments with the cultivation of various species were again begun. Four species adaptable to growth in Poland's climate have been found as a result of twelve years of study. The seeds average from 33 to 39% albumin.—JAN MUSZYNSKI. *Scientia Pharm.*, 9 (1938), 138. (M. F. W. D.)

Spigelia Marylandica—Some Interesting Notes on. This wild plant better known as pink root or Indian pink was named for Adrian von der Spigel who is reputed to have been the first to give direction for preparing a herbarium. Pink root is a member of the *Loganiaceæ* and claims as its nearest relative the well known yellow jasmine (*G. sempervirens*). Pink root bears a cluster of four or five tubular flowers in late spring and may be found from Pennsylvania to Wisconsin and Texas. The Indians

formerly collected its roots and sold them as anthelmintics which account for the name Indian pink often applied to this plant.—ANON. *Am. Botanist*, 45 (1939), 120–121. (W. T. S.)

Sunflower (Helianthus Annuus L.) as an Oil-Producing Plant. This review emphasizes statistics on the cultivation of sunflower and the production of oil therefrom especially in Europe during the years 1913–1936.—A. FISCHER. *Fette u. Seifen*, 46 (1939), 88–89; through *Chem. Abstr.*, 33 (1939), 4068. (E. G. V.)

Tropical Seeds and Their Composition—Contribution to the Knowledge of Some. Several tropical seeds are being used as substitutes for the tonka bean. The following seeds are described as to the oil content, constants for the oil and any constituents isolated: seeds of *Torresea cearensis* Fr. containing only 0.07% coumarin; seeds of *Afzelia africana* Schm. and *Afzelia Cuanzensis* Welw.; Ko-Sam seeds or *Brucea sumatrana* Roxb.; fruit of *Balanites ægyptica* Del.; fruit of *Prosopis strombulifera* Benth.; anatto seeds or seeds of *Bixa orelana* L.; fruit of *Coix lacryma Jobi* L. Seven photographs accompany the descriptions.—FRANZ BERGER. *Scientia Pharm.*, 9 (1938), 122. (M. F. W. D.)

PHARMACY

GALENICAL

Adrenaline Hydrochloride Solutions—Note on the Stability of. Liquor Adrenalinæ Hydrochloridi B. P. was shown to retain its full potency for sixteen months when stored under carbon dioxide at laboratory temperature. At 37.5° C. about half the potency was lost in eight months. The addition of 0.1% sodium metabisulfite or the substitution of hydrochloric acid by sulfurous acid in the preparation has little influence on the maintenance or loss of potency under these conditions of storage, but preserves the color of the solution for a longer period. The color of a solution of adrenaline hydrochloride is not an indication of its potency. Clear, colorless solutions have been shown to have lost 50% of their potency, while colored solutions may retain their full activity. The addition of 0.1% of sodium metabisulfite improves the keeping qualities of Liquor Ardrenalinæ Hydrochloridi B. P. The experimental work done consisted of preparing three solutions from the same batch of adrenaline which had been previously assayed biologically and found to have 85% of the activity of standard pure *l*-adrenaline. Each solution contained 0.12% of this sample, equivalent to 0.1% of pure adrenaline. In the first sample, 0.1% sodium metabisulfite was added; in the second, sulfurous acid replaced hydrochloric acid; the third was prepared in accordance with the formula of the B. P. 1932. All solutions were filled under carbon dioxide into 1-oz. amber stoppered bottles which were subsequently capped. Bottles of each solution 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. *Pharm. J.*, 143 (1939), 98. (W. B. B.)

Ascorbic Acid—Oxalate Formation in. It has been found that aqueous solutions of ascorbic acid and its salts are unstable and progressively lose ascorbic acid content on standing, oxalic acid being one of the products formed. It is probable that the formation is due to an autoöxidation, although the amount formed is disproportionate to the amount of ascorbic acid lost by the solution on aging.—A. E. JURIST and W. G. CHRISTIANSEN. *Am. J. Pharm.*, 111 (1939), 347. (R. R. F.)

Calcium Gluconate—Preparation of a Stable Solution of. The following formula is proposed for a stable highly concentrated supersaturated solution of this salt: Calcium gluconate 73.35 Gm., calcium *d*-glucoheptonate (or 120 cc. of 25% calheptose solution), water *q. s. ad* 1000 cc. Stir the calcium gluconate with the calheptose solution to a smooth mixture and after the addition of the water, heat to boiling for $^1/_2$ hour replenishing the water lost by evaporation, filter hot through a glass filter (Jena No. 4) and put into ampuls hot and then sterilize for 1 hour at 100° C.—I. PFIRSCHKE and G. PEUKERT. *Deut. Apoth. Ztg*, 54 (1939), 992 (H. M. B.)

Collyria. The formulæ for the various eyedrops of the Swedish Formulary (M. B. 1937) are chiefly made with boric acid solution and are of various osmotic pressure, some hypo- and some hypertonic. The lowering of the freezing point is cited for 13 preparations. As boric acid is not bactericidal but only bacteriostatic, and as it contributes the most to the lowering of freezing point in these preparations it is suggested that they could better be made with an active antiseptic, used in small quantity, and the solutions made to isotonicity with NaCl. For this purpose there has been purposed as antiseptic a combination of Nipagen M (*p*-hydroxybenzoic acid methyl ester) and of Nipasol (*p*-hydroxybenzoic acid propyl ester) in the proportion 65 parts + 35 parts in 0.08% aqueous solution. This only lowers the freezing point −0.03°. The M. B. preparations were made up with this mixture in place of boric acid and the lowering of freezing point was determined for each type of preparation, then the amount of NaCl necessary to make the solution isotonic was calculated by means of the formula

$$\frac{0.80 - a}{18.5} = \frac{X}{0.50 \times 58}$$

where a is the freezing point lowering of the solution without addition of NaCl. A table cites the amount of NaCl in per cent and this amount was added. The freezing point lowering was again determined and very uniform results between −0.77° and −0.80° were obtained for the 13 preparations. To test the stability of the thus-made preparations when stored in glass, part of each preparation was filled into ordinary brown glass eyedropper ampuls, part into alkali-free glass bottles stoppered with cork. In the case of drops containing ophthalmologically active drugs, the keeping qualities were determined both by the ocular action of the drugs and by polarimetry of those drugs which were optically active. Observation was for a 2-month period. The optical rotation did not change more than 0.02–0.03°. Certain preparations made with the ordinary formula (boric acid) showed growth of molds, but those made with the Nipagin, Nipasol, NaCl formula did not display any growth of molds. Pilocarpine, atropine or scopolamine drops made with the boric formula became cloudy, the new formula preparations did not, except that the atropine drops became slightly cloudy after 2–3 months. Change to the new formula is proposed.—C. G. LESSER. *Farm. Revy*, 38 (1939), 702, 717. (C. S. L.)

Easton's Syrup—Examination of the Changes Occurring in, During Storage. Prepared according to the formula of the B. P., 1932, Easton's Syrup is unsatisfactory because it: (1) Rapidly develops a color, first pink which later darkens to brown; (2) deposits a white precipitate; (3) supports the growth of molds. For the examination of these changes all samples, unless otherwise stated, were stored in bottles loosely plugged with cotton wool to allow exposure to air. Beyond the statement that the development of color is due to oxidation, very little explanation has been advanced as to the chemical reactions involved. In connection with the factors affecting color and precipitation, it is con-

cluded that: (1) A combination of glycerin and syrup is most satisfactory for retarding the color reaction; (2) glycerin has a greater retarding reaction on the color than syrup but in high concentrations it precipitates the ferrous phosphate; (3) glucose is more satisfactory than sucrose for preventing the color, but owing to its lower solubility in water, it is impossible to obtain a sufficiently high concentration. The author suggests a modified formula which, along with its method of preparation, is given as follows: Iron 8.6 Gm., Phosphoric Acid 35.0 cc., Strychnine Hydrochloride 0.3 Gm., Quinine Hydrochloride 13.3 Gm., Dilute Hydrochloric Acid 50.0 cc., Syrup 660.0 cc., Glycerin 140.0 cc., Distilled Water to 1000.0 cc. Dilute the phosphoric acid with 70 cc. of distilled water; add it to the iron in a flask of suitable size, and heat on a water bath until the iron is dissolved; add to this a solution of strychnine hydrochloride and quinine hydrochloride dissolved in the 50 cc. of dilute hydrochloric acid; filter it into the syrup and glycerin previously mixed and pass sufficient distilled water through the filter to produce the required volume.—W. T. WING. *Pharm. J.*, 143 (1939), 225. (W. B. B.)

Ethyl Nitrite in Brown Mixture, U. S. P.—Decomposition Rate of. Experiments have shown that the decomposition of ethyl nitrite is so rapid in this preparation that it is useless to have it there.—EDWARD GREENFIELD and H. WALTER KUHL. *Jour. A. Ph. A.*, 29 (1940), 35. (Z. M. C.)

Hydrogen Peroxide for Pharmaceutical Purposes—Note on the Stabilization of. The enzyme catalase was used as a means of testing the suitability of various stabilizers used in market preparations of hydrogen peroxide. It was found that the addition of very small amounts of ferric or cupric sulfate, salts which catalyze the decomposition of hydrogen peroxide, greatly increased its germicidal effect against *Bact. coli*. Hydrogen peroxide exhibited a phenol coefficient of 0.014, but the addition of ferric or cupric ions increased the phenol coefficient 100 times. This effect was produced by the addition of 0.1 millimol of the respective salt to each 120 cc. of peroxide. At this concentration the salts themselves are not germicidal. A table is given which shows the variations found in different peroxides of commerce. Those stabilized with acid gave up very little oxygen in comparison with other peroxides which contained neutral stabilizers; it was also found that unstabilized peroxides varied in their performance, probably due to traces of persulfate. The stabilizers tested included (1) acetanilide, (2) phenazone, (3) benzoic acid, (4) thiourea, (5) urea and (6) hexamine. They were added to a standard solution of hydrogen peroxide at a strength of 0.1%, and a table is given in which the different rates of decomposition show the suitability of the stabilizers for pharmaceutical hydrogen peroxide, in as far as they do, or do not inactivate the enzyme. A third table shows the stabilizers which are suitable. Urea is said to be a good stabilizer for pharmaceutical purposes, and phenazone is a good second. Hexamine is also likely to prove satisfactory, but other methods of testing must be resorted to, permanganate proving quite unsuitable.—S. M. TRITTON. *Pharm. J.*, 143 (1939), 103. (W. B. B.)

Hydrogen Peroxide Solution—Stabilization of. The stability of the stronger solution by various preservatives is shown in the following table:

Preservative	H_2O_2	After 1 Year	After 2 Years
1-None	7.3%	1.1%	0.0%
2-0.1% Benzoic acid	7.5	6.0	4.8
3-0.1% Acetanilid	7.5	6.6	6.2
4-0.1% Nipagen	7.3	7.2	7.1

By a rapid method using heat and a reflux condenser, it was shown that a 7.5% solution after 2 hours showed 0.6% and after 3 hours no hydrogen peroxide; with 0.1% phenacetanilid, it showed after 3 hours heating 7.3%; after 5 hours, 7.2%. Solutions with 8.1, 6.45 and 3% hydrogen peroxide containing 0.1% Nipagen, after 2 hours heating, were unchanged, after 5 hours contained 8.0, 6.3 and 2.9% respectively; an 8% solution treated with acetanilid after 5 hours heating contained 7.5% and with benzoic acid and with urea after the same time 6.8 and 6.2% hydrogen peroxide.—KARL HÖLL. *Deut. Apoth. Ztg.*, 54 (1939), 946. (H. M. B.)

Isopropyl Alcohol—Use of, as a Solvent in the Preparation of Official Dry Extracts of the Swiss Pharmacopœia V. On the basis of the preparation of twelve dry extracts from five different drugs under identical conditions of extraction with ethyl alcohol and with isopropyl alcohol, the following statements may be made. Isopropyl alcohol compares favorably with ethyl alcohol in its extraction capacity for the alkaloidal drugs cinchona and nux vomica, is better for the extraction of kola beans but gives a somewhat lower yield of extract from rhubarb than ethyl alcohol does. By a comparison of the extraction behavior in the extraction of senega root, the author points out a distinct disadvantage. In all cases, a longer time was required for the passage of the isopropyl alcohol menstruum combined with a considerable reduction in the rate of dropping of percolate. The finished extracts of cola and rhubarb had a higher content of active principles when made with isopropyl alcohol. Only isolated agreement with regard to alcohol solubility of the dry extracts could be shown for preparations made with ethyl alcohol and isopropyl alcohol. The isopropyl alcohol extract of cinchona bark exhibited a more favorable behavior toward moisture. With a few exceptions, the official preparations made with isopropyl alcoholic extracts exhibited a lower stability than those prepared with the official extract. These facts indicate that in the evaluation of the suitability of using isopropyl alcohol for the preparation of official extracts, not only is the behavior during the extraction process of importance but a study of the properties of the finished extracts is also necessary. While in some cases better extraction properties were shown by isopropyl alcohol, or some of the official preparations could be suitably prepared with the substitute dry extracts, however, the dry extracts prepared from the drugs studied are not entirely suitable for the preparation of other pharmaceuticals. By suitable operations the desired properties may be obtained in the dry extracts prepared with isopropyl alcohol as a solvent although as a result of the increased work or increased amount of materials used, the cost of the preparations would increase. Considered from the scientific standpoint, the use of isopropyl alcohol embodies no advantage over the use of ethyl alcohol. The use of isopropyl alcohol as a substitute for alcohol is of no practical significance inasmuch as cheap sources of ethyl alcohol have become available. The article is illustrated with 40 tables and 21 graphs and cites 54 references.—W. MÄRKI. *Pharm. Acta Helv.*, 13 (1938), 210–270. (M. F. W. D.)

Larocaine, Percaine, Pantocaine and Panthesine. These local anesthetics can be regarded as thermostable for all practical purposes, and undergo practically no decomposition when sterilized by heat.—R. DIETZEL. *Pharm. Zentralhalle*, 79 (1938), 321–325; through *Chimie & Industrie*, 41 (1939), 523. (A. P.-C.)

Paraldehyde B. P.—Preservation of. The author formerly submitted a paper to the British Pharmaceutical Conference in 1937, dealing with the instability of commercial supplies of the official paral-

dehyde, and the extent to which they might depart from the standards of the Pharmacopœia; a recommendation was also made for authoritative recognition of the use of a preservative. The continued examination of commercial samples confirmed the earlier observations, and the present paper is a report on some parallel experiments upon a specially prepared sample of paraldehyde, undertaken so as to show the normal course of decomposition as compared with the effect of preservative agents in retarding that decomposition. It is emphasized that the experiments were conducted upon a specially distilled sample, and this emphasis is said to be necessary because there is no uniform rate of decomposition, some unpreserved commercial samples may even show a comparatively satisfactory degree of stability, while others deteriorate with remarkable and unaccountable rapidity. Proof sufficient for a positive assertion is not forthcoming, but certain experience obtained from distillation experiments suggests that occasionally there are minute traces of impurities present in the paraldehyde which catalyze this decomposition. About 3 liters of a very good specimen of commercial paraldehyde were used in the experiments, and the observations extended over a period of months; three experiments only were devised: (1) To show the normal decomposition; (2) to examine the effect of original acidity; (3) the effect of preservatives. The results of the analyses appear in a table given. Resorcinol, pyrocatechol, clove oil and gallic acid were tried as preservatives, since the preservative to be sought must be in the nature of an antioxidizing catalyst. It is suggested that there can be no reason for prohibiting the use of small amounts of preservatives, such as those used by the author, and the attention is drawn especially to oil of clove. The presence of approximately 0.03% could not be detected by odor or flavor, and it is quite harmless. If a preservative is used, it must be put into the paraldehyde immediately following its distillation, and the distillate must be absolutely correct when this is done.—J. S. TOAL. *Pharm. J.*, 143 (1939), 226. (W. B. B.)

Pharmaceutical Preparations (Tinctures, Fluidextracts)—Evaluation and Proper Storage of Some of the Principal. Digitalis tincture can be stored for years without any considerable changes in the dark and cold, provided it is kept in small, dark-colored glass bottles, completely filled and sealed with paraffin. A criterion of proper storage is constant p_H. The degree of decomposition of glucosides is shown by the fluorescence of digitoxose. Infusions can be stored in a similar manner for a long time.—JANOS RAGETTLI, *magyar Gyógyszerésztud., Társaság Ertesitöje*, 15, (1939), 521–567; through *Chem. Abstr.*, 34 (1940), 1128. (F. J. S.)

Tablet Manufacture by Slugging. In tablet manufacture, if certain medicinal chemicals which are sensitive to heat, moisture or air or are incompatible with other drugs or chemicals included in the formula are present, granulation by pre-compression or slugging is employed as a last resource. The mechanical difficulties of this method were formerly large, because the existing tablet machinery was not suitable for the compression of powders. These difficulties have been overcome and the slugging, or pre-compression, method of granulation is being satisfactorily used with chemicals or combinations of chemicals previously considered troublesome. The term "pre-compression" is best applied to the process whereby crude tablets are first produced and then broken down into granules which are used for the actual tablet production. The term "re-compression" is best restricted to that method of tablet making in which the granules are first compressed lightly, usually to eliminate air, and then heavily, in the same die, to produce tablets. The most successful slugging is always obtained on rotary machines. A special type of machine has been found most suitable where the die cavities, usually $^3/_4$ to $^7/_8$ inch in diameter, into which the powder is to be filled, pass beneath a stationary feeding device or grid. It is of great importance that uniform filling of the die cavities be obtained. After the slugs are produced, the next step is to break them down into uniform-sized granules and this is accomplished by a special type of a machine named a granulator The granulator operates by means of a rotor which oscillates at the bottom of a hopper over steel screens. The slugs are broken by the rotor and the material forced through the screen. The advantages of the slugging process and its possibilities for general application are best exemplified by contrasting this method of tablet granulation of typical tablet formulæ, such as aspirin, phenacetin and caffeine compound or amidopyrine combinations, with the more general method. The slugging procedure does away with the necessity to prepare two separate granulations and thus saves time. Other advantages of the slugging process are: (1) The risk of decomposition, even partial, as a result of hydrolysis or interaction resulting from the presence of water and the elevated drying temperature does not arise; (2) more rapid disintegration is obtained in the case of tablets made by slugging, since the starch in slugged tablets has its disintegrating action unimpaired by not having absorbed any gum or other aqueous binder; (3) less capital expenditure in the way of equipment is needed for slugging; (4) less floor space is needed; and (5) a shorter time cycle is obtained.—W. C. PECK. *Pharm. J.*, 143 (1939), 27, 57. (W. B. B.)

Tablet Triturates—Preparation of, for Use in Hypodermic Injections. The author conducted some experiments to demonstrate the various factors involved in the preparation of tablet triturates and concluded that the use of alcohol (75%) and alcohol (90%) resulted in the preparation of tablets which tended to powder in normal handling, although not appreciably more soluble. Alcohol (25%) and alcohol (50%) gave satisfactory tablets, alcohol (50%) being perhaps the more suitable owing to greater volatility. At the temperatures employed no effect was noted, so that 45° C. or 60° C. may be used. The practice of allowing triturates to dry by exposure to the air should be discouraged, as tablets that have been incompletely dried have been found occasionally to grow molds. There is a definite relationship between proportion of alcohol and solubility. The higher the proportion of added alcohol the less soluble (and harder) are the tablets. Thus the alcohol should be kept down to slightly in excess of the minimum required. For 60 grains of lactose 0.8 cc. of alcohol (50%) was suitable. When making large batches it is of advantage to divide the triturate into smaller portions and to add the alcohol separately to each part as required. Higher proportions of alcohol may cause discoloration.—G. W. G. SMITHERS. *Pharm. J.*, 143 (1939), 171. (W. B. B.)

PHARMACOPŒIAS AND FORMULARIES

British Pharmacopœia—Next. Some of the recommendations of the sub-committee on waters, infusions, solutions, spirits and syrups are given.—ANON. *Australasian J. Pharm.*, 21 (1940), 205. (A. C. DeD.)

Codeine Hydrochloride—Reaction for Phosphate in. The test for codeine phosphate in codeine hydrochloride of the Netherlands Pharmacopœia is discussed. It is suggested that this test should read, "The solution in water (1–50) does not become turbid with barium nitrate (*sulfate*), and also does not become turbid when this is followed by the addi-

tion of ammonia (*phosphate*)."—T. POTJEWIJD. *Pharm. Weekblad*, 76 (1939), 213. (E. H. W.)

N. F.—New, Comments on the. The following preparations of the new N. F. (British) are commented upon: Elixir Caffein. Iodidi, Syr. Cocillanæ Co., Syr. Ferri Subchloridi, Ung. Acid. Benzoic. Co., Mist. Bismuth. et Ammon. Cit., Mist. Bismuth. c. Pepsin, Aurist. Boric, Emuls. Paraff. Liq. c. Phenolphthalein et Agar, Gutt. Cocain. c. Oleo, Linct. Codein. Co., Linct. Morph. Rub., Eusol Solution, Mist. Digital. et Caffein. Mist. Ferri Salicyl., Pasta Mag. Sulph., Pigment. Iod.—W. FORSTER. *Pharm. J.*, 142 (1939), 541. (W. B. B.)

National Formulary VI—Revision of Miscellaneous Monographs of. One hundred sixty-five items are covered of which 5 are deletions, 23 additions and 137 that have been revised.—ANON. *Bull. Natl. Formulary Committee*, 7 (1939), 352–415. (H. M. B.)

Pharmacopœia—Revising the British. Several new substances to be added to the new pharmacopœia are listed.—C. H. HAMPSHIRE. *Chemist and Druggist*, 122 (1940), 283. (A. C. DeD.)

Portuguese Pharmacopœia. Anhydrous Sodium Sulfate of the. A discussion of various methods of preparation. In preparations in which anhydrous sodium sulfate is required, it is preferable to use a product containing 6% of moisture, rather than the completely anhydrous salt, except in the case of powders.—F. DOS REIS. *Noticias farm.*, 4 (1938), 364–390; through *Chimie & Industrie*, 41 (1939), 322. (A. P.-C.)

United States National Formulary Changes. The Revision Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION has announced that 165 changes are proposed in the forthcoming edition of the National Formulary. Some of the proposed changes are given.—*Australasian J. Pharm.*, 21 (1940), 47. (A. C. DeD.)

NON-OFFICIAL FORMULÆ

Baby Oil. A mixture of 40 parts of mineral oil (viscosity 150–200) and 60 parts of vegetable oil such as sesame, raisin seed, soy bean or peanut with oxyquinoline benzoate is recommended.—M. G. DENAVARRE. *Am. Perfumer*, 39 (1939), No. 2, 39–40. (G. W. F.)

Cosmetic Manual. Brushless Shaving Creams. Brushless shaving creams are oil-in-water vanishing creams with little modification. The following groups are recognized: (1) those containing soaps such as stearate products (7 formulæ), (2) those with ammonia as the sole emulsifying agent (3), (3) those with potassium hydroxide as the sole emulsifier (6), (4) those with borax (1), (5) those with triethanolamine (8), (6) those with borax and triethanolamine combined (6), (7) potassium hydroxide and borax (5), (8) sodium and potassium hydroxides combined (2), (9) those with sulfonated oils (12), (10) with gums (2), and (11) with glyceryl or glycol stearates (7 formulæ).—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 45 (1939), 170–173. (H. M. B.)

Cosmetic Manual. Cold Creams. These products consist basically of an oil, water beeswax and preferably an alkali yielding a water-in-oil emulsion. The following groups of formulæ are offered: water-in-oil emulsions without borax (29 formulæ) and creams with borax (80 formulæ).—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 45 (1939), 430–432, 435. (H. M. B.)

Cosmetic Manual. Liquid Creams. These creams include cleansing, skin, hand and foundation lotions and they may be applied easily and uniformly over a large skin area. An outline of their formulation is offered including 33 formulæ.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 46 (1940), 168–169. (H. M. B.)

Cosmetic Manual. Night Creams. The term "night creams" is used for products known as tissue creams, nourishing creams, skin foods, etc., since these names are considered as misleading by the Federal Trade Commission. They have as the active ingredient a vegetable or animal fatty substance which is easily absorbed by the skin and has a softening effect and is used to supply oils and fatty materials lacking in the usual dry skin. Ingredients and manufacture are discussed. Formulæ for beeswax-borax creams (40) of the oil-in-water type, cold cream or stearate type (2), those with oil-in-water emulsifiers other than beeswax and borax (6), water-in-oil creams with lanolin (11) and with absorption bases (6) are offered.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 45 (1939), 678–680, 691. (H. M. B.)

Foot Preparations. The foot ailment, *epidermophytosis* and its treatment are discussed. Eleven formulæ are offered and thirteen references are given.—M. A. LESSER. *Drug and Cosmetic Ind.*, 46 (1940), 165–167, 171. (H. M. B.)

Liquid Dentifrices. A suggested formula is: Wetting agent 5–7%, glycerin, glucose or sorbitol 5–10%, S.D. alcohol 38B 25–35%, FD & C Red No. 2 color 0.005%, soluble saccharin 0.05–0.5%, water to make 100%. Dissolve ingredients in water, adding alcohol last; set aside for 24–72 hours and filter. Wetting agents suggested are sodium lauryl sulfate, sulfonated monoethanolamine laurate salts, sodium di-octyl sulfo-succinate and sodium salt of condensation product of isethionic or tauric acid with oleic acid. The writer questions the value of a liquid dentifrice.—M. G. DE NAVARRE. *Am. Perfumer*, 39 (1939), No. 3, 29–30. (G. W. F.)

Pectin. The therapeutic applications of this substance are reviewed and the following formulæ offered: *Hair Pomade.*—I. Pectin 1, glycerin 4, water to make 100. Mix. II. Pectin 1, citric acid 0.6, water to make 100. Mix. *Tooth Paste.*—Pectin 6, glycerin 10, water 71, alcohol 10, citric acid 1, condensation product of hydrogen peroxide and urea 2. Twenty-nine references.—M. A. LESSER. *Drug and Cosmetic Ind.*, 45 (1939), 549–551, 554. (H. M. B.)

DISPENSING

Ampuls of Calcium Levulinate—Preparation of. Ca levulinate hydrated (I) and anhydrated contains 13.00–13.10% and 14.10–14.20% Ca and this Ca content is superior to that found in the corresponding gluconates and camphorsulfonates. A 5% solution of I in doubly distilled H_2O has a cryoscopic p. −0.78° and p_H 7.6. The addition of 5 cc. *N* HCl to 1 liter of solution shifts the p_H to 6.2–6.6. A detailed procedure for the preparation of 10 liters of 5% I as a brilliant limpid solution suitable for hypodermic and intravenous injection is given. Sterilization of the ampuled solution in neutral glass at 100° for 1 hour caused no perceptible change in the properties of the solution which gave no local or general reactions on intravenous injection in animals and in human subjects.—L. GRACALONI. *Boll. chim.-farm.*, 78 (1939) 457–459; through *Chem. Abstr.*, 34 (1940), 1125. (F. J. S.)

Bulgarian Belladonna Root—Liquor of. Bulgarian belladonna root has come into use for the treatment of epidemic encephalitis and for paralysis agitans. (W. VÖLLER, *Münch. med. Wochschr.*, 44 (1938), 1703.) The mixture of alkaloids from the root seems therapeutically more effective than the pure alkaloids, and the Bulgarian root better than the western European root. The original prepara-

tion was made by maceration with a Bulgarian white wine. Light sherry has been used. A method of maceration and percolation with a menstruum of aqueous tartaric and benzoic acids was studied. Method: 40 Gm. pulverized Bulgarian belladonna root was moistened with 250 Gm. of an aqueous solution containing 0.75% tartaric acid and 0.10% benzoic acid and macerated with stirring for 24 hours. Then the fluid was removed by means of a suction filter. An additional 200 Gm. of the menstruum was macerated with the residue for 24 hours and removed by suction. A third extraction of the residue with 200 Gm. menstruum was given 6 hours maceration and then removed by suction. The collected filtrates were mixed and the alkaloid content determined in a 50-cc. aliquot and calculated as hyoscyamine. To the main bulk of the extract, menstruum was added to make the alkaloid content 0.18%, and it was warmed to 60–70° C. to pasteurize, and set aside for several days in a cool place, then filtered. The assay method for the finished product is also cited. If not pasteurized there might be considerable growth of cocci in a few days despite the content of benzoic acid. Preservation with alcohol cannot be done, as alcohol is contraindicated for many of the patients. Yields were: first maceration: 68.0% of the alkaloids of the root; second maceration: 24.9%; third maceration: 5.2%; in total 98.1%. Other batches, total yield: 97.0, 99.2, 99.3%. An assay is cited for alkaloid content of the root based on Schousen's method (*Farm. Tid.*, (1926), 840).—V. RIBER. *Arch. Pharm. Chemi.*, 46 (1939), 665. (C. S. L.)

Codeine Preparations—Discoloration of. The cause of discoloration of Solutio Codeini Spirituosa and Syrupus Codeicus of the Dan. Phar. 1933, was sought. Spectroscopically it was evident that the codeine content was little affected by the discoloration, though the color arose from the codeine. Color increased with decreasing alcohol content or with alkalinity. There was little discoloration if the codeine was partly neutralized even if the alcohol concentration was low Addition of glycerin to Solutio Codeini Spirituosa decreased the tendency to discoloration. Impurities in the alcohol used affected the color. In the syrup the basic reaction of the codeine could discolor a syrup containing invert sugar. However the chief cause of discoloration was probably an oxidation of a trace of codeine. Lessening the content of morphine did not cause stronger color. Addition of codeine did not cause further formation of invert sugar. The older Dan. Phar. formula for making Syrupus Codeicus from Spiritus Codeini discolored less, and the author purposes either return to the older formula or replacement of water with glycerin in Solutio Codeini Spirituosa, to lessen the difficulty. To make stable syrup the codeine spirit solution used must be colorless and fresh sugar syrup, prepared cold should be used to avoid invert sugar content.—K. ROERBYE *Dansk Tids. Farm.*, 13 (1939), 261. (C. S. L.)

Coloring Agents—Pharmaceutical. A Substitute for Bordeaux B. Sixteen red colors were examined for their suitability for use in pharamaceutical preparations. The dyestuffs examined were the following, the numbers being those of the Color Index: (54) Kiton red; (79) Ponceau 2R; (80) Ponceau 3R; (85) Benzyl Bordeaux B; (186) Ponceau 6R (crystalline form); (179) Carmoisine; (225) Water red; (252) Crocein scarlet; (280) Imperial scarlet 3B; (370) Congo red; (692) Acid magenta; (768) Eosin; (773) Erythrosin; (777) Rose bengal; (778) Phloxin. An attempt was made to determine the various factors involved and the reactions to those factors of the selected dyestuffs when added to pharmaceutical preparations. A brief table is given to demonstrate the suitability of certain colors in certain official pharmaceutical preparations. The four colors which would be the most suitable for pharmaceutical preparations are said to be acid magenta, amaranth, Bordeaux B and lissamine red 6 BS. Bordeaux B and lissamine red 6 BS are so closely similar as to be almost indistinguishable, amaranth has less blue and more yellow than Bordeaux B, while acid magenta is more blue than Bordeaux B and closely approximates an ammoniacal solution of carmine.—C. L. M. BROWN. *Pharm. J.*, 143 (1939), 90. (W. B. B.)

Dispersion Problems in Pharmacy. A discussion of particle size in various preparations.—R. G. RUYSSEN. *Pharm. Weekblad*, 76 (1939), 225. (E. H. W.)

Emulsifying Agents—Water-in-Oil. I. Some Constituents of Lanolin and Similar Compounds. Widely-used emulsifying agents for ointments and cosmetics are waxes such as lanolin, spermaceti and beeswax; polycyclic alcohols such as sterols; aliphatic alcohols of high molecular weight. References to the literature concerning these are given. Confusion still exists concerning lanolin. An investigation was undertaken to determine what components are responsible for its ability to absorb water and to develop a hydrophylic emulsifier which mixed with petrolatum would yield a water-absorbent ointment base not having the objectionable features of lanolin used alone. Anhydrous lanolin was saponified by three different methods and a cold method selected for the experiments. The unsaponifiable portion was separated and resolved into four fractions. The relative efficiency of these components and of some analogous compounds as water-in-oil emulsifying agents with petrolatum were determined. Experiments showed that the emulsifying efficiency of cholesterol is much less than the emulsifying efficiency of mixtures of cholesterol and cholesterol esters when used with petrolatum for the purpose of emulsifying water. No one combination of petrolatum and water-in-oil emulsifying agent can be recommended as a suitable base until there has been further study.—J. L. POWERS, H. B. LEASK and R. S. WARNER. *Jour. A. Ph. A.*, 29 (1940). 14. (Z. M. C.)

Ephedrine on Halogenated Organic Compounds—Action of. Thirty-one halogenated organic compounds were examined and twenty-three reacted with ephedrine base to give the corresponding halide salt. These organic compounds were alkyl, allyl and substituted alkyl halides. Hence carbon tetrachloride, chloral and tribromoethanol are incompatible with ephedrine base in prescriptions. Ephedrine does not react with the halogen atom that is attached to the benzene ring. It combines with *o*-chlorobenzaldehyde to form an addition product, $C_{17}H_{18}ONCl$, by the elimination of one molecule of water.—FRANK A. STELDT and K. K. CHEN. *Jour. A. Ph. A.*, 29 (1940), 106. (Z. M. C.)

Extracts—Improved Method of Preparing Dried. The dried aqueous extracts of the Swed. Phar. and Formulary are directed to be dried from the concentrated extract solution spread in thin films on glass or porcelain plates below 50° C. Experiments with drying on various kinds of paper were made. Papers tested included ordinary white writing paper, wax paper, brown wrapping paper (smooth side up), two types of parchment paper, wax cardboard and cellophane of various thicknesses. It was found that different sorts of concentrated extracts dried better on certain papers. Cellophane was not good in any instance. Extractum Aloes dried well on any of the papers. Writing paper or brown wrapping paper were satisfactory for Ext. Opii. Ext. Rhataniere dried well on writing paper. Ext. Rham. Pursh. dried well on waxed cardboard, as did Ext. Tormentillæ. None of the papers were satisfactory

for extracts of frangula or quassia. Drying was in an ordinary drier at 50° C. Where successful, drying was rapid and the dried extract separated in blocks cleanly from the paper.—S. KJELLMARK. *Farm. Revy*, 38 (1939), 670, 690. (C. S. L.)

Eye Lotion. The following is recommended to remove dust, dirt, dried tears and oil secretions for use by truck drivers, etc.: boric acid 25, sodium borate 30, glycerin 10, witch hazel water 50, distilled water to make 1000.—ANON. *Am. Perfumer*, 39 (1939), No. 2, 46. (G. W. F.)

Folliculin—Preparation of Aqueous Solutions of, for Hypodermic Use. A mixture of 0.05 Gm. folliculin, 1 Gm. $N(CH_2CH_2OH)_3$ and 95 cc. of $HOCH_2$-CH_2OAc is heated with stirring to complete solution and cooled. Dilution with doubly distilled H_2O gives a limpid solution, unstable to light and air, which is suitable for ampuling in colored ampuls under an inert gas. Such ampuls can be sterilized at 100° without loss of activity and provide solutions suitable for intravenous use.—ANTONIO MOSSINI. *Boll. chim.-farm.*, 78 (1939), 482; through *Chem. Abstr.*, 34 (1940), 1127. (F. J. S.)

Homeopathic Prescription. The methods of writing homeopathic prescriptions according to the French school and the meanings of the symbols are explained.—KARL HAAS. *Schweiz. Apoth.-Ztg.*, 76 (1938), 673. (M. F. W. D.)

Incompatibilities in Prescriptions. IV. The Use of Inert Powders in Capsules to Prevent Liquefaction Due to Deliquescence. This is a continuation of a study on the effectiveness of inert powders where ingredients would cause a eutectic mixture. The present study is devoted to capsules containing deliquescent drugs. Primary cause of liquefaction is absorption of moisture. If ingredients are soluble in water, liquefaction is hastened. Some will absorb so much water from the capsule that the capsule itself becomes brittle and cracks. Usually the chief factor is absorption from the air; an air-tight container will stabilize nearly all. Capsules containing deliquescent drugs should be dispensed in glass capsule vials, then, usually, addition of an inert powder will be unnecessary. Sometimes the inert powder adds to stability. Magnesium carbonate and light magnesium oxide are best as they were for substances forming eutectic mixtures. Glass capsule vials are imperative for dispensing capsules containing deliquescent drugs but if liquefaction is due to formation of eutectic mixtures, the type of container is of no importance so far as stability of capsule is concerned.—WILLIAM J. HUSA and CHARLES H. BECKER. *Jour A. Ph. A.*, 29 (1940), 136. (Z. M. C.)

Injections—By What Means Can the Sterility of, Be Endangered? Sterility of injections can be endangered in different ways. The task of the apothecary is to be careful that these sources are avoided as completely as possible. This may be attained if the newer developments in sterilization technic are observed and these go beyond the requirements of the pharmacopœia.—ANON. *Deut. Apoth. Ztg.*, 54 (1939), 821–822. (H. M. B.)

Liquor Antisepticus N. F. VI. The preparation has met much disapproval. Experiments reported in this paper consisted of a comparison of the antiseptic value of the official preparation and modifications of it. The general plan of disinfectant testing of the Hygienic Laboratory was used. Details of this work are reported. Some of the conclusions reached were that deletion of any one ingredient has little effect on appearance of solution; that boric acid has no effect on the phenol coefficient. Also a higher antiseptic value (phenol coefficient) will result upon the reduction of the amounts of the volatile oils used in the N. F. preparation. If the solution is to remain clear at ordinary temperature without clarification only certain amounts of the specified ingredients can be used. These have been determined and are tabulated. When the amounts are decreased, providing chlorothymol is not less than 0.5 Gm. per liter, the antiseptic value is equal to the present official preparation. A formula with working directions is submitted for criticism.—C. O. BEEBE, L. W. BUSSE and A. H. UHL. *Jour. A. Ph. A.*, 29 (1940), 24. (Z. M. C.)

Percolation—Study of. Optimum Conditions for Extraction of Cinchona Bark. After a brief review of modern research on galenicals, work on the extraction of cinchona bark by percolation is described. The factors considered included: *Filling of the Percolator:* The best method was held to be that of U. S. P. IX. *Rate of Adding Menstruum:* The slower the menstruum was added the better the extraction. A regular, slow input was best. *Rate of Outflow:* It was noted that the Swiss Phar. V cites 1 cc. per minute regardless of the amount of drug and the Dan. Phar. VIII states 10–50 drops per minute according to the amount of drug used. Tests with outflow of 1, 10, 30 and 90 drops per minute showed that the slower the outflow, the better the extraction. For practical purposes 10 drops a minute was satisfactory for the percolation of 500 Gm. cinchona bark. *Fineness of Drug Powder:* The total surface of the drug powder in sq. m. per Kg. was determined for sieve sizes of the Swiss Phar. V—Sieve III, 29.55 sq. m., IV, 41.86 sq. m., V, 46.98 sq. m., VI, 55.09 sq. m., VII, 64.00 sq. m. The quantity of alkaloid extracted was found optimum with sieve IV powder; coarse powders had too little surface; with finer powders canalization occurred. *Temperature of Percolation:* The percolator was arranged in a warm bath and percolations were made at 60°, 50°, 40°, 30° and 20° C. The higher the temperature the better the extraction, but above 40° C. the alkaloid precipitated. The difference in yield at higher temperatures was so little that the use of the warm percolator is unnecessary in practice. *Effect of Pressure or Vacuum:* Pressure percolation at 2 or 3 atmospheres influenced the yield very slightly and results were not constant. Improvement was only 2–3% and hence of no practical importance. Vacuum (40–60 mm.) actually lowered the yield. *Ordinary Percolation vs. Evacolation, Diacolation and Repercolation:* The special methods gave less concentrated percolates than did ordinary percolation. In one hour evacolation gave 40.0% alkaloid, diacolation 48.0%, repercolation 50.3%. In six hours ordinary percolation gave 90.0%, evacolation 88%. The cinchona alkaloids exist in the bark as a difficulty soluble alkaloid-tanin combination. In the usual pharmacopœial methods of preparing Extractum Cinchonæ Siccum or Fluidum, 50–80% of the alkaloid of the bark appears in the finished product. Conditions for improving the yield were studied. *Effect of Strength of Alcohol:* Tests were made with 92, 82, 72, 62, 52 and 22 volume % of alcohol, and with water. The best yield of alkaloids was with 82 or 72% alcohol (yield about 80%), next with 62% alcohol (yield about 78%). Water and 92% alcohol gave very poor yields. The total yield of extractives was best with 62% alcohol. This strength was chosen for further experiments. *Effect of Acids and Bases:* The Dan. Phar. VIII uses HCl for preparing the fluidextract and the Helv. Phar. V uses formic acid for Extractum Cinchonæ and citric acid for Decoctum Cinchonæ. Tests were made with equivalent quantities of acids (2 mols. to 1 mol. of alkaloid in the bark) using lactic, hydrochloric, acetic, phosphoric and formic acids; lactic acid gave by far the best yield (about 93% in 6 hours) and HCl was also good (90%). The others gave low yields; formic acid was least effective (68%). Percolation was also carried out using ammonia and

calcium hydroxide; and 92% alcohol was used as the alkaloid was extracted as the base. Ammonia gave 80% yield; calcium hydroxide gave only 44%; and lactic acid was considered the best agent. Two mols of lactic acid were found to be the best concentration. Further work of the author on other galenicals was reported (nux vomica, stramonium and colchicum). *Value of Defatting:* Using petroleum ether to defat the drug (Swiss Phar. V), it was found that from 1 Kg. of drug the amount of fat extracted was nux vomica seed 52.6 Gm., stramonium seed 257.0 Gm., colchicum about 98.0 Gm. The content of alkaloid in the extracted fat was negligible for nux vomica; none for stramonium. However, about 15% of the alkaloids was lost in the colchicum fat. The quantities of fat extracted during ordinary percolation of undefatted drug were: nux vomica 34.4%, stramonium 20.4%, colchicum 12.1%. The alkaloid yields from undefatted and defatted nux vomica were almost identical (about 92%). The defatted stramonium gave a better yield (about 63%) than did the undefatted drug (50%). The yield of alkaloid from undefatted colchicum was better (over 100%) than from the defatted drug (about 83%), because of the loss of alkaloid in defatting. It was concluded that the Swiss Phar. V. method of defatting the seeds was effective but uneconomical because of the quantities of petrol ether needed.—J. BÜCHI. *Dansk Tids. Farm.*, 13 (1939), 205. (C. S. L.)

Procaine Base Dissolved by Means of Carbon Dioxide and Its Method of Action. A suspension of 2 to 5 Gm. procaine in 100 cc. of water is heated to slightly above 59° and the base is brought into solution with a stream of carbon dioxide. This carbonate solution is only slightly more convulsant than the hydrochloride but considerably more anesthetic in topical application.—R. BEUTNER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 380. (A. E. M.)

Solutio Barbamini ad Injectionem. This communication from the laboratory of the Netherlands Pharmaceutical Association compares this solution of the C. M. N. with the specialty "Somnifeen."—H. J. VAN GIFFEN. *Pharm. Weekblad*, 76 (1939), 209. (E. H. W.)

Tablets—Compressed, Preparation of. I. Measurement of the Rate of Disintegration. The author points out that it is not surprising that the British Pharmacopœia Commission should be considering the inclusion of tablets in the next Pharmacopœia. He contends that it will be necessary to include a separate chemical assay for each tablet, treating it as a preparation or galenical of the drug. It would also be a boon to the retail pharmacist if definite die sizes and final weights for each tablet are specified. The rate of disintegration of tablets accepted in an official compendium should also be established as one of the standards for the tablet preparation. Disintegration tests become important when the tablet has to be swallowed whole. Many types of disintegration tests for tablets have been suggested, but most of them possess the disadvantage of not having a definite end-point. The author suggests a method that depends upon a weighted wire cutting through the tablet after the latter has been softened in water. The end-point is the fall of the weight. It is claimed that with a batch of tablets fairly repeatable results can be obtained. The apparatus, which is shown in an accompanying illustration, consists of a rectangular framework of stainless steel of a definite gage, weighted at the bottom with a 20-Gm. brass weight and a metal platform having a rectangular aperture of definite dimensions. The two ends of the platform are extended at right angles and then bent so as to be able to rest on the top of a 100-cc. cylinder. The tablet under test is placed evenly over the aperture on the platform. The wire frame is placed diagonally over the tablet and through the aperture so that the weight exerts a pull on the tablet. The whole arrangement is lowered just below the surface of 100 cc. of distilled water at 18° to 20° C. in a cylindrical measure. As the tablet softens, the wire cuts through it, and ultimately the frame and weight drops. A table is given to show how compression is related to disintegration. The outstanding features of the results obtained are given for the tablets studied.—H. BERRY. *Pharm. J.*, 143 (1939), 174. (W. B. B.)

Vasoliniments, Ergänzungsbuch V—Synthetic Fatty Acids in Place of Natural Oil Acids in. A homogeneous clear vasoliniment is obtained by mixing ammonia spirits (10% ammonia) 8 parts, synthetic fatty acid 32, yellow vaseline oil 60. Camphor, chloroform, ichthyol, ethyl iodide and menthol may be added without difficulty. Only additions of 10% iodine and 10% salicylic acid produce separations. The price of the synthetic fatty oils is much less than that of the natural oils.—RICHARD HOLDERMANN. *Deut. Apoth. Ztg.*, 54 (1939), 1091–1092. (H. M. B.)

Vitamin B Preparations, D. A. K.—Alterations in Formulæ for. Owing to the announcement by the Health Organization of the League of Nations 1939, that one International unit of vitamin B_1 corresponds to 3 micrograms of pure thiamin hydrochloride, the vitamin B preparations of the Danish Apothecaries Control Laboratory are altered in statement of content of International units of this vitamin from 20 International units of vitamin B_1 per Gm. in Liquor B Vitaminorum to 13 International units per Gm. (4 micrograms of thiamin HCl). The vitamin B_1 content in B Tonicum, B Tonicum cum Ferro and Syr. B Vitaminorum is placed at 1000 International units per Gm. Revised formulæ are cited. For diabetics a formula for B Tonicum sine Saccharo if offered in which Syrup of Cherry is replaced by Succus Cerasi and glycerin. Purity rubrics for thiamin hydrochloride are supplied; and Solutio Thiamin Hydrochloride 1%, for use in the above preparations, is described as a solution of thiamin hydrochloride 1 + 799 in 0.001*N* HCl to which is added 200 parts of alcohol.—ANON. *Arch. Pharm. Chemi*, 46 (1939), 608. (C. S. L.)

PHARMACEUTICAL HISTORY

Enkhuizen—Pharmacy in. An historical account of pharmacy in this little Netherlands city.—D. BROUWER and N. J. A. GROEN. *Pharm. Weekblad*, 76 (1939), 494. (E. H. W.)

First International Pharmaceutical Congress of September 16, 1865 in Braunschweig. Historical discussion with an illustration of the group.—KARL SIEBERGER. *Deut. Apoth. Ztg.*, 54 (1939), 870–871. (H. M. B.)

Grensbach Apothecary, the Old Apothecary of the Early County (Earldom) of Eberstein.—HEINRICH LANGENBACH. *Deut. Apoth. Ztg.*, 54 (1939), 1120. (H. M. B.)

Hermann Löns—Grandson of an Apothecary. Historical.—ANON. *Deut. Apoth. Ztg.*, 54 (1939), 991–992. (H. M. B.)

Holland—History of Military Pharmacy in. A historical review of this subject including exerpts from examinations for military pharmacists.—E. I. VAN ITALLIE. *Pharm. Weekblad*, 76 (1939), 349 and 397. (E. H. W.)

Mortars—North- and South-Holland Casters of. An historical review of the casting of metal mortars in Holland with especial reference to the individuals who designed and cast them. In many instances biographies are given. The mortars are listed according to the cities where they were made. Seven illustrations of mortars accompany the article.—

D. A. WITTOP KONING, JR. *Pharm. Weekblad*, 76 (1939), 874. (E. H. W.)

Pharmacy—America's Oldest.—This is an historical sketch of the Simon Rau and Co. drug store in Bethlehem, Pa., founded in 1743 and now the sole survivor of all the early shops in the United States.—R. D. BILLINGER. *Am. J. Pharm.*, 111 (1939), 234. (R. R. F.)

Pharmacy as a Subject of Religious Influence and Feeling. Pharmacy in Retrospect. III. In the words of the authors, "a brief pharmaceutico-historical discussion of the subject from the earliest times to about the 18th to 19th centuries illustrated with latern slides of pharmaceutico-religious objects, mostly from the Squibb Ancient Pharmacy.—GEORGE URDANG and F. W. NITARDY. *Jour. A. Ph. A.*, 29 (1940), 41. (Z. M. C.)

Pharmacy—Books Make History Even in. A very interesting and informative paper about some of the books in the Squibb Ancient Pharmacy.—GEORGE URDANG and F. W. NITARDY. *Jour. A. Ph. A.*, 29 (1940), 36. (Z. M. C.)

Zenexton Helmontii, Toad Amulet Against Pests. Historical—WALTHER ZIMMERMANN. *Wien. Pharm. Wochschr.*, 72 (1939), 524–528. (H. M. B.)

PHARMACEUTICAL ECONOMICS

Drug Specialties and Nostrums—Experiences with the Control and Appraisal of. A discussion.—EDMUND WEISS. *Scientia Pharm.*, 10 (1939), 126–128. (H. M. B.)

Field Apothecaries. The development of this type of apothecary is reviewed.—HERBERT MÜLLER-HESTER. *Deut. Apoth. Ztg.*, 54 (1939), 1111. (H. M. B.)

Mercurials Control. Owing to advances in the price of mercury since the previous Order was issued maximum prices for certain mercury compounds have been revised by the Ministry of Supply under the Control of Mercury (No. 4) Order, 1940, which came into force on April 19. The new prices per lb. are listed.—ANON. *Chemist and Druggist*, 122 (1940), 122 (1940), 328. (A. C. DcD.)

Pharmacy in Finland. Following a trip to Finland visiting apothecary shops and pharmaceutical works, the Danish author reports notes and impressions. Viborg, the largest garrison town, had 10 apothecaries for its 90,000 inhabitants and here the Keskus Apteekki was visited. The laboratory of this shop was very adequately fitted for preparation of the A. V. preparations (Apteekkanens Valmisteite), which correspond to the Danish Apothecaries' Control Laboratory preparations in Denmark. The Kauppatorin Apteekki in Viborg was also visited. In 1939 this shop celebrated its 250th anniversary. It is the second oldest in Finland; the oldest, in Abo, was founded 5 days earlier in 1689. The Punasenhähten Apteekki in Viborg (largest shop there) and the military hospital pharmacy were also visited. Among country pharmacies, that in Enso was visited. The Kaesaniemi Apteekki in Helsingfors was in the author's opinion the most elegantly fitted pharmacy in the entire North. In Finland more prescriptions are filled than in Denmark. There is no universal law as to restricted drugs, regulations are set up for individual cities. Among medicines much called for in Finland is male fern. The Finns eat much raw fish and there are 50 to 100 thousand cases of tapeworm annually. Pharmaceutical works visited included the Medica and Orion works in Helsingfors and the Pharmakon Co. in Abo. Specialties constitute about 25% of the drug demand in Finland. The Finish Phar. VI was issued to come into use July 1, 1938, written in Finnish, and the Swedish edition is in preparation. The Finnish Apothecaries' Society is preparing a formulary. The training of pharmacists and the nature of the student examinations are considered. A one-year lecture and laboratory course is given in pharmaceutical chemistry, pharmacognosy, technical pharmacy, management, physics, bacteriology and pharmacology. After passing the examination, a year of service in an apothecary shop is necessary before the license is granted. There are 436 apothecaries in Finland, 239 provisors (the examination for provisor corresponds to that for candidate in Denmark) and 760 pharmaceutists (examination corresponds to that for pharmaceutical assistant in Denmark). There are 300 apprentices and about 200 female assistants. Only about a third of those passing the examination can find posts to continue in pharmacy. The Medical Control Board supervises the governmental control of pharmacy in Finland.—O. S. ANDERSEN. *Arch. Pharm. Chemi*, 46 (1939), 630. (C. S. L.)

Tinctures—Use of. The forty-one D. A. B. VI tinctures are compared in a chart on the basis of use or demand in 100 German apothecaries located in large and small cities and in country and hospital pharmacies.—HERMANN V. CZETSCH.-LINDENWALD. *Deut. Apoth. Ztg.*, 54 (1939), 1138. (H. M. B.)

MISCELLANEOUS

Acetylsalicylic Acid—Stabilized Salts of. A substantially tasteless stabilized composition comprises an alkaline earth salt of acetylsalicylic acid such as the calcium or magensium salt, with the addition of about 1 to 2% of ammonium chloride.—JOSEPH R. STEVENS, assignor to MERCK & Co. U. S. pat. 2,158,091, May 16, 1939. (A. P.-C.)

Ampul Glass for Large Containers of Intravenous Solutions—Test for the Quality of. Liter bottles were especially treated by application of acid vapors under heat and pressure to prevent "leaching" when solutions are put into them, autoclaved and stored. Conductivity water, a saline solution, a dextrose solution were put into the bottles; some were autoclaved, others not, and were then stored for periods of 3, 6, 9 and 12 months and the conductivity water was examined for inorganic matter. Results indicate that this method of treating containers tends to harden the glass so that there is little, if any, "leaching" during autoclaving and storage.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 8 (1939), 8–10 (H. M. B.)

Cosmetic Composition of Substances Having the Property of Absorbing Ultraviolet Light Rays. Products obtained by interaction of molecular proportions of triethanolamine and *o*-cresotic acid or 2:3-hydroxynaphthoic acid absorb rays of wave length 2900–3200A. and are suitable for use in cosmetic (sunburn) preparations.—F. E. E. STOCKELBACH. Brit. pat. 508,818; through *J. Soc. Chem. Ind.*, 58 (1939), 997. (E. G. V.)

Cosmetic Preparations—Possible Interaction between Components of. Typical samples of undesirable (or even dangerous) interactions between common, but incompatible, ingredients of cosmetics (creams, shampoos, etc.) are cited.—T. RUEMELE. *Seifensieder-Ztg.*, 66 (1939), 434–435; through *J. Soc. Chem. Ind.*, 58 (1939), 1002. (E. G. V.)

Cosmetic Products—Improvement to. A process for improving the properties of condensation products of high molecular split-off products of albumin of the type of lysalbinic and protalbinic acids with higher fatty acids for use in cosmetic products involves precipitation of the concentrated aqueous solutions of their alkali metal salts by adding a strong acid such as hydrochloric and liquefying the precipitate simultaneously with its formation by increasing the temperature during the precipitation and by adding to the precipitate about 1 to 5% of an organic substance such as benzoic acid to effect

lowering of the melting point.—FRITZ SOMMER and MAX NASSAU, assignors to CHEMISCHE FABRIK GRÜNAU A. G. U. S. pat. 2,151,241, March 21, 1939. (A. P.-C.)

Cosmetics—Trend of Progress in. It is in the domain of cream manufacture that the biggest changes have taken place in cosmetic manufacture in recent years. The cosmetic manufacturer is confronted by an almost overwhelming array of emulsifying agents. Among modern emulsifying agents of known composition which exhibit good stability toward mild acids may be mentioned cholesterol and oxycholesterol, cetyl alcohol and steryl alcohol for the production of creams of the water-in-oil type, and sapamine salts and sulfated and phosphated derivatives of cetyl and steryl alcohols for the production of creams of the oil-in-water type. Cetyl and steryl alcohols themselves, as well as glyceryl monosterate and allied esters, are also useful constituents of creams of the latter type, owing to the ease which which they may themselves be emulsified. They give added stability to the products. Face powders and hair preparations are also briefly discussed.—H. S. REDGROVE. *Pharm. J.*, 143 (1939), 219. (W. B. B.)

Creams—Toilet. Lard and dairy cream with perfume are mixed with hydrogen peroxide (for cleansing cream), turtle oil and hydrogen peroxide (for cold cream), and almond oil, starch, and cochineal (for vanishing cream).—L. L. WARREN. Brit. pat. 504,827; through *J. Soc. Chem. Ind.*, 58 (1939), 1006. (E. G. V.)

Dentifrices. An "edible" dentifrice resistant to bacterial decomposition comprises an intimate mixture of a salt such as trisodium phosphate associated with casein, egg albumin, gelatin, yeast, blood protein or a vegetable meal and with tricalcium phosphate, with which also vitamin-containing concentrates, etc., may be mixed. Various details of manufacture are given, and the product has a p_H of about 7.0 to 10.0.—HENRY KLEIN and EMANUEL KAPLAN. U. S. pat. 2,154,168, April 11, 1939. (A. P.-C.)

Double Cyanide Gauze, B. P. C. It is suggested that Double Cyanide Gauze, B. P. C., be stored in such a manner as to protect it properly from the atmosphere, since even the small amount of sulfur contained in the atmosphere of most localities will cause discoloration, in the form of dark patches.—R. M. SAVAGE. *Pharm. J.*, 142 (1939), 514. (W. B. B.)

Hair—Compositions for Waving. An aqueous composition contains about 3 to 30% of a morpholine and about 10% of oil such as castor and olive oils and is emulsified by the reaction product of part of the morpholine with a small amount of a higher fatty acid.—ALEXANDER L. WILSON and HENRI MORIN, assignors to CARBIDE AND CARBON CHEMICALS CORP. U. S. pats. 2,154,924 and 2,154,925, April 18, 1939. (A. P.-C.)

Hair Dyes—Functions of Phenols in. An examination of the effects of dihydric and trihydric phenols on the oxidation of diamines in hair dye mixtures shows that the function of the phenols is to promote the formation of fast colors having brown shades. They prevent the formation of insoluble Bandrowski's base and so give a better color for the same amount of diamine. Study of the chemical reactions involved shows that in general there is first the formation of red or brown indophenols with the oxygen in the *ortho* position. These indophenols then condense with the formation of oxazines and oxazones which form a permanent color with the hair. A color film was then shown to demonstrate the formation of these dyes and the development of the color on the human head.—ANON. *Chemist and Druggist*, 122 (1940), 299. (A. C. DeD.)

Hands—Care of the. The following preparations are discussed: modern Swedish glycerins (3 formulæ), a glycerin jelly with gelatin, one with pectin, a citroglycerin, a cream with glycerin and starch, one with a stearate base for the hands, one with a base of glycerin and stearate (hand smoother and softener cream), one with a base of triisopropanol amine, a hand whitener cream, an acid cream for the hands, a mother-of-pearl liquid cream, a hand massage cream, a cream with a lanolin base of superior quality, a liquid hand cream, two hand lotion creams, two creams with absorption bases, a cream with a base of monostearate of propylene glycol, a nail polisher and nail lacquers.—HUGO JANISTYN. *Riechstoff Ind. Kosmetik*, 14 (1939), 163–166. (H. M. B.)

Hexylresorcinol Capsules. *2,155,444*—A center of solid hexylresorcinol is coated with a thin layer of inert material such as starch and hermetically sealed in a continuous, tough, tenacious, adhering layer of soluble elastic material such as gelatin of practically uniform thickness throughout, this layer being made up of two parts with the edges integrally united together. *2,155,445*—relates to apparatus and operative details (involving the use of vacuum) for forming coated pills of solid hexylresorcinol of such character.—PAUL S. PITTENGER and JOHN W. JESTER, assignors to SHARP & DOHME. U. S. pats. 2,155,444 and 2,155,445, April 25, 1939. (A. P.-C.)

Hydrocarbon Oil Insecticides. A hydrocarbon oil is used with 0.1 to 1.0% of an emulsifying agent which is an addition product of a mono-hydroxylic benzene derivative having its hydroxyl attached directly to the benzene ring with an unsaturated fatty acid, such as cresolricinoleic or phenololeic acid.—ARTHUR G. KAUFMANN, assignor to TIDE WATER ASSOCIATED OIL CO. U. S. pat. 2,154,850, April 18, 1939. (A. P.-C.)

Hygroscopic and Efflorescent Chemicals—Tightness of Various Type Containers for Packaging. Calcium chloride U. S. P. XI and sodium phosphate U. S. P. XI were used in the tests and the results indicate that plain cardboard containers and untreated cardboard canisters are not suitable for packaging these types of chemicals. Especially treated cardboard canisters and tin cans appear to be sufficiently impervious to moisture and to meet the usual commercial requirements; glass bottles with screw caps and suitable liners appear to represent the tightest practical commercial package and are suitable for storage of the chemicals under average conditions. No major differences were found between the values obtained with unopened and opened and reclosed packages. Percentage loss varies with the quantity of chemical under test. An attempt was made to eliminate the package size factor by calculating the loss in Gm. per square cm. of container surface.—JOHN F. ROSS and L. KAPLAN. *Bull. Natl. Formulary Committee*, 8 (1939), 76–87. (H. M. B.)

Insecticide. Nicotine tannate in concentrated form and suitable for use in spray compositions is produced by the reaction of nicotine and tannin in an aqueous medium in the presence of nontannin constituents of quebracho extract, or of gum arabic, or other protective colloid.—CHARLES H. BATCHELDER, dedicated to the free use of the Public. U. S. pat. 2,152,236, March 28, 1939. (A. P.-C.)

Insecticide. *N*-Nitrosodiphenylamine is used as an active ingredient, suitably for uses similar to those of lead arsenate.—ANDREW F. FREEMAN, dedicated to the free use of the people in the territory of the U. S. A. U. S. pat. 2,155,010, April 18, 1939. (A. P.-C.)

Insecticide and Fumigant. The active principle is an epoxide of an unsaturated compound having more than one multiple bond, such as butadiene

monoxide.—ADRIANUS J. VAN PESKI and JOHAN M. HOEFFELMAN, assignors to SHELL DEVELOPMENT CO. U. S. pat. 2,152,003, March 28, 1939. (A. P.-C.)

Insecticides—Organic. The review discusses the chemical and physiological action of the compounds of the rotenone group, the pyrethrins, quassin and nicotine.—F. B. LAFORGE and L. N. MARKWOOD. *Ann. Rev. Biochem.*, 7 (1938), 473–490; through *Chem. Abstr.*, 33 (1939), 3960. (F. J. S.)

Isopropanolamine—Salts of. I. Triisopropanolamine. Salts of fatty acids were prepared and studied. Properties are reported for caproate, caprylate, caprate, laureate, myristate, palmitate, stearate and oleate. Emulsions of each were prepared and studied; also cosmetic creams. These salts were slightly superior to triethanolamine as emulsifying agents. They are softer and soluble in liquid petrolatum. Creams did not discolor with age to the extent that triethanolamine creams did. A mixed isopropanolamine consisting approximately of 43% each of di- and triisopropanolamine and 14% monoisopropanolamine was used in similar experiments. It was found to have greater emulsifying power for pharmaceutical emulsions or cosmetics than the triisopropanolamine or the triethanolamine. The myristate was found to be superior to the laurate and possessed lower surface tension. Salts of the mixed isopropanolamines were softer than either of the others and were lighter colored than triethanolamine salts. Creams containing the mixed isopropanolamines did not discolor on aging to the extent that the triethanolamine creams did.—GEORGE W. FIERO. *Jour. A. Ph. A.*, 28 (1939), 1036. (Z. M. C.)

Lactuca Virosa—Standardization of Preparations Derived from the Milky Juice of. Wasicky, Stern and Zimet have described a method in which the content of bitter principle is determined by taste. The method is here applied to the evaluation of the milk from *Lactuca virosa* which has recently been of pharmaceutical and pharmacological interest. The results obtained by this method are comparable with those obtained colorimetrically.—G. SCHENCK and H. GRAF. *Mikrochimie Acta*, 3 (1938), 231–235; through *Chimie & Industrie*, 41 (1939), 954. (A. P.-C.)

Lipsticks—Taste and Perfuming of. Twenty-eight volatile oils and eight synthetics are discussed.—ALEXANDER KATZ. *Am. Perfumer*, 39 (1939), No. 3, 34–37. (G. W. F.)

Nails and Nail Changes. I. Investigation of Nail Lacquers and Their Components. A study of the composition of fingernail lacquers with toxicological and sensitization tests on guinea pigs and patch tests on human subjects.—HENRY SILVER and BERNARD CHIEGO. *J. Invest. Dermatol.*, 2 (1939), 361–374; through *Chem. Abstr.*, 34 (1940), 1125. (F. J. S.)

Ointments, Massage Creams, Etc.—Device for Irradiating. A device for the irradiation of materials such as pastes and creams comprises a receptacle for the material adapted for extruding the contents through a mouth thereon, means adapted to be connected to the mouth of the receptacle and having a tabular part through which the material extruded from the mouth of the receptacle is passed before delivery for use, a radioactive material positioned on the inside of the tubular part whereby to irradiate only the small portion of the material which is to be used first. A radioactive salt may be mixed with a synthetic resin properly diluted and the mixture applied as a thin film to a support extending into the mouth of a collapsible tube from which the material to be irradiated is extruded as used in small portions.—ALEXANDER F. KAGAN CHABCHAY. U. S. pat. 2,148,683, Feb. 28, 1939. (A. P.-C.)

Shaving Cream as Hydrogel. The importance of obtaining a stable homogeneous hydrogel condition (which is assisted by the presence of, for example, potassium chloride) before shaving cream can be filled into tubes, etc., is briefly pointed out.—H. SCHWARZ. *Fette u. Seifen*, 46 (1939), 292–299; through *J. Soc. Chem. Ind.*, 58 (1939), 744. (E. G. V.)

Soap—Lithium Compounds in. Lithium carbonate, oxide or citrate imparts degreasing properties and hence is valuable for shaving soaps.—Brit. pat. 498,850; through *Am. Perfumer*, 40 (1940), No. 1, 58. (G. W. F.)

Soaps—Medicated. Review with 38 references.—H. FIEDLER. *Fette u. Seifen*, 45 (1938), 686–688; through *Chem. Abstr.*, 33 (1939), 4069. (E. G. V.)

Tooth Brushes with Synthetic Bristles. Two British manufacturers are marketing tooth brushes which in appearance will not differ from their well-known products of the past but which will, in fact, have synthetic bristles produced from nylon. Nylon wears better than hog bristles. In a machine, simulating the use of a tooth brush, the abrasion and fatigue resistance is such that after 7000 scrubs the nylon brush is intact, with every tuft in place and only a few fibers out of alignment, whereas a high-grade hog bristle brush has lost many of its bristles. Nylon synthetic bristles do not break off or split in service. In hygiene, as well as in strength, nylon out rivals natural bristle. It absorbs only one-fifth as much moisture as hog bristles and absorbs it more slowly. A hog bristle brush is almost completely saturated in three minutes whereas a nylon brush can be soaked in water for at least five minutes without perceptible loss of stiffness. The surface of nylon is smooth and does not become soggy and dirty in use; it is not susceptible to bacterial attack. It is chemically stable and resists the action of dentifrices. Nylon filaments, from which synthetic bristles are made, are water-white. As they are machine-made, the diameters can be controlled to any desired thickness.—ANON. *Chemist and Druggist*, 122 (1940), 320. (A. C. DeD.)

Vaginal Preparation. A sulfodicarboxylic acid ester compound, such as sodium dioctylsulfosuccinate, is used, suitably with gum tragacanth, glycerol, thymol, sodium benzoate, maleic acid and tapioca flour, etc.—MOSES L. CROSSLEY, assignor to CALCO CHEMICAL CO. U. S. pat. 2,149,240, Feb. 28, 1939. (A. P.-C.)

Vitamins and Hormones—Use of, for the Production of Biologically Active Cosmetic Products. Formulæ with detailed procedures are offered for the following types of creams containing vitamins and hormones: hormone breast creams, vitamin skin vanishing creams, hormone creams (solid and liquid), vitamin face lotion and milk.—W. REHDERN. *Riechstoff Ind. Kosmetik*, 14 (1939), 171–174. (H. M. B.)

Zinc Oxide in Soap Making. Zinc oxide improves the appearance, the emollient characteristics and acts as a fixative for color and perfume.—P. I. SMITH. *Am. Perfumer*, 40 (1940), No. 1, 57–58. (G. W. F.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Aconite—Bioassay of. Since no satisfactory assay has been devised a preliminary investigation was undertaken to determine whether the analgesic action is due to aconitine or other constituents. Then an assay method hitherto untried seemed better than to try to improve methods that had not

proved satisfactory. It had been shown that aconite produces emesis in the pigeon so that method was chosen. It was not found possible to get aconine and benzoylaconine in pure state so a comparison of the analgesic activity of the pure alkaloids could not be made. So a comparison was made of pure aconitine, the aconitine breakdown products and the total alkaloids. Analgesia was measured by its effect upon corneal reflex, the effect upon frog reflex and the sensitivity of the cat's tail. Then aconitine, aconitine breakdown products and total alkaloids were injected into a series of pigeons to determine minimum emetic dose. Results indicated that aconitine is the active analgesic agent, that it consistently produces emesis and that it probably is the only emetic principle in aconite. Determination of the minimum emetic dose of an aconite preparation would be a direct measure of the aconitine content. Apparently emesis is the result of central action since intravenous injection produces emesis promptly but intraperitoneal injection was slow; also the dose intraperitoneally is approximately twice that intravenously. Emetic centers are located in the medulla and aconitine stimulates other medullary centers. Apparently the chief disadvantage of the pigeon emesis method of assay is that the emetic dose is much too close to the fatal dose.—B. V. CHRISTENSEN and J. W. NELSON. *Jour. A. Ph. A.*, 29 (1940), 97. (Z. M. C.)

Adrenaline—Enzymatic Transformation of, by Sympatholytic Agents into a Hypotensive Substance. The authors have stated that the sympatholytic substances activate the transformation of adrenaline into a hypotensive substance upon contact with certain tissues. The new substance formed seems to have the characteristics of adrenaline (inverse), which causes one to believe that the inversion of the effects of adrenaline is produced by a mechanism of activation of an enzymatic process.—G. UNGAR and J. L. PARROT. *Sci. de Biol.*, May 6, 1939; through *Presse méd.*, 38 (1939), 730. (W. H. H.)

Alcohol—Studies in the Absorption, Distribution and Elimination of. IV. The Elimination of Methyl Alcohol. From experiments on rats the authors conclude: (1) That more than 70% of the methyl alcohol is eliminated in the expired air. (2) That the elimination follows the principle defined for volatile substances which are largely non-reactive. (3) That the amount eliminated in unit time is determined by the concentration of alcohol in the blood and the volume of pulmonary ventilation. (4) That the curve obtained from the concentrations of methyl alcohol in the blood during elimination is not a straight line but an experimental curve. (5) That the Widmark value (β) held by him to be a constant is not a constant but a variable influenced by all factors which influence the amount of methyl alcohol eliminated in unit time in the expired air.—H. W. HAGGARD and L. A. GREENBERG. *J. Pharmacol.*, 66 (1939), 479. (H. B. H.)

Dextro-Amphetamine Sulfate—Central Nervous System Simulant Effects of. While the peripheral actions of both stereoisomerics of Amphetamine (Benzedrine) are practically identical, there is a marked difference in the effect on the central nervous system, the dextro-isomer being 2 to 4 times more active than the levo-compound. In narcolepsy, post-encephalitic Parkinson's disease and postural hypotension it was found that clinical evaluation shows the *r*-compound to be 1.5 to 2 times more active than the racemic substance.—MYRON PRINZMETAL and GORDON A. ALLES. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 206. (A. E. M.)

Analeptics—Comparison of Different Types of Central Stimulation from. Rats or other small animals were suspended in small cages from wire springs and the added movements were recorded on a revolving drum. Metrzol, in doses from 10 to 40 mg. per Kg. produced no increase in general activity except during convulsions resulting from doses of 40 mg. Similarly picrotoxin did not increase the activity at doses from 0.1 to 1.6 mg., but caused convulsions at higher dosage. Coramine stimulated coördinated activity from 20 to 160 mg. The latter dose however produced temporarily general convulsions; its total action lasted for 7 hours. Caffeine sodium benzoate at doses of 10 mg. produced threshold activity, 20 to 40 mg. caused frank stimulation, but the latter dose killed one out of 10 animals. Cocaine in doses from 50 to 60 mg. was highly stimulating but resulted in death of one in six animals. The margin of safety between barely effective and convulsive or fatal doses was, for caffeine, 4 times, for coramine 8 times.—J. W. SCHULTE, M. L. TAINTER and J. M. DILLE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 242. (A. E. M.)

Anesthetics—Tissue Injury Caused in Experimental Animals by. The authors made a study to determine whether ether, chloroform, ethyl chloride, ethylene and nitrous oxide cause tissue damage when they are used as general anesthetics. This was done by examining the perfusates from the isolated dog's lungs, ventilated with the anesthetic, for histamine and another substance which, after a latent interval, causes contraction of the gut followed by slow relaxation. The latter substance is called S. R. S. (slow reaction substance). The method used and the results of the experiments with each anesthetic are described in detail. Only high concentrations of the volatile anesthetics: ether, chloroform and ethyl chloride, caused severe injury to the tissues of the perfused lung with the liberation of histamine and S. R. S. The gaseous anesthetics tested: ethylene and nitrous oxide caused no liberation of S. R. S. and only trivial outputs of histamine even when administered in the pure state. Hence the volatile anesthetics must belong to that class of agents which injure tissue with the liberation of histamine and S. R. S. To this class of agents belong snake venoms and staphylococcal toxin. The gaseous anesthetics belong to that class of agents which injure the tissue with the liberation of histamine but without the liberation of S. R. S. To this class belong radiant energy, photodynamic action and $HgCl_2$.—C. H. KELLAWAY and E. R. TRETHEWIE. *Australian J. Exptl. Biol. Med. Sci.*, (1939), 225–240. (W. T. S.)

Anterior Pituitary—Permanent Sugar Diabetes Produced by Extracts of. In 1932, B. A. Houssay demonstrated the diabetogenic action of cold alkaline or salt water extracts of the anterior lobe of the pituitary. These extracts injected daily into the peritonium of the normal dog, raise the blood sugar and the symptoms of diabetes appear. If the injections are suppressed the hyperglycemia is not maintained. But if, as was discovered by F. G. Young, the doses of the pituitary extracts injected each day are increased, the glycosuria is attenuated, the diabetic state may be maintained for two to four weeks and, more important, it persists after the suppression of the injections. A permanent sugar diabetes is then realized. The author has observed a normal dog in this state for a period of one hundred days. The grouping of these characteristics can be clearly distinguished from that produced by extirpation of the pancreas.—A. LOUBATIERES. *Acad. de Sci.*, (June 12, 1939); through *Presse méd.*, 57 (1939), 1129. (W. H. H.)

Apomorphine Hydrochloride—Action of, on the Intact Intestine in the Unanesthetized Dog. Apomorphine, when injected intravenously, may either increase or decrease the general tonus of the intact intestine, depending on the animal and its condi-

tions at the time of injection. The peristaltic contraction may be augmented especially when the general tonus is diminished. Borborygmi are commonly noted following the injections of apomorphine.—CHARLES M. GRUBER, VICTOER G. HAURY and MILES E. DRAKE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 193. (A. E. M.)

Barbiturates and Thiobarbiturates—Effect of, on Isolated Rabbit Uterus. Short-acting barbiturates (evipal and pentobarbital) and thiobarbiturate (thiopentobarbital, pentothal and thioethamyl) have the same actions on uterine segments as the longer-acting barbiturates. Dilutions of 1:5000 to 1:50,000 cause rapid loss in general tonus.—CH. M. GRUBER and CH. M. GRUBER, JR. *Arch. intern. pharmacodynamie*, 62 (1939), 377. (W. H. H.)

Benzenedrine—Pharmacodynamic Study of, in the Animal. Weak doses, between 5–20 mg. of benzedrine produces in the dog: an increase in arterial pressure; this hypertension produced by a notable peripheral vasoconstriction, is clear and of long duration; the intense bradycardia that one finds upon the isolated frog heart, is due, in the dog, *in vivo* to an excitation reflex of the cardiomoderator center; at the same time there is an excitation or a sensitization of the peripheral parasympathetic and also probably a toxic action upon the myocardium; a clear and persistant increase in the amplitude of the cardiac contractions; an important increase in the urinary flow justified by the circulatory conditions (general hypertension, accumulation of blood in the distended renal vessels) caused by phenylaminopropane; in the majority of cases a moderate stimulation of respiration principally of sino-carotid reflex origin; a sensitization of the orthosympathetic autonomic nervous system, the response to the occlusion of the carotids and to the injection of adrenaline was clearly more accentuated after phenylaminopropane. After repeated weak doses, phenylaminopropane produced inverse properties: hypotension, antidiuresis and depression of the peripheral vasomotor system, notably at the level of the synapses. A strong dose of phenylaminopropane at once is hypertensive; but it is clearly hypotensive when a strong dose is administered to an animal which has received previously a single large dose or several small doses of the substance. The administration of strong doses at once shows a toxic action upon the myocardiac fibers.—L. DAUTREBANDE, E. PHILIPPOT and R. CHARLIER. *Arch. intern. pharmacodynamie*, 62 (1939), 179. (W. H. H.)

Benzedrine Sulfate (β-Phenylisopropylamine)—Effect of, on Metabolism and the Cardiovascular System in Man. Benzedrine was given orally to normal subjects in doses of 30 mg. The metabolic rate increased on an average of 15.4% in the first 2½ hours. The rate did not return to normal for over 9 hours, but had returned after 24 hours. Blood pressure rose perceptibly, reaching its maximum in 1½ hours, there was a slow decline in pressure, the normal levels being reached within 24 hours.—K. H. BEYER. *J. Pharmacol.*, 66 (1939), 318. (H. B. H.)

Biphenyl Derivatives—Local Anesthetic Action of Some. Of 63 biphenyl derivatives examined, 12 containing 1, 2 or 3 amino groups had more or less anesthetic action when applied to the rabbit cornea, the human tongue and the sciatic nerve of the frog. 2,2′-Diaminobiphenyl was by far the most active. Derivatives containing only halogen, nitro, alkyl, hydroxyl and carboxyl substituent groups had no local anesthetic action.—E. CHIERICI. *Ann. chim. farm.* (1938) 48–66; through *Chimie & Industrie* 41 (1939) 727. (A. P.-C.)

Caffeine and Cardiac Delivery. By registering cardiometrically the volumetric variations of the heart *in situ* upon the anesthetized and vagotomized dog, the author has studied the action upon the myocardiac contraction by caffeine, theobromine and theophylline. Administered intravenously in a dose of 0.25 ctgr. per Kg. of animal, these three substances produce a clear augmentation and durable cardiac delivery. This augmentation of cardiac delivery has a double origin: first an augmentation by peripheral vasodilation of the mass of venous blood returning to the right heart, that and especially a favorable action of these drugs upon the myocardia itself. The myocardiac action proper of these drugs consists in determining a more energetic cardiac systole. It does not seem that an equal dose will produce from the quantitative point of view any difference in the augmentatory action of these three drugs upon the cardiac delivery.—R. CHARLIER. *Arch. intern. pharmacodynamie*, 62 (1939), 370. (W. H. H.)

Cardiazol—Excretion of. In the dog the drug is excreted with the feces. No destruction in the body can be observed.—K. HINSBERG. *Arch. Exptl. Path. Pharmacol.*, 192 (1939), 90; through *Brit. Med. J.*, 4090 (1939), 1122E. (W. H. H.)

Central Heat Production and Checking of Same. The determining of heat production through the determination of the difference between the carotid blood temperature and the temperature of the gray substance in the brain, in the brain stem, gave, by the subcutaneous injection of phenylamine bases, phenylpropanolmethyl amine (Ephedrin) and β-phenylisopropylamine (Actedrin, Benzedrin) in a dose of 0.01 Gm. to cats, an increase in heat production in the brain portion of between 0.5 and 1° C. With a dose of 1 mg. of adrenaline there was a moderate rise of the central temperature, whereas Sympatol (*p*-oxyphenylmethylaminoethanol) and Veritol (*p*-oxyphenylisopropylmethylamine) were inactive. The increase in heat production can last for several hours and is accompanied by accelerated and panting respiration, extended tongue, increased reddening of the mucous membrane and a moderate viscid secretion of saliva, dilated pupils and considerable psychic disturbance. These poisoning symptoms can be aleviated by sodium evipan. Acetylcholine when administered subcutaneously in dosage of 10 mg. per cat produced a different type of poisoning of the central nervous system. There is produced a fall in temperature of over 1° C. which is held for over one hour without any pronounced decrease of respiration, increased salivary secretion and without perceptible disturbance of the general condition. The preliminary administration of ephetonin, actedrin or adrenaline, which causes a change in the warmth control of the brain, is not checked with acetylcholine but continues to give a rise in temperature in the gray matter of 1° C. during one-half to one hour; simultaneous with the rise in the poisonous state there is accelerated open-mouth respiration, increased salivation, enlarged pupils and psychic excitement. If a second dose of acetylcholine is injected it is successful. The application of atropine during the poisoning failed to increase or decrease the temperature. The possible explanation for the observed results are discussed.—S. FEITELBERG, E. P. PICK and A. VON WARSBERG. *Arch intern. pharmacodynamie*, 61 (1939), 447. (W. H. H.)

Chloral—Intravenous. Introduced as an intravenous anesthetic in 1869 for animals and man, chloral has been used in this way in veterinary practice with varying success for many years. The author claims excellent results in horses, after 1500 cases, with the use of a solution in the proportion of chloral hydrate 1 Gm., sodium citrate 0.5 Gm. and water 5 cc. For major surgery a dose of 11 Gm. of chloral per 100 Kg. body weight suffices. He

concludes that this method of using citrated chloral deserves a trial in man.—MARCENAC. *Anesthésie et analgésie*, 5 (1939), 42; through *Brit. Med. J.*, 4091 (1939), 1164E. (W. H. H.)

Cholinesterase. The findings are opposed to the hypothesis that myasthenia gravis is due to an excess of cholinesterase in the muscle. Marked lowering of the cholinesterase of the serum is found in some advanced phthisical patients and in some cases of advanced carcinoma.—JONES, S. MAXWELL and C. W. STADIE. *Quart. J. Exptl. Physiol.*, 29 (1939), 63; through *Brit. Med. J.*, 4089 (1939), 1070G. (W. H. H.)

Cobalt—Fate of, after Oral Administration. After oral administration to rabbits of metallic cobalt the resorption as well as the excretion by the kidneys takes place very slowly. In the course of 5 × 24 hours, however, as much as about 25% of the dose administered can be excreted by the Kidneys. After subcutaneous injection of the stable complex compound carbonatotetramine cobalt chloride about 60% of the amount of cobalt injected is excreted by the kidneys in the course of three hours, and about 70–80% in the course of twenty-four hours. The cobalt is presumably excreted in the form of unsplit complex compound. Carbonatotetramine cobalt chloride administered by mouth is reabsorbed very slowly.—M. SIMESEN. *Arch. intern. pharmacodynamie*, 62 (1939), 347. (W. H. H.)

Cobra Venom and Morphine—Behavior of Rats in a Maze in Relation to Analgesic Effect of. The greater the general depression of the rats, the greater is the analgesia. In the case of corba venom, however, analgesia or heightening of the pain threshold is obtained without any marked effect on general behavior of the animals.—MOSES B. MACHT. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 436. (A. E. M.)

Cobra Venom and Morphine—Effect of Repeated Injections of, on Behavior of Rats in a Maze. Repeated injections of morphine induced in rats, running in a circular maze, a tolerance or habituation so that although depressed by the narcotic at first, they showed no such effect later. Similar series of daily injections of corbra venom, given the same animal after a period of rest, produced no symptoms of habituation.—MOSES B. MACHT. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 433. (A. E. M.)

Cocaine and Procaine—Relation of, to the Sympathetic System. Experiments were performed on the denervated pupil, the auricle, the intestine, the uterus and the blood pressure of pithed cats. The authors conclude that both cocaine and procaine are sympathomimetic.—D. F. MACGREGOR. *J. Pharmacol.*, 66 (1939), 393. (H. B. H.)

Curare. Carefully assayed curare was given intravenously and intramuscularly in gradually increasing doses, based on body weight, to subjects with spasticity and dystonia musculorum. There was some relief of symptoms with doses insufficient to cause distressing side-effects.—M. S. BURMAN. *Arch. Neurol. Psychiat.*, 41 (1939), 307; through *Brit. Med. J.*, 4089 (1939), 1070D. (W. H. H.)

Cyanide—Effect of, on Cerebral Metabolism. The effects of intravenous and intracarotid cyanide injections on cerebral and muscle metabolism were studied; 37 observations were made on 11 dogs. A significant decrease in the cerebral oxygen consumption was observed, a decrease which varied directly with the concentration of cyanide used. The concentration of cyanide which depressed the metabolism of the brain failed to exert an effect on the arterial-venous difference of muscle blood.—J. F. FAZEKAS, HARRIET COLYER and H. E. HIMWICH. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 496. (A. E. M.)

Delesseria Sanguinea L.—Anticoagulent Principal from. In the spring and summer it is possible to isolate from the red algæ *Delesseria sanguinea* L. an anticoagulating principal which on intravenous injection in a dose of 15 mg. per Kg. makes the blood of a rabbit uncoagulable for about one hour. The principle is practically inactive when given intramuscularly or orally. The anticoagulation properties of the algæ principal can be restored *in vivo* by intravenous injections of 2 mg. thionine per Kg. animal.—H. ELSNER, A. LIEDMANN and K. OPPERS. *Naunyn-Schmiedeberg's Arch.*, 190 (1938), 510; through *Scientia Pharm.*, 9 (1938), 134. (M. F. W. D.)

Desoxycorticosterone Acetate—Effect of, upon Blood Sugar and Electrolytes of Adrenalectomized Rats. The injection of adequate amounts of desoxycorticosterone acetate into fasted adrenalectomized rats does prevent the drop in concentration of blood sugar found in untreated adrenalectomized animals. The amount required to maintain the blood sugar is greater than that necessary to maintain normal concentration of serum electrolytes and non-protein nitrogen.—HAROLD E. HARRISON and HELEN COPLAN HARRISON. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 506. (A. E. M.)

Desoxycorticosterone and Other Crystalline Derivatives and of Purified Extracts of the Adrenal Cortex—Comparative Activity of. Employing adrenalectomized immature rats the author found that synthetic desoxycorticosterone acetate manifests an activity of one rat unit per mg. when given by intraperitoneal injection. It is suggested that this substance be used as a standard reference for the assay of adrenal cortical extracts. It was found that this material is quite effective by mouth in these rats and that this method of administration is recommended for its therapeutic use. The author describes a method for the preparation of a crystalline steroid, the comparatively high potency of which suggests it to be the adrenal cortical hormone. Corticosterone was found to be comparatively inactive, as were a number of crystalline derivatives.—ARTHUR GROLLMAN. *J. Pharmacol.*, 67 (1939), 257. (H. B. H.)

Devil's Club Root (Fatsia Horrida)—Pharmacologic Study of. Much controversy has existed over the value of oral preparations for treatment of insulin. Report is made of some observations on the blood sugar metabolism of rabbits treated with aqueous extracts of Devil's Club Root. Experimental details are given; results are tabulated. The observations seem to indicate that oral administration of these aqueous extracts had no hypoglycemic effect upon the blood of rabbits that had been starved from 15 to 24 hours.—LEONARD J. PICCOLI MICHAEL E. SPINAPOLICE and MORRIS HECHT. *Jour. A. Ph. A.*, 29 (1940), 11. (Z. M. C.)

Diethylaminoethoxy-2-Diphenyl (1262 F.). In the course of research upon the pharmacologic activity of new phenolic ethers diethylaminoethoxy-2-diphenyl or 1262 F. has appeared remarkable for its particular action that it has upon the heart. A chemical constant, the results of antagonistic and pharmacodynamic experiments by 1262 F. upon fibrillation induced by physical or chemical agents have been successively considered. 1262 F. is hypotensive and slows the cardiac rhythm without modifying it very much, at least in the chloralosed dog as shown by electrocardiographic tracings. 1262 F. acts upon the heart by diminishing its susceptibility to the fibrillation provoked by electrical stimulation of the bare ventricle; this effect already clearly shown in the rabbit is again more characteristic upon the dog: the limits of the toxic voltage chosen for these experiments was 0.02 volts to 9.25 volts (mean

of eight experiments). 1262 F. prolonged considerably the duration of the systolic inexcitable period of the heart of the frog. It attenuates or suppresses the action of a series of poisons to the heart; it diminishes the formation of heterotropic rhythms by adrenaline, barium chloride, and aconitine nitrate; it diminishes the bradycardia of acetylcholine; finally it opposes the cardiac bloc produced in the guniea pig by adenosine-phosphoric acid of the muscle.—D. BOVET, E. FOURNEAU, J. TREFOUËL and H. STRICKLER. *Arch. intern. pharmacodyname*, 62 (1939), 234. (W. H. H.)

Diethylstilboestrol—Action of upon the Gential Organs of the Embryo of the Chicken. Diethylstilboestrol has a very powerful feminating action upon the embryo of the chicken. From a qualitative point of view, this action is analogous to that of the female hormone, abstractively of certain difference in the reaction of the canal of Muller.—E. WOLFF. *Acad. Sci.*, May 8, 1939; through *Presse med.*, 52 (1939), 1050. (W. H. H.)

Digitalis—Assay of. The experimental work followed the method described by McGuigan and McGuigan. Depth of anesthesia by pentobarbital is discussed and is a question needing more study. Effect on vasometer center needs investigation. The lag of digitalis action is discussed. The authors conclude that dogs are reliable animals for the standardization of digitalis. The dose of the International Powder in the form of a tincture prepared as directed by the U. S. P. XI and using only the supernatant liquid is 120 mg. (1.2 units) per Kg., or an average of 12 injections of 0.1 cc. per Kg. given intravenously. The U. S. P. Reference Powder is 20% stronger than labeled. Instead of 0.745 the factor should be 0.62.—PHILIP BLICKENSDORFER and H. A. MCGUIGAN. *Jour. A. Ph. A.*, 29 (1940), 101. (Z. M. C.)

Digitalis—Assay of. I. Criteria for Evaluating Various Methods Using Frogs. Minimizing variations inherent in the responses of living organisms is important in bioassays. Certain restrictions might be adopted. All investigators should test any modification they propose for U. S. P. XII on some standard material. Each modification should be tested at more than one dosage level. Then with comparative data on two modifications a method of computation is necessary and such a method is outlined in the present report. "By transformation of dosages to logarithms and of percentage effect to probits, the sigmoid dosage-response curves for the two materials or procedures involved in the test are fitted by parallel straight lines. Then the horizontal distance between them measures with a calculable precision the log-ratio of their potencies, $M \pm s_m$. Methods are described for increasing the precision of M by an efficient design of the individual assay, by utilizing past experience relative to the slope of the standard curve where applicable and by combining the results of replicated assays to obtain a more precise weighted mean log-ratio of potencies. On the above statistical basis, four criteria are proposed for evaluating an assay procedure: (*a*) a value of chi-square which indicates that the several groups of frogs used in the test were homogenous and comparable, (*b*) a consistent and relatively steep slope of the parallel dosage-effect curves, (*c*) a consistently low value of the standard error of the log-ratio of potencies, s_m, and (*d*) agreement of replicated determinations of M within the sampling error. These criteria have been applied in a comparison of the effects produced by injection of the same sample of digitalis in test dilutions containing 5 and 23% of alcohol. The apparent potencies of the U. S. P. XI Reference Digitalis Powder and of the International 1926 and 1936 Standard Digitalis Powders were not influenced by this fourfold change in the alcoholic content of the injected test dilutions, the same digitalis powder when injected with 5% alcohol exhibiting a potency 103.0 ± 2.54% of that exhibited when injected with 23% alcohol. The relative effectiveness of digitalis injected intramuscularly has been compared with that injected in the lymph sac. One hour after injection the effective absorption of U. S. P. XI Reference Digitalis Powder from the lymph sac was about one-half that from the thigh muscles and even over night the potency of digitalis was slightly but significantly greater (106.5 ± 2.3%) by the intramuscular route than *via* the lymph sac. The difference was less pronounced with the 1936 International Standard Powder. The overnight assays showed a smaller standard error than the one-hour tests because of a consistently steeper dosage-effect curve."—LLOYD C. MILLER, CHESTER I. BLISS and HERBERT A. BRAUN. *Jour. A. Ph. A.*, 28 (1939), 644. (Z. M. C.)

Digitalis—Cat and Dog Units of. Cats were used in the experimental work. Results are tabulated. They support the opinion that the U. S. P. Digitalis Reference Powder is 20% stronger than labeled. The factor should be 0.62 instead of 0.745. Using 0.62 results are in harmony with previous workers and the average found is almost "ideal" for a dose of 1.00 cc. per Kg. weight of cat. Almost any sequence of five cats gives accurate results within 10% of the average dose. Experiments recorded in this paper and that by Blickensdorfer and McGuigan show that by the use of both dogs and cats the U. S. P. Reference Powder is 20% stronger than it is labeled. When a tincture is prepared using 0.62 Gm. of the powder in 10 cc. of alcohol, the dose for dogs is 1.20 cc. per Kg. body weight and the dose for cats is 1.00 cc. per Kg. The results are in harmony with the Hatcher dose for the cat and agree closely with the results reported by other investigators using the frog method.—J. A. BONE, J. W. ELAM and PHILIP BLICKENSDORFER. *Jour. A. Ph. A.*, 29 (1940), 105. (Z. M. C.)

Digitalis Substances—Cumulative Action of. Histological studies on cats which have undergone protracted treatment with digitalis substances (digitoxin, oleandrin) show that a cumulative action is associated with well-defined changes in the heart muscle fibers. With small doses there is a slightly perceptible fatty degeneration; with high doses a severe necrosis of the myocardium. All intermediary stages may be seen.—W. LINDNER. *Arch. exptl. Path. Pharmakol.*, 192 (1939), 155; through *Brit. Med. J.*, 4097 (1939), 154D. (W. H. H.)

Diodrast. Cerebral Arteriography in the Dog and in Man with a Rapidly Excreted Organic Iodide. Diodrast, 3,4-diiodo-4-pyridon-N-acetic acid diethanolamine, injected as a 70% solution into the common carotid artery gives excellent visualization of the arteries.—SIDNEY W. GROSS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 258. (A. E. M.)

Endocrine Compounds. The Pituitary Gland. The preparation and actions of the following principles of this gland are reviewed: thyrotropic, adrentropic, diabetogenic, ketogenic, blood sugar-raising and parathyrotropic.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 45 (1939), 426–428. (H. M. B.)

Ephedrine Agents Active in Combating Anoxemia. The duration of the resistance of a dog under chloralose anesthesia to acute anoxemia (2.41% oxygen in the atmosphere) can be trebled by an intravenous injection of 0.45 to 0.50 mg. of ephedrine, norephedrin or pseudonorephedrine. The effect is explained by a central and peripheral action of the agent.—L. BINET and M. STRUMA. *Compt. rend. acad. sci.*, 207 (1938), 543–545; through *Chimie & Industrie*, 41 (1939), 727. (A. P.-C.)

Epinephrine Substitutes—Smooth Muscle Actions of. VII. Responses of Denervated Smooth Muscles of Iris and Intestine to Epinephrine, Ephedrine, Amphetamine (Benzedrine) and Cocaine. Experiments using ephedrine, cocaine and amphetamine (benzedrine) were performed on the denervated pupil of rabbits and cats and segments of intestines of rabbits, cats and monkeys. Species differences were noted and their importance to pharmacological studies indicated. The evidence of these experiments is definitely against these drugs producing sympathicotropic effects, but on the other hand, gives little support to the musculotropic action.—M. E. DRAKE, R. JOHN F. RENSHAW, FRED S. MODERN and C. H. THIENES. *J. Pharmacol.*, 66 (1939), 251. (H. B. H.)

Ethanolamines and Their Salts—Experimental Research upon the Diuretic Action of. The authors have stated during the course of experiments upon the visceral distribution of sulfamides that diethanolamine acetate, which had been used as a solvent for these products, was capable of greatly increasing the volume of urine, when injected rapidly or slowly into the veins of the animal. Diethanolamine benzoate has been found to be less marked in its diuretic action. On the contrary, pure diethanolamine is equally as efficacious as the acetate. The mono- and triethanolamine acetate are without effect upon urinary secretion. All of these products are devoid of toxicity upon the dog.—E. CHABROL, J. COTTET and J. SALLET. *Soc. de Biol.*, (June 3, 1939); through *Presse méd.*, 46 (1939), 925. (W. H. H.)

Ether U. S. P.—Stability of, after the Container Is Opened and the Use of Bulk Ether in Surgical Anesthesia. In 1934 a study was published by Gold and Gold showing that U. S. P. ether as supplied in large containers (27- and 55-pound drums), and free of aldehydes and peroxides by the U. S. P. tests, does not deteriorate rapidly when the containers are opened repeatedly and stoppered with cork. This was contrary to the prevailing view (see U. S. P.). About a year later a study of 702 anesthesias by Hediger and Gold showed that anesthetists cannot distinguish between anesthesia induced by such ether from that by ether "for anesthesia" taken from $^1/_4$-pound tins. However, in 1937 a report was made by Aurelius, Herlong and Nitardy, which reaffirmed the view that ether is unstable in cork-stoppered cans. We have now studied this matter further, making quantitive estimations of aldehydes, peroxides and acids in ether (obtained in 27-pound drums and $^1/_2$-pound tins) stored in cork-stoppered tins in which anesthetic ether is supplied over periods of several weeks during which samples were removed frequently. Various conditions affecting deterioration were studied: temperature, sunlight, colored glass, air. A reëxamination of the question was also made in nearly 2000 additional surgical anesthesias in the hospital. Both studies confirm our previous conclusions regarding the deterioration of ether after the container is opened, and regarding the fact that anesthetists cannot distinguish bulk ether in tins which had been opened several weeks from ether in small sealed containers in surgical anesthesias. That bulk ether is entirely satisfactory for anesthesia is confirmed by the clinical studies of Dooley (1935) and Morrison (1938).—MAYNARD B. CHENOWETH, ELLA M. HEDIGER and HARRY GOLD. *J. Pharmacol.*, 66 (1939), 1. (H. B. H.)

Extract of Rauwolfia Heterophylla—Direct and Indirect Intestinal Effects of. The aqueous extract injected in dogs was obtained by 3 hours decoction following 21 hours maceration of 100 Gm. of the powdered root with 800 cc. of water, filtering and adding 8 mg. of sodium chloride per cc. In a dose of 1 cc. per Kg. the extract produces on one hand a strong but rather slight lasting hypotension, on the other hand a fall of the tonus and an arrest of peristalsis. It produces an apparent inversion of the essential intestinal effect of adrenaline.—RAYMOND-HAMET. *Compt. rend.*, 209 (1939), 599. (G. W. H.)

Gelsemium Elegans—Toxic and Cardiovascular Effects of. The authors have observed that *Gelsemium elegans* produces more intense hypotensive and renal vasoconstrictor effects than *Gelsemium sempervirens*, however the toxicity of these two drugs is very closely related as shown upon the guinea pig and frog.—CAHEN and MOISSET DE ESPANES. *Soc. de Biol.*, (June 17, 1939); through *Presse méd.*, 57 (1939), 1130. (W. H. H.)

Glutathione and Sulfhydril Compounds—Action of, upon Cobra Venom In Vitro. The authors have studied in detail the neutralizing action of glutathione and various sulfhydril compounds upon cobra venum. They found that these compounds acted as reducers in modifying the chemical composition of the venom.—L. BINET, G. WELLER and E. ROBILLARD. *Soc. de Biol.*, (July 1, 1939); through *Presse méd.*, 60 (1939), 1178. (W. H. H.)

Heparin—Constitution and Properties of. Heparin, which was first found to exist in the liver, later was also isolated from other organs, *e. g.*, the lungs. The chemically identified components of heparin suggested a resemblance to chrondiotine sulfuric acid, though this acid lacks anticoagulant power. Later it was found that the aminosugar of heparin was glucosamine, and it is now thought that it is a mucoitinic sulfuric acid. Further work showed that the heparin polysaccharide is built up from glucoronic acid, glucosamine, and acetic and sulfuric acids. The properties of heparin are in agreement with what is known of its chemical nature. Its potency is unaffected by ordinary enzymes and by oxidizing or reducing agents. It is resistant to heat and may be sterilized in an autoclave. Solutions are not susceptible to contamination by bacteria. One mg. of the pure substance is sufficient to prevent coagulation of about 500 cc. of cat's blood for twenty-four hours at 0° C. Chemically pure heparin injected intravenously into animals and man causes no ill effects. The action is rapid; five minutes after intravenous injection, blood can be taken from the donor without any danger of clotting during the transfusion. However, heparin soon passes from the blood and is stored in the tissue before excretion in the urine, so that heparinization of the donor does not last for long. The dose required for dogs, rabbits, cats and human beings per Kg. body weight is the same; about 1 mg. per Kg. body weight injected intravenously raises the coagulation time to 30 to 45 minutes. One investigator found that heparin prevented the formation of thrombi, and experiments are at present being undertaken to test its possible value in the prevention of this uncommon, but serious, complication of surgical operations. The purification of heparin involves constant standardization of the various fractions by testing their anticoagulant power.—ANON. *Pharm. J.*, 142 (1939), 642. (W. B. B.)

Hexoestrol—Biological Effects of the Synthetic Oestrogen. The synthetic oestrogenic substance 4 : 4′-dihydroxy-γ : δ-diphenyl-*n*-hexane has been found to sensitize the uterus of the ovariectomized rabbit to the action of progesterone and to stimulate the nipples and mammary glands. Implantation in the rat was prevented by the oral administration of the oestrogen. Reduction of body growth and atrophy of the gonads followed its prolonged use in rats. The uterus of the immature rat was increased in weight by stilboestrol and hexoestrol, the changes produced indicating that the activities of the two substances were approximately equal. When

assayed by injection into ovariectomized rats, hexoestrol was found to be more active than stilboestrol, and both were two to three times more active than oestrone. Stillboestrol and hexoestrol showed approximately the same degree of activity when given by mouth and when applied intravaginally.—N. R. CAMPBELL, E. C. DODDS, W. LAWSON and R. L. NOBLE. *Lancet*, 237 (1939), 312. (W. H. H.)

Hydroxyhordenine—Nicotinic Action of. Hydroxyhordenine or N-dimethyl-β-(3,4-dihydroxyphenyl)-ethylamine, which because of its catechol nucleus might be expected to have a sympathicomimetic action like adrenaline, has been shown by numerous pharmacological tests to retain the characteristic action of hordenine. Thus the introduction of a second phenolic hydroxyl group does not suppress the function of the tertiary amine.—RAYMOND-HAMET. *Compt. rend.*, 209 (1939), 67. (G. W. H.)

Hypophysis and Melanophore Expansion. Subcutaneous injection of appropriate doses of barbiturate (dial, luminal, numal and veronal), corynanthene or gravitol produces an intense and prolonged darkening of the skin and reticulate expansion of the melanophores in normal pale frogs but not in hypophysectomized frogs. Pallor response can be provoked in animals rendered fully dark by any of these drugs by subsequent hypophysectomy or decapitation caudal to the hypophysis. Various experiments have been devised to ellucidate the actual mechanism involved in this melanophore-expanding action of the drugs. These experiments have shown that the melanophore-expanding action of these drugs is not due to the associated motor paralysis, to vasomotor changes or to any potentializing action of the drugs upon the melanophore hormone itself. They have shown that the expansion of the melanophores after drug administration is the result of a central humoral effect producing an augmentation of the melanophore hormone secretion from the neuro-intermediate lobe of the hypophysis. Direct application of minute amounts of the examined drugs to the exposed hypophysis region of normal pale frogs produces maximum melanophore expansion. Direct application of local anesthetics to the exposed hypophysis region of normal frogs (pale) also produces a maximum expansion of the melanophores. Subsequent hypophysectomy produces pallor. Hypersecretion of the hypophyseal melanophore hormone previously induced by the examined drugs persists after blocking the nerve impulses to the hypophysis by the use of local anesthetics or by extirpation of the whole infundibulum. The drug therefore seems to act through a direct glandular stimulation, or through a suppression or decrease of a preëxisting inhibitory tone influencing melanophore hormone secretion of the hypophysis through its innervations. Melanophore-expanding substances have been classified into two groups. One group, the non-pituito-tropic substances, expand the melanophores by acting directly upon the skin in a manner that may be termed the "primary reaction" of melanophore expansion. The other group, the pituito-tropic substances, expand the melanophores indirectly through an augmentation of the melanophore hormone secretion of the hypophysis, the "secondary reaction" of melanophore expansion.—T. C. R. SHEN. *Arch. intern. pharmacodynamie*, 62 (1939), 295. (W. H. H.)

Isolated Heart—Normal or Pathologic, Irradiation of, by Short Waves. The isolated heart of the rabbit, either normal or intoxicated by histamine, strophanthin or phosphorus, produces an augmentation of contractions under the influence of irradiation by short waves.—J. BLOMMERS. *Arch. intern. pharmacodynamie*, 62 (1939), 231. (W. H. H.)

Magnesium Sulfate—Anoxemia and Absorption of. In a series of barbitalized dogs which were subjected to various degrees of anoxemia ranging from 15.32 to 8.35% oxygen the velocity of absorption of magnesium sulfate remained unchanged. The control animals absorbed 13.7% of magnesium sulfate and those subjected to anoxemia 13.5%; the range was from 3 to 37.8%. The impermeability of the gut to this salt is thus seen to be only relative, a fact not generally appreciated. These experiments present no evidence that anoxemia increases the permeability of the intestinal epithelium. Since magnesium sulfate is a very depressing drug to the respiratory center and since it is so widely used in disease associated with anoxic states it is of distinct importance to clinical medicine in that the velocity of absorption of magnesium sulfate presumably is appreciably unaltered by anoxemia.—D. W. NORTHUP and E. J. VAN LIERE. *Arch. intern. pharmacodynamie*, 62 (1939), 178. (W. H. H.)

Malva Sylvestris L.—Chemical and Pharmacological Studies on. A 20% decoction of fresh leaves showed the following values: surface tension (Traube) 64.3 at 25° C.; viscosity (Ostwald) (compared with water) 1.28 at 25° C.; reaction, slightly acid; mucilaginous matter 1.06%; reducing sugars, negligible; glucosides, negative; alkaloids, negative; vitamins A, B, B_1 and C, present in sufficient amounts to prevent avitaminosis. The decoction exerted a slight hyperglucemic effect lasting about 2 hours. No variations in calcemia were observed. The formation of scar-tissue was retarded by local application of the decoction.—L. CALLEGARI and G. MONTOLIVO. *Boll. soc. ital. biol. sper.*, 13 (1938), 201–203; through *Chimie & Industrie*, 41 (1939), 522. (A. P.-C.)

Metabolic Rate in Experimental Hyperthyroidism—Effects of Various Agents on the. Studies were made on guinea pigs, experimental hyperthyroidism being produced by the administration of thyrotropic hormone. Of the following substances only sodium iodide was found to be of value: sodium fluoride, vitamins A, B, C, D, and G, sodium iodide, estrogenic hormones, ergotamine tartrate, quinine hydrochloride and sodium thiocyanate.—W. C. CUTTING and G. B. ROBSON. *J. Pharmacol.*, 66 (1939), 389. (H. B. H.)

Nerium Oleander in Cardiac Insufficiency. The active principles of *Nerium oleander* have partly a digitalis-like and partly a strophanthin-like effect. They are less toxic than digitalis and their effect is more rapid. The preparation used is said to be absorbed so rapidly when given by mouth or *per rectum* that hypodermic injections are unnecessary.—L. BINDER. *Klin. Wochschr.*, 18 (1939), 573; through *Brit. Med. J.*, 4094 (1939), 1316A. (W. H. H.)

Nicotinic Poisons and Intrapleural Pressure. The authors showed that nicotine poisons produced an important diminution of intrapleural pressure, where the intensity and duration varied according to the dose and type of poison employed (nicotine, lobeline, phenoxy-1-dimethylamine-2-ethane or J. L. 407, hordenine, sparteine, potassium chloride). Three factors regulate this phenomena: augmentation of thoracic amplification, parasympathomimetic, than sympathomimetic action. The mechanisms put in play are complex and intervene in the process of circulatory, local vascular and intrinsic muscular (bronchial and interalveolar) orders.—J. TROISIER, M. BARIETY and D. KOHLER. *Soc. de Biol.*, (July 1, 1939); through *Presse méd.*, 60 (1939), 1178. (W. H. H.)

Northern Mistletoe—Two Therapeutically Active Constituents of. Extracts of mistletoe prepared with 50% alcohol, acetic acid or water at a temperature below 40° are active on the heart and in reduc-

ing blood pressure. When an extract is shaken with activated charcoal, the blood-pressure reducing principle is adsorbed while the cardiac principle passes through in the filtrate. The blood-pressure principle is most easily elutriated from the charcoal by 2% acetic acid. The two principles were both precipitated when a glacial acetic acid extract was poured in a thin stream into acetone. An alcoholic cholesterol solution precipitated the blood-pressure principle as a molecular compound, the cardiac principle remaining in the filtrate. Treatment with xylene and ether broke up the cholesterol compound, and the blood-pressure principle was then further purified by precipitation from water solution with acetone. The blood-pressure principle was eventually obtained in yellow flakes, rapidly darkening in color in air, which in doses of 0.5 mg. produced an abrupt fall in blood pressure. Heating with 2% HCl, hydrolyzed the principle, liberating a nitrogenous aglucone. The cardiac principle was obtained from the alcoholic cholesterol filtrate by solution in acetic acid and precipitation with acetone. It was obtained as yellow-white flakes, darkening on exposure to air. It acts only on the heart and is fatal to rabbits in doses of 0.004 Gm./Kg. It is water soluble, acid in reaction and reduces Fehling's solution after hydrolysis. The hydrolysate yielded galactose and glucuronic acid and an acid of the formula $C_{15}H_{22}O_8$. There was also found a fourth compound among the hydrolysis products. The product is soluble in water and alcohol and can be acetylated. The acetylated ester melts at 54°. The molecular formula determined for this compound is $C_{24}H_{33}NO_{11}$. The nitrogen is shown to be in a ring. The structure has not yet been worked out.—K. WINTERFELD. *Scientia Pharm.*, 9 (1938), 105. (M. F. W. D.)

Oxyhydrilotherapy—Assay of. The author believes that it is possible, particularly in the case of diabetics, to watch not only the progress of the more or less latent alkalinization, but also the economic distribution of the oxyhydrils and a modification of this distribution by the Vichy cure, by studying the two processes of phthaline saturation and ureogenesis whose signification is different. He deduces very interesting considerations for the posology of the alkaline water.—L. LESCOEUR. *Soc. D'Hydro. et de Climat. Med. de Paris*, (March 20, 1939); through *Presse méd.*, 43 (1939), 866. (W. H. H.)

Parasympatol—Action of, on Fibrillation of the Heart. Sympatol is able to raise the resistance against electrical stimuli causing extra systolia, tachycardia and fibrillation; and the after fibrillation disappeared in all cases. Sympatol shortens the refractory period and conduction time; and it neutralizes or prevents heterotropic rhythms caused by adrenaline or barium chloride. The meaning of these facts is discussed, in connection with the author's view about fibrillation.—K. VAN DONGEN. *Arch. intern. pharmacodynamie*, 62 (1939), 261. (W. H. H.)

Pharmacodynamic Substances and Venous Pressure. The venous action of a number of pharmaceutical substances has been studied, by recording the arterial and venous pressure of the rabbit and cat. Four types of reaction are possible: rise in arterial, rise in venous; rise in arterial, fall in venous; fall in arterial, rise in venous; fall in arterial and fall in venous. The reaction of the first type is produced by: adrenaline, hypertonic solution of glucose. The reaction of the second type by: pituglandol, pituitrin, 2020 Ciba and in part by coramine. The reaction of the third type by acetylcholine and yohimbine. The reaction of the fourth type by amyl nitrite. Histamine produces in the rabbit the reaction of the fourth type, while in the cat that of type three. There is also given a table of the results of twenty other pharmaceutical substances.—A. FLEISCH and W. KÜCHLER. *Arch. intern. pharmacodynamie*, 62 (1939), 357. (W. H. H.)

Picrotoxin and Metrazol—Depressant Action of. Experiments were done on rats and rabbits. It was found that after the initial stimulatory action of picrotoxin and metrazol there ensued various types of depression, the latter being significant when these substances are used as analeptics. With picrotoxin there is a critical dose level below which there is a shortening of the recovery time of the "cortical placement reaction," but above this level there is a prolongation of the recovery of these reactions when the compound is used as an antagonism to sodium pentobarbital. In all doses of picrotoxin there is a decrease in the recovery time of the righting reflex. Similar relationships hold true for metrazol. These actions should be kept in mind when these substances are used in the treatment of barbiturate poisoning.—JAMES M. DILLE and LLOYD M. HAZLETON. *J. Pharmacol.*, 67 (1939), 276. (H. B. H.)

Picrotoxin, Metrazol and Coramine—Comparative Study of the Stimulant Analeptics. Rabbits were given nembutal intraperitoneally. Of the three analeptics picrotoxin was the most effective in the severer grades of depression.—H. W. WERNER and A. L. TATUM. *J. Pharmacol.*, 66 (1939), 260. (H. B. H.)

Pinguicula Vulgaris L. The introduction of 1 cc. of fresh juice of *Pinguicula vulgaris* into 200 cc. of Ringer solution diminishes the muscular tonus of isolated intestine with reduction of the spontaneous contractility of the organ. Further addition of an equal amount gives further reduction. This principle with a paralyzing action may account for the immobility of insects in contact with the leaves of *Pinguicula vulgaris*, an insectivorous plant whose secretion has proteolytic activity.—C. MASINO. *Boll. chim.-farm.*, 77 (1938), 217–218; through *Chimie & Industrie*, 41 (1939), 519. (A. P.-C.)

Pituitary—Specific Metabolic Principle of, and Its Relation to Melanophore Hormone. A specific metabolic stimultant is present in pituitary extracts. It increases the oxygen consumption of rabbits and depresses the respiratory quotient, carbon dioxide production being increased, especially in starved animals, and body temperature rises. Some evidence of decreased nitrogen metabolism is obtained. This active principle probably stimulates fat metabolism and depresses carbohydrate oxidation or increases gluconeogenesis. The active principle is thermolabile, resistant to alkali and to pepsin, destroyed by trypsin and adsorbed by charcoal. In these respects and in its distribution throughout the pituitary and its occurrence in extracts of various types this metabolic principle exactly resembles the melanophore-expanding hormone. Distinctions between this metabolic principle and the thyrotropic, adrenotropic and growth hormones of the anterior lobe and the pressor and oxytocic substances of the posterior lobe are discussed. Active extracts have been prepared from ox, sheep and pig pituitaries, the active principle being present in both anterior and posterior lobes but in highest concentrations in pituitary colloid and in extracts of the pars intermedia.—D. K. O'DONOVAN and J. B. COLLIP. *Endocrinology*, 23 (1938), 718; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 289. (S. W. G.)

Posterior Pituitary—Action of Extracts of, upon Excitability and Chronaxie of Muscles. The authors state that when extracts of posterior pituitary are injected intramuscularly it augments the rheobase and chronaxie of muscles. The maximum of this action takes place fifteen minutes after the injection; in about one hour or later the total effect disappears. The chronaxies are slightly enlarged. The rheo-

bases are modified more precociously and longer, their enlargement is considerably more.—P. LEGOFF and A. PERGOLA. *Soc. Fran. D'Electro. et Radio.*, March 28, 1939; through *Presse méd.*, 43 (1939), 866. (W. H. H.)

Pregnanediol Excretion in Menstrual Cycle. The excretion of pregnanediol was correlated with endometrial biopsies in five women during the menstrual cycle. No pregnanediol was excreted during the proliferative phase—that is, the early part of the cycle. Pregnanediol excretion was found in all cases having a secretory endometrium. On the basis of Venning and Browne's findings estimates were made as to the normality of ovarian function.—A. M. HAIN and E. M. ROBERTSON. *Brit. Med. J.*, 4093 (1939), 1226. (W. H. H.)

Quinine—Antagonism of, to Prostigmin. Quinine, injected intravenously, is antagonistic to prostigmin and synergistic with curarine in its effects on normal skeletal muscle. Quinine produces its effects on muscle both by raising the threshold of the motor end-plates and by direct action on the muscle fibers. It is not possible to decide which of these two actions of quinine is the more important in the relief of the rigidity of myotonia congentia until more is known of the cause of the disease. It is suggested that in myotonia congentia there is hyperexcitability to normal amounts of acetylcholine.—G. BRISCOE. *Lancet*, 236 (1939), 1151. (W. H. H.)

Quinine—Effects of, on Normal and Denervated Skeletal Muscle and on the Acetylcholine and Physostigmine Actions on Skeletal Muscle. Experiments were done on dogs anesthetized with nembutal. The authors conclude that quinine produces potentiation of muscle twitches, although response to tetanic stimulation is inhibited. In explaining the action of quinine in myotonia it is theorized that quinine may have a double action, one blocking the action of acetylcholine, the other influencing the magnitude of the muscular contraction.—Y. T. OESTER and C. A. MAASKE. *J. Pharmacol.*, 66 (1939), 133. (H. B. H.)

Rauwolfia Heterophylla—Curious Physiological Property of. It has been shown (*Compt. Rend. Soc. Biol.*, 129, 462) that *Rauwolfia heterophylla*, the antimalarial drug of Guatemala, is endowed with a major sympathicolytic action. Since then, it has been discovered that on injecting a dog with 1 cc. per Kg. of an aqueous extract, 8 cc. representing 1 Gm. of drug, at the same time the inversion of the hypertensive effects of moderate doses takes place, there is obtained a more or less strong augmentation of the hypertension caused by the occlusion of the carotids.—RAYMOND-HAMET. *Compt. rend.*, 209 (1939), 384. (G. W. H.)

Santonin Derivative with a Direct Helminthic Action. The experiments show that, in the system, santonin is converted, at least in part, into a quinol derivative, and it would seem that it is this transformation that governs the anthelmintic action of santonin. In its original form, santonin exerts its anthelmintic action on ascarides very slowly. If the santonin is replaced by one of its derivatives having a quinol structure, such as hyposantonylquinol, the helminthic action is much more rapid.—Y. ASAHINA and T. MOMOSE. *Proc. Imp. Acad.*, 14 (1938), 112–114; through *Chimie & Industrie*, 41 (1939), 951. (A. P.-C.)

Saponin—Action of, upon Gastric Mucosa. The normal orthotonic stomachs of young subjects have been subjected to radiologic examination in view of permitting a study of the mucosa under the local action of saponin. It has been observed that there is an increase in the size of the folds and other characteristic modifications of augmentation of the hyperemic and watery state of the mucosa. Further, it has increased the exaggerated production of mucus and a moderate increase of the liquid secretions of the stomach. These local effects of the saponin upon the stomach are transient and may be compared to the irritation of the nasal and pharyngeal mucosa, as an expression of exaggerated functioning. In comparison to the increased turgor of the gastric mucosa and to the hypermucorrhea due to the local action of gentian, one may state that, with the exception of the secretion of the stomach liquids which are a little more clear in the latter case, the effects do not differ in the degree of modifications obtained and by the duration. With saponin the effect upon the turgor is more important, more rapid and more durable. The effect upon the hypermucorrhea is, on the contrary, less important and less durable than with gentian. The effects are moreover comparable to the digestive hyperemia of the stomach accompanied with the exaggerated production of mucus and liquid secretion that one observes after the ingestion of proteic compounds. The local action of saponin upon the state of turgency of the mucosa and upon the behavior of the secretory functions and that exercised upon the permeability of the gastric mucosa of the frog are compared with the results of the experiments that Jacobi has carried out upon the skin of the frog. The analogy of the observed reactions upon the skin and the stomach seem to indicate the existence of a certain relation between the power of absorption and the state of turgor of the gastric mucosa.—I. IVANCEVIC and S. KADRNKA. *Arch. intern. pharmacodynamie*, 62 (1939), 202. (W. H. H.)

Snake Venoms. VII. As the inactivation of a component (10 to 25%) of the ultrafiltered and dialyzed neurotoxin of *Naja tripudians* by cysteine is irreversible, the reduction of the active groups cannot be an equilibrium reaction as suggested by Slotta and Fraenkel-Conrat for their *Crotalus* venom; the reduced component probably undergoes a further transformation which protects it from the reverse oxidation. The following additional experiments confirm the stability of neurotoxin toward cysteine and the nonexistence of an equilibrium. With cysteine in the complete absence of oxygen the activity decreased about 15%. On treatment with oxygen until all the SH groups were oxidized the activity remained unchanged. The precipitated cysteine was centrifuged off, the oxygen completely removed with nitrogen and the solution again treated with cysteine; the activity did not change. That the inactivation of the component referred to above is not reversible was shown by reducing the activity of the venon with cysteine to 85% of its original value and adding a large excess of S-S glutathione; no reactivation resulted.—F. MICHEEL and H. SCHMITZ. *Ber.*, 71 (1938), 1446–1448; through *Chimie & Industrie*, 41 (1939), 953. (A. P.-C.)

Stilbestrol and Ethinyl Estradiol—Uterine Effects from Single Treatments of, in Monkeys. After single oral or intramuscular doses of stilbestrol varying from 1 to 200 mg., uterine bleeding occurred within 11 to 28 days. The time between medication and bleeding is the same after oral and intramuscular treatment. Small doses are as effective as large ones. After oral treatment with 0.5 mg. ethinyl estradiol, uterine bleeding occurred on the 18th to 20th day. No toxic or other untoward effects were observed, not even in heavy doses.—EARL T. ENGLE and ROGER C. CRAFTS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 293. (A. E. M.)

***g*-Strophanthin—Resorption of.** In experiments on cats it was shown that the minimal lethal dose of the drug given orally was about twenty times higher than after parenteral application. The drug was destroyed in the small intestine, more rapidly

in the duodenum and jejunum than in the ileum.—F. SVEC. *Arch. exptl. Path. Pharmakol.*, 192 (1939), 18; through *Brit. Med. J.*, 4090 (1939), 1122E. (W. H. H.)

Sulfamide Products—Research upon the Visceral Distribution of. The authors have studied upon the dog the effects of slow injection of 1162F and 693 previously dissolved in diethanolamine acetate, and have recorded the following facts. For the same animal the distribution of sulfamide products is sensibly the same in the muscles, liver, kidney, spleen and the prostate. The content in the blood is comparable to that of the viscera. The figures vary from one animal according to the importance of the dose injected and also according to the time which it takes to disperse the same from the time of injection to the retention by the organs. The kidneys can excrete a very marked concentration with respect to sulfamides since one can reveal in the urine, toxic doses of 50 times greater than that contained in the blood. Further the diethanolamine acetate used as a solvent produced a very remarkable diuresis which does so without facilitating the elimination of sulfamide products. The biliary secretion is sensibly maintained constant during the course of these experiments.—E. CHABROL, J. COTTET and J. SALLET. *Soc. de Biol.*, (June 3, 1939); through *Presse méd.*, 46 (1939), 925. (W. H. H.)

Sulfanilamide and Prontosil Soluble—Lack of Carcinogenic Potency of, in Mice. Repeated subcutaneous injection of sulfanilamide and of Prontosil Soluble in mice over a period of one year failed to produce tumors in these animals.—PAUL C. ZAMECNIK and SIMON KOLETSKY. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 391. (A. E. M.)

Sulfanilamide Group—Pharmacology of. The drugs in general use for chemotherapy of bacterial infections are sulfanilamide and certain of its derivatives—notably M. & B. 693. These derivatives can be divided into those in which substituents are introduced into the amino group and those in which they are introduced into the amide group. The action of these drugs is discussed from the aspects of absorption and excretion and of toxic symptoms. —G. A. H. BUTTLE. *Brit. Med. J.*, 4100 (1939), 269. (W. H. H.)

Sulfanilamide—Studies on the Excretion of, by the Digestive Glands. Experiments on dogs indicate that orally administered sulfanilamide is excreted in the bile, pancreatic juices, gastric juices, succus entericus and saliva in appreciable quantities. Bacteriostatic levels may be obtained in the hepatic bile. Sulfanilamide was found to be not definitely toxic to the liver in doses of from 0.66 to 1.3 Gm. orally per day for 3 days in dogs ranging from 7 to 12 Kg. The concentration of sulfanilamide in pancreatic juice roughly parallels the concentration in blood. The highest concentration in sulfanilamide so far as the secretions studied is concerned was found in the gastric juice. The concentration may attain 50 mg. per 100 cc. gastric juice 4 to 6 hours after oral administration of 2 Gm. of the drug.—H. M. CARRYER and A. C. IVY. *J. Pharmacol.*, 66 (1939), 302. (H. B. H.)

Sulfapyridine Potentiation of Narcotic and Toxic Effects of Papaverine in Rats and Rabbits. Sulfapyridine potentiates the anesthetic action of papaverine. This is not dependent upon an increased concentration of sulfapyridine in the blood.—SUSI GLAUBACH. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 325. (A. E. M.)

Syntropan—Action of, on the Gastrointestinal Tract. "Syntropan in small amounts effectively antagonizes stimulation by drugs of the parasympathetic mechanism of excised intestine without muscular depression. Larger amounts of syntropan produce some direct muscular depression of excised intestine. Syntropan depresses the activity of the duodenum in the unanesthetized dog with less effect upon heart rate, pupil size and salivation than atropine. About 100 times more syntropan than atropine is required to produce the same degree of depression of intestine. In the unanesthetized dog, syntropan antagonizes the stimulating effect of mecholyl, morphine and pitressin. The antagonism of morphine and pitressin by syntropan is much greater than for an equivalent dose of atropine and suggests that antagonism of smooth muscle stimulants may be obtained by syntropan in the intact animal. Syntropan produces relaxation of the tone of the stomach and inhibition of peristaltic activity. The effect of syntropan on gastric secretion excited by a meat extract meal and histamine is weak as compared with atropine."—B. B. CLARK, E. B. S. SHIRES, JR., E. H. CAMPBELL and C. S. WELCH. *J. Pharmacol.*, 66 (1939), 464. (H. B. H.)

Thiobarbiturates—Effect of, on Spleen and Kidney. Sodium thiopentobarbital, pentothal sodium and sodium thioethanyl when injected intravenously into intact and spinal dogs may produce rises in blood pressure and decreases in the volumes of the spleen and kidney. Evipal produces a fall in blood pressure and a dilation of the same organs. The action of thiobarbiturates is partly peripheral, as far as the vascular system is concerned.—V. G. HAURY, CH. M. GRUBER, JR., and CH. M. GRUBER. *Arch. intern. pharmacodynamie*, 62 (1939), 342. (W. H. H.)

Tincture of Iodine—Action of, When Injected into the Pericardial Sac. Tincture of iodine, injected into the pericardial sac, is rapidly absorbed as indicated by the appearance of iodine in the urine. It effects a gradual rise in blood pressure with an increase in pulse pressure. There is also a temporary decrease in intestinal activity, which occurs after section of the vagi, and is also obtained by intravenous injection of iodine. The M. L. D. of tincture of iodine injected intravenously, when given at a rate of 0.1 cc. of tincture per Kg. body weight every 5 minutes, is 1 cc. per Kg. Ten cc. (1 dose) and 16 cc. given in divided doses in the pericardial sac were not lethal.—J. A. BONE and J. W. ELAM. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 563. (A. E. M.)

Tutin—Pharmacological Action of, and Its Antagonism with Sodium Amytal. Several species of the genus *Coriaria* are poisonous to livestock and men. A previous report had to do with coriamyrtin from *C. myrtifolia*. Tutin is from *C. thymofolia* and other species indigenous to New Zealand. Experimental details are given. A table shows toxicity of tutin in comparison with coriamyrtin, picrotoxin, metrazol and thujone. Another table shows detoxification of tutin by "Sodium Amytal" in comparison with other convulsants in rabbits. Conclusions are as follows: (1) Tutin, $C_{20}H_{23}O_8$, a glycoside of *Coriaria thymofolia*, has a convulsant action similar to that of coriamyrtin and picrotoxin. It is slower in the onset of action but longer in duration. (2) Comparisons have been made with coriamyrtin, picrotoxin, metrazol and thujone, in mice and rabbits, by the determination of convulsive and lethal doses, injected subcutaneously and intravenously. (3) In rabbits "Sodium Amytal" can detoxify 55 minimal lethal doses of coriamyrtin, 40 minimal lethal doses of picrotoxin, but only 7.5 minimal lethal doses of metrazol and 5 minimal lethal doses of thujone. (4) Conversely, tutin given by vein can detoxify in rabbits a little more than 2 minimal lethal doses of "Sodium Amytal" injected subcutaneously.—EDWARD E. SWANSON. *Jour. A. Ph. A.*, 29 (1940), 2. (Z. M. C.)

"Vasodepressor Substance" in Blood. Extracts of rabbit's blood were obtained by the Barsoum-

Gaddum method or by a simple trichloracetic acid extraction. These extracts augment the movement of guinea pig intestines and decrease the blood pressure in the urethanized and atropinized cat. These effects are not influenced by bleeding or cooling the animal or by the injection of adrenaline. This is also true of the ability of the extracts to promote gastric secretion in dogs with a Pavlov gastric pouch. —K. FUZII. *Tôhoku J. Exp. Med.*, 35 (1939), 264; through *Brit. Med. J.*, 4092 (1939), 1216H. (W. H. H.)

Venoms of Two Australian Snakes—Hemolytic Activity of, Found to Correlate Histamine Liberating Power. Liberation of histamine and coagulable protein from perfused organs of various animals by the injection of certain snake venoms is known to be at least partly due to the formation of a strongly hemolytic lysocithin-like substance. The extract and perfusates of such envenomed organs is known to contain another unidentified substance, "slow-contracting substance," capable of changing the irritability of gut muscle. T. set out to determine whether the strongly hemolytic venom of the Australian back snake and the weakly hemolytic venom of the death adder differ in their ability to liberate histamine from and to form the "slow-contacting substance" in perfused organs. By examining the extracts and perfusates of the normal and envenomed organs of dogs and rabbits along with the blood from these animals the following conclusions were drawn: With the liver of the dog the output of histamine following black snake venom injection rose steeply while the output after death adder venom was less and rose more gradually. Coagulable protein and liver pigments appeared in the perfusates from the liver following the injections of the venom from the black snake. Likewise the hemolytic lysocithin-like substance and "slow-contracting substance" were formed by the venoms from either snake but in strikingly larger amounts with black snake venom. There is a strict parallelism between the hemolytic activity of these venoms and their ability to liberate histamine and protein from perfused tissue. This was thought to signify that the liberation of histamine and protein in cell injury is mediated by the formation of lysocithin.—E. R. TRETHEWIE. *Australian J. Exp. Biol. Med. Sci.*, 17 (1939), 145–155. (W. T. S.)

Veratrum Viride—Activity of, by the Daphnia Method. The *Daphnia* method offers a rapid, inexpensive and accurate means of evaluating the activity of substances, like the above, which owe their activity to a complex, especially when the locomotion of the *Daphnia* is visibly affected in their presence. In the present investigation it was shown that one lot of *Veratrum viride* was 1.7 times more toxic than the other.—ISADORE COHEN. *Am. J. Pharm.*, 111 (1939), 426. (R. R. F.)

TOXICOLOGY

Anti-Moth Solution. The solution contains triethanolamine trifluoride, aluminum sulfate and a wetting agent soluble in the solution.—MERCK & CO., INC. Belg. pat. 431,512, Jan. 31, 1939. (A. P.-C.)

Barbital—Cumulative Poisoning by. Experiments have been carried out, by means of the method of Mafnus, to measure the depression of reflexes produced in rabbits by hypnotic drugs, in this case barbital. It has been shown that cumulative poisoning with barbital can be induced in rabbits. It has also been shown that the depression of reflexes runs exactly parallel with the barbituric acid content of the brain (estimated by the method of Koppanyi), and that the cumulative phenomena induced are due to an accumulation of the drug. In the case of barbital, therefore we are dealing with a pure chemical cumulation. The results of control experiments confirm this and show that the amount of barbital remaining after twenty-four hours amounts to 35–50% of the original dose.—H. L. WOLFF. *Arch. inter. pharmacodynamie*, 62 (1939), 433. (W. H. H.)

Benzene and Aromatic Compounds in Benzenes—Intoxications by. A discussion of the results of a survey of Belgian industries carried out from 1934 to 1937, relative to numerous cases of intoxication by benzene.—A. P. STASSENS. *Compt. Rend. 18me Congr. Chim. Ind., Nancy*, Sept.-Oct. 1938, 779–783. (A. P.-C.)

Chlorinated Hydrocarbons. A diet rich in calcium is effective in preventing the yellow atrophy of the liver produced by carbon tetrachloride, but this is not so in the case of penta- and hexa-chlornaphthalenes. Extra milk or calcium lactate in the diet workers is therefore valueless in this respect, and the administration of xanthine does not prevent liver injury. When a mixture of penta- and hexachlornaphthalene is given to dogs by mouth the urinary chlorides rise, indicating that the body cells detach chlorine from this compound. A high intake of chlorides does not enhance toxicity. Permissible "safe" concentrations in the air of workrooms have now been determined for fourteen chlorinated hydrocarbons.—C. K. DRINKER. *J. Ind. Hyg. Toxicol.*, 21 (1939), 155; through *Brit. Med. J.*, 4098 (1939), 208G. (W. H. H.)

Chloroform—Cumulative Poisoning by. It is demonstrated that it is possible to produce cumulative poisoning in mice with chloroform. This cumulation depends on a pure summation of action so that it is classed as an "organic cumulation." When mice are exposed to a concentration of 0.005 cc. per liter for half an hour, the maximum damage is not seen for six days. This damage does not consist merely of a degenerative fatty infiltration, but also in definite cellular injury. With repeated poisoning the fatty infiltration is pushed into the background by the cellular damage.—H. L. WOLFF. *Arch. inter. pharmacodynamie*, 62 (1939), 487. (W. H. H.)

Glycols. Propylene glycol in small doses resembles ethyl alcohol and glycerol in that it can be oxidized in the body and probably assimilated, but the higher glycols are toxic and can be ranged in the order of their toxicity. After correlating information from the current literature with the results recorded, it is concluded that certain glycols should be excluded entirely from food and drug preparations and the use of propylene glycol should be limited.—E. P. LAUG, H. I. CALVERY, H. J. MORRIS and G. WOODARD. *J. Ind. Hyg. Toxicol.*, 21 (1939), 173; through *Brit. Med. J.*, 4098 (1939), 208G. (W. H. H.)

Insulin—Tolerance to and Toxicity of. Parenteral glucose injections produce a beneficial stimulation only with brief administration, and, if long continued, becomes harmful or fatal. The tolerance of several animal species for insulin in conjunction with parenteral glucose administration was established. Insulin can kill by a hypoglucemia or by producing a demand for fatal amounts of glucose. Large doses of insulin can be antidoted by a series of small glucose injections, but not by adrenaline. Hyperinsulinism creates sensitiveness to the osmotic shock of glucose injections and all other forms of shock. Fourteen refereuces.—F. M. ALLEN. *Ann. Internal Med.*, 12 (1939), 1263–1278; through *Chem. Abstr.*, 33 (1939), 3892. (F. J. S.)

Ivy Poisoning—Treatment and Prevention of. The author advises the preparation of a tincture of *Rhus toxicodendron* from which small doses are used. One dram (4 cc.) of the tincture to 4 ounces

(120 cc.) of water or lactated pepsin; an adult to take 1 teaspoonful, in a wineglass of water, before meals; children to take 10 to 15 drops of the same solution three times a day.—J. C. ATTIX and J. C. ROMMEL. *Clin. Med. Surg.*, 46 (1939), 410. (W. H. H.)

Mandelic Acid—Experimental Studies on the Toxicity of. In acute poisoning with mandelic acid the central system is affected; in chronic or subchronic intoxication the kidney is primarily injured. In all doses mandelic acid acts on the capillaries and finally causes passive congestion. In the kidney mandelic acid produces hyperemia with subsequent, frequently fatal, hermorrhage.—B. SCHOVANCE. J. STOLZ and R. ZADINA. *Acta Med. Scand.*, 99 (1939), 61-77; through *Chem. Abstr.*, 33 (1939), 4324. (F. J. S.)

Nitrous Gases—Intoxication by, During Pickling. Description of a case produced by inhalation of nitrous gases during pickling with nitric acid of metal articles to be electroplated.—G. PANCHERI. *Medicina Lavoro*, 29, 246-250; through *Chimie & Industrie*, 41 (1939), 681. (A. P.-C.)

Picrotoxin in Barbiturate Poisoning. Picrotoxin, a violent convulsant poison, can be used with safety in relatively large doses in barbiturate poisoning wherein it has proved to be dramatically effective in saving life.—J. L. LOVIBOND and G. C. STEEL. *Lancet*, 237 (1939), 561. (W. H. H.)

Poisonous Principle of Nerium Odorum. This plant, known as Kaner (Hindustani), is very common in South India, and its leaves are often used as a poison, as either a paste or a decoction. Recent work on its poisonous principle does not support the conclusions of Chuni Lall Bose (Lyons *Medical Jurisprudence for India*, 8th Ed., p. 725). It is apparent that the three extracts referred to therein probably owed their poisonous action to one active poisonous principle, and that the three substances were probably the same poisonous principle in different degrees of purity. The pure white crystalline glucoside has been isolated from this plant and its chemical and physiological properties have been studied. The method of extraction was as follows: The acid alcoholic extract of the leaves, after evaporation of the alcohol, was taken up with boiling water, the solution was treated with basic lead acetate and filtered, and the filtrate was decolorized with animal charcoal and again filtered. The cooled aqueous filtrate was de-leaded with sodium oxalate and filtered and the filtrate made alkaline with sodium carbonate solution and extracted with chloroform. The chloroform extract, after removal of the chloroform by distillation, was dissolved in not 30% alcohol, boiled with animal charcoal and filtered and the filtrate was again extracted with chloroform. Evaporation of the chloroform at a low temperature and drying in the vacuum desiccator yielded a white crystalline substance (m. p. 123° C.), which was sparingly soluble in water, very sparingly soluble in ether, petroleum spirit or benzene, and readily soluble in alcohol, acetone or chloroform. A minute speck, dissolved in concentrated sulfuric acid, gave an immediate purple color which took on a deeper tint on standing. It also gave a positive result in Keller's test—a bright green color appearing in the acetic acid layer and a purple color in the sulfuric acid layer. Both the colors were stable for several days. The average minimum lethal dose for frogs weighing about 10 Gm. was about 0.00002 Gm., paralysis and death being the symptoms noted. Eight mg., injected into the abdomen of a dog weighing about 4.1 Kg., killed it within an hour. The symptoms noted were progressive paralysis starting from the hind legs, defecation, retching, foaming at the mouth and death. This extract was thus about six times as poisonous as strychnine to frogs. Semimicro combustion gave: C, 66.4; H, 8.08% (O, by diff. = 25.5%). The molecular weight was approximately 656. The formula $C_{35}H_{50}O_{10}$ and the name "nerin" are tentatively suggested for this substance. Quantitative determinations by Lane and Eynon's method, after hydrolysis with emulsin or hydrochloric acid, showed that 1 Gm.-mol. of the glucoside yielded 1 Gm.-mol. of a hexose calculated as dextrose. It was thus a β-glucoside. The non-sugar residue from the hydrolysis was much less toxic than the glycoside to frogs. The yield of pure "nerin" from the fresh leaves was about 0.09%.—ANNUAL REPORT OF THE CHEMICAL EXAMINER, GOVERNMENT OF MADRAS, 1937. *Analyst*, 64 (1939), 121. (G. L. W.)

Polyneuritis—Mass Poisoning in the Form of, on Shipboard Caused by the Ingestion of Oil Containing Tritolyl Phosphate.—R. DEBRE and H. BLOC. *Bull. mem. soc. méd. hôp. Paris*, 54 (1938), 1726–1733; through *Chem. Abstr.*, 33 (1939), 3877. (F. J. S.)

Renghas Fruit (Semecarpus Heterophylla Bl.)—Toxic Principle of. The toxic principle of renghas fruit is obtained by extracting with an equal quantity of absolute alcohol, filtering the extract, concentrating by distilling the solvent until there is separation into two layers, decanting the oil layer and dissolving it in petroleum ether, extracting the alcoholic layer with the same solvent and combining the two solutions, removing the solvent by distillation under high vacuum. The "renghol" thus obtained is an almost colorless, crystallizable oil, the formula of which corresponds with 2,3-dihydroxy-*n*-pentadecene-(10)-yl-benzene, which is related to urushiol and which has a strong vesicant action. The position of the double bond was determined by ozonization of the dimethyl ether, which gives rise to the formation of valeric aldehyde.—H. J. BACKER and N. J. HAACK. *Rec. Trav. Chim. Pays-Bas*, 57 (1938), 225–232; through *Chimie & Industrie*, 41 (1939), 726. (A. P.-C.)

Rubber—Possible Toxicity of a Product Used in Working. The product in question was stated by the manufacturers to be the butylidene derivative of aniline containing absolutely no free aniline. It was shown, however, that small amounts of free aniline vapors are given off continually from the product into the atomosphere, and that the product therefore constitute a potential occupational hazard and should be manipulated with the same precautions as aniline.—A. LESPAGNOL. *Ann. méd. légale criminol. police sci.*, 18 (1938), 301–305. (A. P.-C.)

Sulfanilamide—Elixir of, Pathological Effects of Poisoning by. The elixir, its active components diethylene glycol and sulfanilamide, and a synthetic composition were tried separately on groups of animals. Conditions simulated those in the human cases. The similarity between the clinical course and pathologic picture of the fatal human cases and that observed on experimental animals affords conclusive proof that the chief toxic agent in Elixir of Sulfanilamide was diethylene glycol. Clinical symptoms were nausea, diarrhea and coma. Pathologic changes were chiefly in liver and kidneys.—E. M. K. GEILING and PAUL R. CANNON. *J. Am. Med. Assoc.*, 111 (1938), 919. (G. S. G.)

Sulfanilamide—Encephalomyelitis Following the Use of. Two cases of encephalomyelitis following the administration of sulfanilamide are described, one of which ended fatally. The total doses taken were small (14 gr. and 18 gr.) and if the drug was responsible the patients must have been very susceptible to it. There is evidence that patients suffering from certain illnesses—including acute rheumatic fever and lupus erythematosus—are especially liable to develop toxic manifestations

after taking sulfanilamide. Vascular changes are seen in some cases of encephalomyclitis and their relation to the demyelinating lesions is discussed.—J. H. FISHER and J. R. GILMOUR. *Lancet*, 237 (1939), 301. (W. H. H.)

Sulfanilamide—Toxicity of the Ortho, Meta and Para Isomers of. The dose lethal for 50% of the animals for oral administration in mice is: *ortho*, 3.48 Gm.; *meta*, 12.45 Gm.; *para*, 4.61 Gm. per Kg. There is no correlation between solubility and toxicity of the three isomers. There seems to be neither relation between toxicity and therapeutic activity.—EDWIN P. LAUG and HERMAN J. MORRIS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 541. (A. E. M.)

Sulfathiazole and Sulfapyridine—Observations of the Toxicology of. If the sodium salts be used, the toxicity of sulfathiazole appears to be about 65% of the toxicity of sulfapyridine for lethal dose of 50% of the animals. Repeated administration of the drugs in the food of mice indicates that sulfathiazole is more toxic than sulfapyridine at a high dose level but that there is no difference at a dose level which is effective therapeutically. In monkeys and growing rats receiving either drug for 14–57 days, sulfapyridine is clearly more toxic. The principal pathological change in all three species appears to be renal damage. Sulfathiazole is more rapidly metabolized and undergoes less conjugation than sulfapyridine.—H. B. VAN DYKE, R. O. GREEP, GEOFFREY RAKE and C. M. MCKEE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 410. (A. E. M.)

Sulfonamide Compounds—Cyanosis Caused by. When examining blood spectroscopically for methemoglobin, it is essential that the sample should be laked with only a small volume of water and examined soon after withdrawal. Otherwise the presence of the pigment may not be detected. In cyanosis developing during the therapeutic use of 2-*p*-aminobenzenesulfonamidopyridine and *p*-aminobenzenesulfonamide, where there is no other obvious cause, careful spectroscopic examination of the blood always demonstrates the presence of either methemoglobin or sulfhemoglobin. In methemoglobinemia, whether produced by 2-*p*-aminobenzenesulfonamidopyridine or by sodium nitrite, methylene blue is effective in causing the rapid disappearance of the cyanosis by converting methemoglobin to hemoglobin. The dye is active when given intravenously, intramuscularly or by mouth. It is suggested that the routine employment of methylene blue in conditions calling for the prolonged administration of 2-*p*-aminobenzenesulfonamidopyridine may be a useful measure in preventing cyanosis. Methylene blue has no effect in preventing or modifying the cyanosis of sulfhemoglobinemia.—D. CAMPBELL and T. N. MORGAN. *Lancet*, 237 (1939), 123. (W. H. H.)

Thallium—Occupational Intoxication by. A description and discussion of the clinical symptoms.—E. CAPELLI. *Medicina Lavoro*, 29 (1938), 225–234; through *Chimie & Industrie*, 41 (1939), 680. (A. P.-C.)

Triethylene Glycol—Toxicity of, and the Effect of Para-Amino-Benzene-Sulfonamide upon the Toxicity of This Glycol. Recent investigations of other workers seemed to indicate that "the ether linkage of the di-glycols may be the portion of the molecule responsible for the degeneration of epithelial cells of parenchymatous organs, especially of the kidney." So toxicity of triethylene glycol ($HO.C_2H_4OC_2H_4OH$) was of interest because it has two ether linkages. Details of experimental work are reported, results tabulated and shown by graph. The following conclusions were drawn from the study: Triethylene glycol is less toxic than diethylene glycol when fed to rats. It is, therefore, doubtful that the ether linkage in the higher glycols is responsible for the increase in toxicity reported previously. The lethal dosage when given by stomach tube undiluted is between 10 and 15 cc. triethylene glycol per Kg. body weight. Ten cubic centimeters per Kg. body weight show definite toxic symptoms and retarded weight increase. Water solutions do not seem to be more toxic than when the glycol is given undiluted. Adult rats are killed by 5% solutions while young rats barely survive this concentration. Young rats thrive well on 3% solutions and the increase in weight is absolutely normal. If one considers that as low as 0.25% diethylene glycol showed impairment of growth in rats, it seems that further investigations of triethylene glycol and glycols of higher molecular weight might be worth while. The M. L. D. for intramuscular injections for white rats is approximately 8.4 Gm. per Kg. body weight.—W. H. LAUTER and V. L. VRLA. *Jour. A. Ph. A.*, 29 (1940), 5. (Z. M. C.)

THERAPEUTICS

Acaprine—Treatment of Chronic Malarial Infection of the Spleen. For treating malaria carriers who escape the action of the said specific medicaments, the author used acaprine (methyl-sulfomethylate of urea of 6-aminoquinoline) as an adjuvant treatment and obtained satisfactory results He has made a review of previous research concerning the pharmacodynamics of the substance and gives reasons for its utilization in the treatment of chronic malarial infection of the spleen.—I. RADVAN. *Presse méd.*, 58 (1939), 1143. (W. H. H.)

Antimalarial Preparation. Castor oil or the like is broken down into a mixture of compounds containing from 7 to 12 carbon atoms. The mixture is converted into compounds the terminal carbon atoms of which are combined with substituents which can be replaced by amino groups. These compounds are made to react with the amino group (which may or may not be substituted) of an amine so that the latter is introduced into the compounds. —R. F. A. ALTMAN. Belg. pat. 423,593, Oct. 31, 1937. (A. P.-C.)

Antimonials of Therapeutic Activity—Organic. Experiments were carried out on the production of aryl-stibnic acids of low toxicity possessing therapeutic properties which would be useful for the treatment of kala-azar. From this standpoint good results were obtained with derivatives of arylstibnic acids and of thiourea.—G. M. DYSON. *Rec. Trav. Chim. Pays-Bas*, 57 (1938), 1016–1028; through *Chimie & Industrie*, 41 (1939), 730. (A. P.-C.)

Azo Compounds—Therapeutic. 3,5-Diaminopyridine or one of its substitution products, such as a hydroxy, alkoxy, halogen or alkyl derivative, is coupled with a diazo compound such as one formed from aniline, *p*-, *o*- or *m*-chloroaniline, *p*-bromoaniline, *p*-anisidine, β-naphthylamine, sulfanilic acid or anthranilic acid. The products have uses similar to those of the corresponding derivatives of 2,6-diaminopyridine.—ARTHUR BINZ and OTTO VON SCHICKH, assignors to SCHERING A. G. U. S. pat. 2,156,141, April 25, 1939. (A. P.-C.)

Bile Pigment Preparation. A preparation for the treatment of arthritis and fibrositis contains a bile pigment together with bile acids or their salts.—BERNARD L. WYATT and HARRY E. THOMPSON, assignors to ARMOUR AND CO. U. S. pat. 2,156,891, May 2, 1939. (A. P.-C.)

Burn Therapy. A review with 22 references.—M. A. LESSER. *Drug and Cosmetic Ind.*, 45 (1939), 681–683, 686–687. (H. M. B.)

Calomel Ointment—Clinical Reports on Colloidal. Three calomel ointments were used: (A) colloidal

calomel suspension 30 Gm., hydrous wool fat 35, white petrolatum 35; (B) calomel U. S. P. 150 Gm., gelatin 3, water 300 cc. and the resulting suspension incorporated in a base of cholesterol 20 Gm., white petrolatum 175, lanolin 175; (C) calomel U. S. P. 150 Gm., gelatin 120, water 6000 cc. and the suspension incorporated in a base of white petrolatum 150 Gm. and lanolin 150. Forty-five cases afflicted with a variety of skin diseases are reported. With B, 14 out of 23 cases showed no improvement after 1–4 weeks, 5 showed slight improvement after 2–3 weeks; 4 showed marked improvement after 2–4 weeks; none were reported healed. With C, of 21 cases, 4 showed no improvement, 2 showed slight betterment, 3 improved, 12 much improved in 1–6 weeks. Eighteen cases were treated with A if B and C had failed to render suitable improvement; of these, 3 improved and 15 were much improved or healed in 1–3 weeks.—BERNARD FANTUS and H. A. DYNIEWICZ. *Bull. Natl. Formulary Committee*, 8 (1939), 23–29. (H. M. B.)

Chemotherapy—Outline of. 9-Sterols and Related Substances. A discussion.—ANON. *Pharm. J.*, 142 (1939), 649. (W. B. B.)

Chemotherapy—Phenomenon of Reënforcement in. Reënforcement of the Therapeutic Action of Antimalarial Compounds of the Quinoline Series. Trypan blue and pyrrole blue have no therapeutic effect against *Plasmodium præcox* but when given with a less than therapeutic dose of plasmocide, the therapeutic effect of the latter on malaria in birds is very marked. Pyrrole blue increases the chemotherapeutic index of plasmocide from 20 to 40. Pyrrole blue has a similar effect on 6-isoamyl-8-(β-diethylaminoethylamino)-quinoline which alone is inactive toward *Plasmodium præcox*. Pyrrole blue does not reënforce the action of quinine or atebrine. Malaria parasites treated with pyrrole blue for five generations behaved toward plasmocide like those which had never been in contact with pyrrole blue.—I. L. KRITCHEVSKI. *Ann. inst. Pasteur*, 61 (1938), 205–216; through *Chimie & Industrie*, 41 (1939), 952. (A. P.-C.)

Cobalt in Control of Nutritional Anemia. A description is given of a nutritional anemia of ruminants, known as pine disease, which is prevalent in this country and in other parts of the world. This anemia can be cured and prevented by the administration of cobalt salts without the use of iron. The quantity of cobalt salts required to cure affected sheep is 1 mg. daily for fourteen days. The same treatment acts as a preventive for a period of at least six months. The disease was formerly controlled by the administration of iron compounds. The presence of cobalt in significant quantities has been demonstrated in these compounds by several workers.—H. H. CORNER. *Brit. Med. J.*, 4098 (1939), 169. (W. H. H.)

Cod Liver Oil Treatment of Wounds. Successful applications of a mixture of the crude oil with talc, starch and distilled water are reported in fourteen cases of wounds and eleven of skin diseases. In the former cicatrization and healing was often notably stimulated.—MANDILLON, DEJARNAC and SOULIER. *Gaz. Hebdomadarie des Sci. Med. de Bordeaux*, 60 (1939), 322; through *Brit. Med. J.*, 4096 (1939), 98A. (W. H. H.)

Colchicine—Irradiation of Cancer Following Injections of. X-rays were markedly more lethal to bits of carcinoma from colchicine-treated animals than to similar pieces from non-treated animals. Light frequent irradiation was less injurious and more effective to cause disappearance of tumors than infrcquent heavy dosage.—M. F. GUYER and P. E. CLAUS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 565. (A. E. M.)

Copper Morrhuate—Colloidal, Specific Action of. A patient with cystitis was treated with lavage of mercuric oxycyanate, suppositories containing belladonna, valerian and camphor bromide by mouth, with little improvement. A few small calculi were found. Careful clinical examination revealed mitral insufficiency and secondary hepatic congestion. The patient was treated with digitalis to relieve the cardiac symptoms and the other symptoms were unrelieved by a variety of therapies. Finally a tonic medication of daily intramuscular injections of colloidal cupric morrhuate (gadusan) was used, with rapid and notable improvement in all manifestations and presumably a complete cure after four months treatment—CYRO CHESNEAU. *Rev. Syniatrica*, 31 (1938), 167. (G. S. G.)

Coughing and Expectorants. Types of coughing are discussed and the selection of expectorants—drugs which modify expectoration—depends on the type of cough affecting the individual. These drugs are classified as sedative, irritant or stimulant and anodyne. Examples of each class with their effectiveness are reviewed. Seven formulæ and 11 references are given.—M. A. LESSER. *Drug and Cosmetic Ind.*, 45 (1939), 422–425, 428. (H. M. B.)

Dihydrotachysterol—Effect of, on Various Types of Experimental Rickets in Rats. The effect of dihydrotachysterol on prevention of rickets in rats differs widely according to the ricketogenic diet fed. Rickets caused by high-calcium-low-phosphorus diets was not prevented by a non-toxic amount which protected rats fed low-calcium-high-phosphorus diets.—ALFRED T. SHOHL, CH'UAN H. FAN and SIDNEY FARBER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 529. (A. E. M.)

Drug Orders Dispensed in 1938. Orders received are classified as follows: for the treatment of (I) circulatory disorders (14 prescriptions), (II) nervous diseases (7), (III) ailments of the respiratory tract (6), (IV) disorders of the urinary tract (8), (V) ailments of the oral cavity and digestive tract (17), (VI) skin disorders (24) and (VII) miscellaneous ailments such as abdominal cramps (1), dysmenorrhea (1), headache (2). Thirty-eight references.—K. KOCH. *Deut. Apoth. Ztg.*, 54 (1939), 1010–1011, 1032–1033, 1040–1041, 1063–1065. (H. M. B.)

Eczema—Irradiated Dusting Powder Suitable for Treating. A mixture of roasted gypsum and anhydrite is irradiated with ultraviolet rays and may be mixed with other ingredients such as zinc oxide or pulverized chamomile blossoms, etc., to promote healing of eczema and to prevent irritation of the skin.—GUSTAV STUX. U. S. pat. 2,153,653, April 11, 1939. (A. P.-C.)

Epanutin in Epilepsy. An investigation was undertaken to ascertain the action of sodium diphenyl hydantoinate (epanutin) on a large series of epileptics (53 male and 22 female) in mental hospitals. The anticonvulsant properties of epanutin were confirmed and compared with those of luminal, prominal, bromide and chloral. The action of apanutin was superior to that of these drugs in many cases, but in others it appeared to be inferior. Mental improvement was observed in most patients, the typical epileptic temperament being considerably improved and the patients becoming more congenial and more easily nursed and occupied. The importance of the toxic action of this drug is emphasized. Many cases exhibited toxic nervous symptoms, but only one developed a rash. These toxic symptoms often developed after an increase in the dose.—D. BLAIR, K. C. BAILEY and J. S. MCGREGOR. *Lancet*, 237 (1939), 363. (W. H. H.)

Estradiol Esters Esterified in the 3-Position—Therapeutic. By treating a corresponding ester of

the type of estrone with catalytically activated hydrogen in an aliphatic ester of low boiling point as solvent (such as ethyl acetate), esters are produced such as estradiol 3-acetate, estradiol 3-propionate, estradiol 3-butyrate, estradiol 3-palmitate, etc., and corresponding carbonic acid esters and urethans. Platinum, palladium, nickel or cobalt may be used as catalysts with hydrogen under 4 atmospheres pressure.—KARL MIESCHER and CAESAR SCHOLZ, assignor to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. U. S. pat. 2,156,599, May 2, 1939. (A. P.-C.)

Eupaverine—Treatment of Arterial Embolis with. Eupaverine, an antispasmodic medicament, has been used with success in vesicular and uretheral colics, in constipation and against the crises of angina of the lungs. This is especially so by its inhibitory action upon vascular spasm which prevented a large number of accidents during the course of embolitic process by its utilization. It has also been observed many times giving good results in pulmonary embolism cases, embolis of the central artery of the retina, arterial embolis of the extremities, etc. The case observed by the author concerned a subject having present a rough embolis of the poplitel artery paradoxical to the breadth of the perforation of the foramen ovale. The antispasmodic treatment utilized (intravenous injections of cupaverine) has produced complete recovery. This therapeutic procedure tends to indicate the relief of mutilating operations and without the risk of embolectomy or amputation.—FRENSCHE. *Münch. med. Wochsch.*, 85 (1938), 1747; through *Presse méd.*, 35 (1939), 85. (W. H. H.)

Gonadotrophic Hormones in Whooping Cough. Treatment with charcoal adsorbate of the gonadotrophic hormones of pregnancy urine or with antuitrin-S was carried out in a series of 136 children, and yielded satisfactory results in just over 80% of the cases. The method is also said to be effective in prophylaxis.—K. VENKATACHALAM and A. N. RATNAGIRISWARAN. *Indian Med. Gaz.*, 74 (1939), 271; through *Brit. Med. J.*, 4099 (1939), 264A. (W. H. H.)

Heparin in Thrombosis. An account is given of 117 cases in which post-operative treatment with heparin was administered. While thrombosis was frequent among the control cases, it was not once observed in the heparin-treated cases. Reference is also made to twenty Swedish cases of thrombosis in the main branch of the central vein of the retina treated with heparin; about fifty per cent reacted favorably.—J. E. JORPES. *Nordisk Medicin*, 2 (1939), 1723; through *Brit. Med. J.*, 4101 (1939), 382B. (W. H. H.)

Heptyl Aldehyde. Heptyl aldehyde, administered to mice in their food, caused extensive liquefication in spontaneous mammary carcinomata and prolonged life. The author does not advance this substance as a "cure" for cancer, but suggests that two or more chemicals used in combination may provide a chemotherapeutic control for cancer, at least in mice.—L. C. STRONG. *Am. J. Cancer*, 35 (1939), 401; through *Brit. Med. J.*, 4096 (1939), 98D. (W. H. H.)

Insulin and Cardiazol in Schizophrenia. The postconvulsive alterations of the carbohydrate metabolism in the direction of diabetes mellitus may be considered as reactions of the organism and not as direct results of the action of cardiazol. Similarly, after the administration of insulin the organism endeavors to compensate for the toxic effect of the drug by an alteration of the carbohydrate metabolism in the direction of diabetes mellitus.—L. MEDUNA and B. ROHNY. *Lancet*, 236 (1939), 1139. (W. H. H.)

Insulin Hypoglucemia in Cancer Patients. Cancer patients are usually hypersensitive to insulin. Radium treatment seems to increase the sensitivity still further.—R. REDING. *Compt. rend. soc. biol.* 129 (1938), 878–880; through *Chem. Abstr.*, 33 (1939), 2203. (E. G. V.)

Irradiated Ergosterol (A. T. 10). A. T. 10 (irradiated ergosterol) contains a factor able to mobilize lime salts. Observations on a case of postoperative tetany and a case of sprue with hypocalcemia showed that the administration of A. T. 10 had a good effect. In cases of colitis and nephrosis with hypocalcemia it had no effect.—J. JACOBI and F. TIGGES. *Deut. Arch. klin. Med.*, 183 (1939), 558; through *Brit. Med. J.*, 4096 (1939), 98E. (W. H. H.)

Laxatives and Colds. A summary of replies of physicians to a questionnaire referring to laxatives and colds indicates a surprisingly high percentage of medical usage of laxatives and alkaline mixtures in cold or influenza cases. Less than 50% of the answers gave names of proprietary mixtures.—MURRAY BREESE. *Drug and Cosmetic Ind.*, 45 (1939), 433–435. (H. M. B.)

Magnesium Trisilicate—Use of Hydrated, in Peptic Ulcer.—M. KRAEMER. *Am. J. Digestive Diseases Nutrition*, 5 (1938), 422; through *Chem. Abstr.*, 33 (1939), 2209. (E. G. V.)

Male Sex Hormone—Synthetic. Fifty-four patients suffering from various forms of hypogenitalism were successfully treated with 10 to 75 mg. of testosterone propionate a week. No untoward side-actions were observed.—H. H. TURNER. *Endocrinology*, 24 (1939), 763; through *Brit. Med. J.*, 4102 (1939), 432F. (W. H. H.)

M. & B. 693—Agranulocytosis Following Administration of. Agranulocytosis may arise after, or during, treatment with M. & B. 693. The white-cell count falls for two to three days after the drug has been discontinued. A case of puerperal streptococcal infection showed an atypical response to the drug similar to that seen in cases of agranulocytosis during sulfanilamide therapy. Though agranulocytosis may be suspected as the cause of a sudden deterioration in a patient's condition during treatment, it cannot be definitely diagnosed without a white-cell count. Frequent blood examinations should therefore be made on all cases where M. & B. 693 is continued for more than a week and large doses are given.—M. E. SUTHERLAND. *Lancet*, 236 (1939), 1208. (W. H. H.)

M. & B. 693 Rashes. Attention is drawn to the commoner types of drug rash following treatment with M. & B. 693 and their possible confusion with the eruptive fevers, especially measles, rubella and scarlet fever. It is suggested that, during epidemic prevalence of these diseases in the future, a careful history with regard to the administration of this drug or similar compounds would be of great assistance in differential diagnosis. Reference is made to the acute reactions, accompanied by a rash, which may occur in patients previously sensitized to these drugs, and also to the harmful effects of actinotherapy in such cases.—A. R. THOMPSON. *Brit. Med. J.*, 4095 (1939), 13. (W. H. H.)

Methyl Testosterone—Oral Application of, and Its Simplification of Androgen Therapy. Methyl testosterone is very efficacious by mouth, being about twice as active as testosterone by this route. Potency was fully maintained in a eunuch with 100 mg. daily, and a lower dosage of 50 mg. is effective. All the signs of puberty can be rapidly produced in cases of genital hypoplasia affecting not only sexual but physical development, and for such patients it is probable that much smaller doses would be adequate. If methyl testosterone can be manufac-

tured economically and inexpensively in large quantities it is suggested that oral therapy with this androgen may ultimately replace all other methods of using testosterone or its propionate. Probably this very potent androgen will be available as soon as more extended toxicity trials have been made, and it would seem wise that its sale should be restricted to a signed prescription. The price will in some respects control the sale of very large doses, but its misguided use in uncontrolled cases may give rise to serious consequences, as it must be remembered that several undesirable effects can be produced by very large doses of androgen in women or in young boys, and possibly there are other results of which the author is yet unaware.—G. L. FOSS, *Brit. Med. J.*, 4095 (1939), 11. (W. H. H.)

Molybdenum—Ferrated Colloidal. A product suitable for therapeutic use consists of colloidal molybdenum with an adsorbed water-soluble ferrous salt such as ferrous sulfate.—PERCY R. VESSIE, assignor to FLORENCE A. VESSIE. U. S. pat. 2,150,472, March 14, 1939. (A. P.-C.)

Nasal Therapeutic Compositions. Aqueous nose-drop or nasal spray compositions containing therapeutic ingredients such as ephedrine sulfate in aqueous solution have incorporated with them about 3.5% of polyvinyl alcohol, which serves to give increased viscosity at nasal temperatures.—JOHN H. WRIGHT, assignor to PIEDMONT DEVELOPMENT CORP. U. S. pat. 2,156,233, April 25, 1939. (A. P.-C.)

Nicotinic Acid in Delirium Tremens. In a chronic whisky addict an attack of delirium tremens (recurrence) associated with severe gastrointestinal manifestations and acute stomatitis was made to disappear within twelve hours by the administration of nicotinic acid. Previous to this, thiamin had been given in large doses, but without any perceptible result. The prompt response to nicotinic acid favors the assumption that lack of this vitamin is an important factor in the development of delirium tremens.—F. MAINZER and M. KRAUSE. *Brit. Med. J.*, 4101 (1939), 331. (W. H. H.)

Peptic Ulcer—Use of Aluminum Hydroxide Gel in the Treatment of. Colloidal aluminum hydroxide was efficacious in 12 cases.—E. S. EMERY, JR. and R. B. RUTHERFORD. *Am. J. Digestive Diseases Nutrition*, 5 (1938), 486–492; through *Chem. Abstr.*, 33 (1939), 2209. (E. G. V.)

Silver Nitrate—Use of, for Burns. The use of an ointment made of silver nitrate 0.25, distilled water 250, olive oil 25 and lanolin 50 parts, is found beneficial in cases of burns. The region is cleansed with sterile physiological salt solution, the ointment is applied and dressings are changed daily. ANON. *Jornal dos Medicos*, (April 1938); through *Tribuna farm.* (*Parana*), 6 (1938), 143. (G. S. G.)

Sodium Diphenyl Hydantoinate in Epilepsy. Ninety-one chronic epileptics who had ceased to respond to other anticonvulsants were treated with sodium diphenyl hydantoinate. The patients all lived at home and had been under regular observation and treatment with other drugs for an average of 6.4 years. The trial period ranged from six weeks to ten months (average 4.1 months). The fits were reduced in frequency in 79% of the subjects with grand mal and 63% of those with petit mal. In 19% the improvement was dramatic and has been maintained for over five months. Toxic symptoms arose in 36% and two patients died in status epilepticus while receiving the drug. The drug seems to be of value in the treatment of epilepsy in some cases when other forms of treatment have failed, but there are no indications that it should supersede the less toxic anticonvulsants in the initial stages of treatment. Its administration requires careful observation of the patient.—D. WILLIAMS. *Lancet*, 237 (1939), 678. (W. H. H.)

Spinal Anesthesia. The results of observation on a series of cases of spinal anesthesia administered by the time diffusion technic are recorded. The series consisted of a total number, up to the time of writing, of 907 cases, in 551 of which dosage, timing, level of anesthesia, etc., were carefully observed and correlated, and a further 356 cases administered as routine, which were not specially observed but which proved satisfactory. The drug used throughout was light percaine, with the maximum dose of 12 cc. Presumably the results obtained would not hold good for other solutions. The method appears to have a considerable margin of safety, is rapid, reasonably accurate, and has proved most satisfactory in practice.—J. HUGHES. *Brit. Med. J.*, 4093 (1939), 1224. (W. H. H.)

Sulfanilamide. In cystitis and pyelitis the "minimal effective step-dosage method" was found to be the most effective and least disturbing to the patient. On the first day the total dose was 15 grains, on the second day 30 grains and on the third day 45 grains. If necessary, the dose was increased daily by 15 grains until a total daily dose of 75 grains was reached. As soon as a sterile specimen of urine was obtained the dosage was maintained at the effective level for four days, and thereafter withdrawn by decreasing the daily dose by 5 grains every other day.—D. R. MITCHELL, P. H. GREEY and C. C. LUCAS. *Can. Med. Assoc. J.*, 40 (1939), 336; through *Brit. Med. J.*, 4096 (1939), 98A. (W. H. H.)

Sulfanilamide and the Blood in Scarlet Fever. The observations made showed that sulfanilamide had little deleterious effect on any element of the blood except the polymorphonuclear leucocytes. In the patients treated with sulfanilamide a slight but constant depression of the total white cell count was observed in all periods of scarlet fever, especially in the first week. Differential counts showed that this was due to a diminution in the neutrophil polymorphs. Although this depression never amounted to an actual leucopenia, it is very easy to imagine that in a patient with a grave infection, in whom the marrow is already depressed, the administration of sulfanilamide may have the unfortunate effect of bringing about the serious state of agranulocytosis. It seems very significant that, in the sulfanilamide, group, 23% of those examined in the first week of illness did not show a leucocytosis, whereas the corresponding figure in the control group was only 6.3%. After the first week the occurrence of leucocytosis is too variable for its absence to have the same significance.—J. O. FRENCH. *Lancet*, 237 (1939), 127. (W. H. H.)

Sulfanilamide Drugs.—M. NURMIA. *Suomen Kemistilehti*, 12A (1939), 122–3; through *Chem. Abstr.*, 34 (1940), 218. (F. J. S.)

Sulfanilamide Drugs—Chemotherapy by. While cure of certain experimental general infections with bacteria by sulfanilamide compounds is an enormous advance, the efficacy of the present drugs is by no means ideal. As far as mice are concerned, sulfanilamide is surpassed by, for example, M. & B. 693 and rodilone, and especially the related monoacetyl *p*-diaminodiphenyl sulfone. But with all the range of effective dosage is not wide, and treatment to be most successful must begin early. Further work on the absorption and excretion of members of the series, and on the chemical transformations which they may undergo in the body, as well as clinical observation, is required in order to enable them to be used to the best advantage as regards the choice of drug, and the dosage in amount and spacing in time. Where conditions favorable to general infection have arisen, prophylactic use of

the sulfanilamide group should be valuable. Where infection has been established the best therapeutic effects are secured in acute, diffuse conditions without marked local tissue changes. Hence these drugs are not likely to obviate operative procedures where focal lesions such as accumulations of pus or extensive necrosis of bone or other tissues have occurred.—C. H. BROWNING. *Brit. Med. J.*, 4100 (1939), 265. (W. H. H.)

Sulfanilamide in Treatment of Scarlet Fever. In a series of 253 cases of scarlet fever in children under 10 years of age, treated with sulfanilamide, the complication rate was 15% as compared with 25.3% in a similar series of 261 controls It is suggested that sulfanilamide has a place in the treatment of scarlet fever, and one of its chief values is prophylactic. Seventy-nine patients have been given small doses of sulfanilamide from admission to hospital until the fourteenth day of the disease, and again from the twenty-first to the twenty-eighth day. In this group the complication rate was 11.4%.—E. C. BENN. *Brit. Med. J.*, 4107 (1939), 644. (W. H. H.)

Sulfanilamide—Peritonitis Treatment with. A series of twenty-six cases of general peritonitis and fifteen cases of appendix abscess were treated with sulfanilamide and its derivatives. The method of treatment is discussed together with the drug dosage. Several cases are reviewed in full, and particulars of the series of forty-one cases are tabulated. The results of the treatment are given, along with the conclusions to be drawn.—D. C. CORRY, A. C. BREWER and C. NICOL. *Brit. Med. J.*, 4105 (1939), 561. (W. H. H.)

Sulfanilamide Therapy for Suppurative Pylephlebitis and Liver Abscess. This is a frequent residual of acute appendicitis, and is usually fatal, regardless of therapy. Two cases are reported, one diagnosed clinically by biopsy of the liver, showed colon bacillus. Both were treated with sulfanilamide 6 to 3 Gm. daily, for three to four days, then reduced for two weeks. Complete recovery was made in each case.—REUBEN OTTENBERG and MAURICE BERCK. *J. Am. Med. Assoc.*, 111 (1938), 1374. (G. S. G.)

Sulfanilamide—Treatment of Venereal Lymphogranuloma with. Veneral lymphogranuloma with rectal stricture is usually treated with antimony and potassium tartrate. This is seldom successful as it probably is a virus disease. Two cases were treated with sulfanilamide, 10 grains a day, to a maximum of 60 grains. After a rest period of 10 days the course was repcated. Several courses were given with a complete cure in each case.—ALVA A. KNIGHT and VERNON C. DAVID. *J. Am. Med. Assoc.*, 112 (1939), 527. (G. S. G.)

Sulfanilamide—Use of, in Gonorrhea in Male. A total of 1625 cases of gonorrhea were treated with sulfanilamide. The patients were divided into groups; one received a tolerance dose of the drug alone; the second had local therapy (mild silver protein and irrigation with potassium permanganate) added; and in the third group therapy was hampered by toxic manifestations. Of 1425 average patients, 50% were cured in one month and 25% in two months. Failure in the other 25% was due to intolerance in most cases. No deaths occurred in the 1625 cases, nor any marked blood dyscrasies. The use of sulfanilamide is efficacious in gonorrhea of the male but it demands caution and intelligence in its use.—BARNEY SILVER and MANNING ELLIOT. *J. Am. Med. Assoc.*, 112 (1939), 723. (G. S. G.)

Sulfanilamide—Use of, in Non-specific Infection of Urinary Tract. There is no standard dose since the amount must vary with the age and renal condition of the patient. Bed patients are more tolerant of large doses than ambulatory patients. Variations in the route of administration make it useful. The blood level of sulfanilamide should be watched throughout the period of administration. It produces brilliant results in non-specific urinary infections. Failures may be due to lack of proper identification of the infecting organism.—ANSON L. CLARK. *J. Am. Med. Assoc.*, 112 (1939), 719. (G. S. G.)

Sulfapyridine—Distribution and Excretion of, in the Guinea Pig. The orally administered sulfapyridine is nearly completely absorbed from the stomach after 4 hours and is distributed to every liquid, tissue and organ in the guinea-pig body, mostly in free form. About 70% of the drug is excreted in the urine after 36 hours and resorption from the larger gut mucosa may account for the discharge of the balance with the feces.—KONRAD E. BIRKHAUG. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 270. (A. E. M.)

Sulfapyridine—Effect of, on Immune Response to Pneumococcal Infection. The immune response that occurs naturally in the course of untreated pneumonia, studied by determining types-specific and species-specific agglutinins and by the dermal reactivity to type-specific polysaccharides, is apparently unaltered by treatment with sulfapyridine. There is no relation of the heterophile-antibody titer to the clinical course of pneumococcal pneumonia or its immune responses following sulfapyridine therapy.—JOSEPH C. EDWARDS, THEODOR E. KIRCHER, JR., and LAWRENCE D. THOMPSON. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 539. (A. E. M.)

Sulfapyridine in Pneumonia. This report from the Blegdam Fever Hospital in Denmark deals with fifty-four patients, 27% of whom suffered from Type I pneumonia. The total dosage of sulfapyridine for adults was on the average 28 Gm. at the rate of 0.5 to 1 Gm. every four hours. In 80% of the cases the temperature fell to normal within forty-eight hours, and the mortality was 1.9%.—A. ELDAHL. *Nordisk Medicin*, 2 (1939), 1807; through *Brit. Med. J.*, 4102 (1939), 432B. (W. H. H.)

Sulfapyridine—Report on. Experimental and clinical evidence show that sulfapyridine is useful in pneumococcic, staphylococcic and Friedlander's bacillus infections. There is no evidence yet that it is as good as, or superior to, sulfanilamide in hemolytic streptococcus, meningococcic, gonococcic or Welch bacillus infections. It is irregularly absorbed and slowly excreted. Toxic manifestations are similar to those of sulfanilamide. Rational schemes of therapy have not yet been presented.—PERRIN H. LONG. *J. Am. Med. Assoc.*, 112 (1939), 538. (G. S. G.)

Sulfapyridine—Treatment of Pneumococcic Pneumonia with. One hundred pneumococcic pneumonia patients were treated with sulfapyridine with an initial dose of 2 Gm. and 1 Gm. every hour to a total of 25 Gm. There were 4 deaths, 3 of type III. There were also 8 cases of bacteremia. The drug causes a critical drop in temperature in 24 to 48 hours, with prompt improvement. It is specific for pneumococcic infections, but requires watchful care.—HARRISON F. FLIPPIN, *et al.* *J. Am. Med. Assoc.*, 112 (1939), 529. (G. S. G.)

Sulfapyridine—Treatment of Pneumococcus Infections with. 2-(*p*-Aminobenzenesulfonamide)pyridine is a chemotherapeutically active drug against pneumoccus types I, II, III, V, VII, VIII and particularly I, VII and VIII, in mice. It is equally as effective as sulfanilamide against hemolytic streptococci and meningitis. Twenty-three patients treated with sulfapyridine, included pneumonia, empyemia and bronchitis, chiefly of pneumococcic

origin. Toxic symptoms were mild nausea and mental confusion, subsiding promptly. Cyanosis due to accumulation of methemoglobin was controlled by methylene blue. Results have been encouraging and its use has been recommended with serum therapy in severe cases.—HENRY L. BARNETT, *et al. J. Am. Med. Assoc.*, 112 (1939), 518. (G. S. G.)

Sulfur (Colloidal) to Modify Extirpation Diabetes. Administration of colloidal sulfur in daily doses of 250 to 500 mg. has no effect on the diabetic state of the depancreatized dog.—HARRY GREENGARD and GARR J. BURT. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 253. (A. E. M.)

Sulfur Derivatives—Antibacterial Chemotherapy of Organic. The following conclusions are given: This review gives an account of the enormous progress realized in the chemotherapy of sulfur derivatives in recent years. The preparation of a totally inoffensive substance has not been achieved but progress has been made. Rubiazol is slightly toxic and is a specific for streptocoeci. The antimicrobic properties of *p*-aminophenylsulfamide have permitted the preparation of synthetics possessing remarkable bacterial polyvalence. Other sulfur derivatives such as the sulfones, sulfoxides, etc., have also been found useful. The accidents resulting from administration of sulfur derivatives have caused them to be unjustly discredited: a large measure of the difficulties are avoided if the precaution of eliminating saline purgatives and all other medicinal association is followed. Most of the published cases of agranulocytosis reveal that the administration of sulfur derivatives was instituted simultaneously with other medication: the arsenicals are particularly dangerous in this respect. Many reports indicate that organic sulfur derivatives alone do not cause agranulocytosis. A bibliography is appended.—F. VAN HAMME. *J. pharm. Belg.*, 21 (1939), 639–643, 654–660, 673–679. (S. W. G.)

Tetralylquinol. *2,151,370*—This compound is an anthelmintic. It is produced by reducing 6-nitrotetralin to 6-hydroxyaminotetralin and treating the latter with dilute sulfuric acid. *2,151,371*—The production of acylated tetralylquinol derivatives, such as the acetate and benzoate, is described. They also have anthelmintic properties.—YASUHIKO ASAHINA. U. S. pats. 2,151,370 and 2,151,371, March 21, 1939. (A. P.-C.)

Therapeutics—Recent Developments in. The chemistry, pharmacology and uses of adrenaline and the sympathomimetic drugs is discussed.—F. PRESCOTT. *Chemist and Druggist*, 122 (1940), 325. (A. C. DeD.)

Ulcerative Colitis—Cod Liver Oil Per Rectum as an Adjunct in the Treatment of.—R. R. BEST. *Am. J. Digestive Diseases Nutrition*, 5 (1938), 426–428; through *Chem. Abstr.*, 33 (1939), 2209. (E. G. V.)

Vitamin B_1 in Hookworm Anemia—Deficiency of. Two cases of hookworm anemia in which a considerable degree of œdema was present are described, where treatment with vitamin B_1 in the form of brewer's yeast and betaxin rapidly cured the œdema after treatment with iron and the provision of a generous diet had failed to do so. In each case the administration of betaxin was followed by increased diuresis, an action which does not appear to have been recorded apart from true beriberi. The result of this treatment suggests that the œdema which accompanies hookworm disease and anemia is due to a deficiency of vitamin B_1, which is in turn due most probably to loss of vitamins in the blood extracted from the host by the hookworm.—A. MCKENZIE. *Lancet*, 236 (1939), 1143. (W. H. H.)

Vitamin K and Prothrombin Deficiency. In obstructure jaundice the plasma prothrombin level may be low and may become further reduced following operation. Dangerous bleeding is probable should this figure be reduced to 50% of normal. Administration of vitamin K and bile salts leads to a restoration of the prothrombin level and control of the bleeding tendency.—J. D. STEWART. *Ann. Surg.*, 109 (1939), 588; through *Brit. Med. J.*, 4102 (1939), 432E. (W. H. H.)

NEW REMEDIES

SYNTHETICS

Azochloramid Saline Mixture Tablets (Wallace & Tiernan Products, Inc., Belleville, N. J.) consist of azochloramid (N-N'-dichloroazodicarbonamidine) mixed with sodium chloride and phosphate buffers. When the tablet is dissolved in 2 ounces of distilled water, the resulting solution is an isotonic saline containing azochloramid 1:3300 buffered to p_H 7.4. Azochloramid solutions are distinguished from all other chlorine compounds by their unusual stability and by their gradual liberation of active chlorine over long periods of time, even in the presence of organic matter. The tablets are valuable for use as a hot soak or compress, for irrigation, for instillation and for moistening a wet dressing—for topical application in the treatment of local tissue infection, and for prophylactic use. It is also a powerful deodorant, indicated in empyema, cellulitis, abscesses and deep wounds where control of infection and removal of large quantities of pus present a problem. Azochloramid is yellow and is both fat- and water-soluble; its preparations are non-toxic, relatively non-irritating and will not stain tissue or clothing. The tablets are supplied in bottles of 100 and 500 tablets.—*Amer. Professional Pharmacist*, 5 (1939), 215. (F. J. S.)

Ben-Ovocylin (Ciba Pharmaceutical Products, Inc., Summit, N. J.) is α-estradiol benzoate in an oily solution. It is used for its estrogenic action in menopause; for involutional melancholia; in selective cases of primary amenorrhea and dysmenorrhea, inhibition of lactation; pruritus vulvæ; senile vaginitis; vulvovaginitis in children. The dose, according to the individual need of the case, is from 0.1 or 0.2 mg. to 1.0 mg., 1 to 3 times a week. Ben-Ovocylin is supplied in ampuls of 0.1, 0.2 and 1 mg. per cc. and in boxes of 6 and 50.—*Amer. Professional Pharmacist*, 5 (1939), 392. (F. J. S.)

Decicain, formerly Pantocain (Bayer Products Ltd., London), is *p*-butyl-aminobenzoyl-dimethyl-amino-ethanol hydrochloride. It is used to produce anesthesia. Administration: Surface anesthesia, 1 to 2% aqueous solution; infiltration: 1:1000 solution in normal saline, with suprarenin; conduction: 2:1000 solution in normal saline with suprarenin; spinal (intrathecal): 1.5 to 2 cc. of a $\frac{1}{2}$% solution, without suprarenin. It is supplied in bottles of 1 and 5 Gm.; tablets ($1\frac{1}{2}$ grain), tube of 10; solution, 2%, bottle of 25 cc.—*Australasian J. Pharm.*, 21 (1940), 61. (A. C. DeD.)

Iodobesin (Anglo-French Drug Co. Ltd., London) is organic iodine (iodoalbumin), with pluriglandular extracts. It is used in cases of obesity and other troubles due to deficient endocrine activity. The dose is one or two tablets twice or three times a day. It is supplied in bottles of 60 and 120 tablets.—*Australasian J. Pharm.*, 21 (1940), 61. (A. C. DeD.)

Kaodrox (John Wyeth & Bro., Philadelphia, Pa.) is colloidal kaolin and aluminum hydroxide gel. It is indicated for dental use in the treatment of peridontal disease as a therapeutic adjunct to proper instrumentation and oral prophylaxis. It is of value in traumatic gingivitis, chronic suppurative peridontitis; Vincent's infection, "Schmutzpyor-

rhea" (calcic peridontitis), hemorrhagic gingivitis and other non-specific types of oral disease. Kaodrox is sufficiently adsorbent and astringent for dental use, aids in reëstablishing normal tissue tone, inactivates and removes bacterial toxins, allays inflammation and exerts a soothing effect, reduces swelling, exerts a mild astringent effect without vasoconstriction, adsorbs and removes irritant substances and coagulates mucus. It is applied on a cotton swab by means of a trough in the cap of the bottle. Kaodrox is supplied in 4-oz. bottles. *Amer. Professional Pharmacist*, 5 (1939), 650. (F. J. S.)

Kapilon (Glaxo Laboratories Ltd., Greenford, Middlesex, England) contains in each ampul 5 mg. of 2-methyl-1:4-naphthoquinone; an analogue of vitamin K—in oil solution. It is used in cases of obstructive jaundice, neo-natal hemorrhage. The dose is 1 to 2 cc. as the physician directs; by injection preferably; when necessary, *per os*. It is supplied in boxes of 6 x 1-cc. ampuls.—*Australasian J. Pharm.*, 21 (1940), 61. (A. C. DeD.)

Livogen (British Drug Houses Ltd.) is of value in the specific anemias known to respond to liver treatment. Its content of the vitamin B complex (the members of which combine with other substances in the body to form enzymes) maintain the chemical processes involved in the breaking down and building up of all body tissues. The action of Livogen is not to stimulate for the time being tired and worn out tissues but to assist the processes of repair and replacement and to supply the substances necessary for the smooth working of such revitalized tissues. It is used in the treatment of anemias, in the prevention of the polyneuritis of pregnancy and of alcoholism, also in gastrointestinal disorders in anorexia and in retarded growth.—*Indian and Eastern Chemist*, 20 (1939), 228. (A. C. DeD.)

Phytoferol (The British Drug Houses Ltd., London) is a standardized solution of vitamin E in capsules, each of which contains the equivalent of 3 mg. of synthetic di-α-tocopherol. It is used in cases of habitual abortion, dysmenorrhea, defective lactation, pregnancy, toxaemia, sterility, etc. The dose as the physician directs. It is supplied in boxes of 25 and 100 capsules; in bottles for export.—*Australasian J. Pharm.*, 21 (1940), 61. (A. C. DeD.)

Pranturon (Schering Corporation, Bloomfield, N. J.) is a highly potent gonadotropic factor derived from pregnancy urine and it is indicated in undescended testes and functional menorrhagia. Pranturon is administered intramuscularly and the solution is best prepared immediately before use. It is supplied in packages of 3, 6, 10 and 50 ampuls with diluent (150 International units); and in packages of 3, 6 and 50 ampuls with diluent (750 International units). It is supplied as a stable powder with accompanying containers of diluent because, presented in this form, the material remains potent and a fresh sterile solution can be prepared at the time of injection.—*Amer. Professional Pharmacist*, 5 (1939), 651. (F. J. S.)

Racephedrine Hydrochloride. (The Upjohn Co., Kalamazoo, Mich.) is racemic ephedrine hydrochloride ($C_{10}H_{15}ON.HCl$); it is a colorless crystalline powder soluble in 4 parts of water and 25 parts of alcohol. The aqueous solution is neutral to litmus and is optically inactive. It is a sympathomimetic and an antispasmodic agent. Racephedrine Hydrochloride resembles natural ephedrine hydrochloride very closely; it produces less pressor effect and is less likely to cause undesirable side actions than ephedrine hydrochloride. The shrinking action of racephedrine and ephedrine on the nasal mucosa is the same. It is used as an antispasmodis in bronchial asthma, decongestant in rhinitis and hay fever. The dosage is: orally, one $^3/_8$-grain capsule one to three times daily; locally, as a spray from an atomizer or as drops in the nose. Racephedrine Hydrochloride is supplied in bottles of 40 and 250 capsules ($^3/_8$-grain); and in 1-oz. and pint bottles of a 1% solution in Modified Ringer's Solution.—*Amer. Professional Pharmacist*, 5 (1939), 651. (F. J. S.)

Sobisminol (Mass and Solution) (E. R. Squibb & Sons, New York) contain a complex organic bismuth compound resulting from the interaction of sodium bismuthate, triisopropanolamine and propylene glycol; each cc. of the solution is equivalent to 20 mg. of bismuth. It can be used wherever bismuth therapy is indicated in the treatment of syphilis as a spirochæticide, including use with one of the arsenicals or in alternate courses with arsenicals, according to the preference of the clinician. When given orally, (adult dose = 2 capsules t. i. d.) sobisminol mass appears to have an antisyphilitic action comparable to that produced by sobisminol solution (2 cc. twice weekly) and other soluble compounds of bismuth administered parenterally. It has been given daily for periods of many months without producing cumulative toxic effects. Sobisminol is supplied as follows: mass in oral administration, capsules containing 0.75 Gm. sobisminol mass equivalent to 150 mg. bismuth in packages of 100 and 1000; solution for intramuscular administration, 2-cc. ampuls in boxes of 12, 1-cc. ampuls in boxes of 12, also supplied in boxes of 100 and in bulk in 50-cc. bottles.—*Amer. Professional Pharmacist*, 5 (1939), 719. (F. J. S.)

Sodium Sulfapyridine Monohydrate (Lederle Laboratories, Inc., New York, N. Y.; Abbott Laboratories, North Chicago, Ill.; Merck and Co., Rahway, N. J.) consists of sodium 2-sulfanilyl aminopyridine monohydrate, $C_{11}H_{10}N_3O_2SNa.H_2O$ (Synonyms: Dagenan soluble, sulfapyridine sodium, sulfapyridine soluble, M. & B. 693 soluble). It is indicated for emergency use in the treatment of pneumococcic pneumonia when the oral administration of sulfapyridine fails through lack of absorption or where immediate therapy is necessary. Sodium Sulfapyridine Monohydrate is administered on the basis of 0.06 Gm. of drug per Kg of body weight of patient; and it is supplied in 2-Gm. and 5-Gm. ampuls of sterile dry powder, to be used with freshly-prepared sterile distilled water and never, in more than 5% solution.—*Amer. Professional Pharmacist*, 6 (1940), 112. (F. J. S.)

Somatose (Bayer Products Ltd., London) consists of water-soluble meat albumoses. It is a tonic and invigorant, a physiological stomachic and appetizer. The dose is 2 to 4 teaspoonfuls daily, distributed over the day, dissolved in water. For children the dose is half. It is supplied as a powder in tins of 1 ounce, as a liquid in bottles, sweetened, about 6 ounces, unsweetened also, about 6 ounces.—*Australasian J. Pharm.*, 21 (1940), 162. (A. C. DeD.)

"Tabloid" Empirin Compound with Codeine (Burroughs Wellcome and Co., London and Sydney) contains acetylsalicylic acid, phenacetin, caffeine, with codeine phosphate. It is used as an analgesic and antipyretic. The dose is one or two, with a little water. It is supplied in bottles of 25 and 100.—*Australasian J. Pharm.*, 21 (1940), 61. (A. C. DeD.)

Taxol (Continental Laboratories Limited) is essentially a biological laxative. Its action follows closely the process of nature. Food is not rushed through the digestive tract. No oily substance hinders the action of the digestive secretion of food. The lactic ferments of Taxol help digestion, the power of the intestines is enhanced by its intestinal gland content. The small quantity of agar-agar

present in Taxol provides a slight additional bulk to aid mechanical propulsion of food through the intestines. It is claimed that all forms and degrees of constipation are suitable for treatment by Taxol. Whether constipation is a solitary symptom or the concomitant of a mild or grave morbid condition, it can be relieved in the appropriate dosage by Taxol.—*Indian and Eastern Chemist*, 20 (1939), 228. (A. C. DeD.)

SPECIALTIES

Calcax (G. D. Searle & Co., Chicago, Ill.) contains in each tablet calcium carbonate 3 1/2 grains (0.227 Gm.), magnesium carbonate 2 1/2 grains (0.162 Gm.), cerium oxalate 1/2 grain (0.0324 Gm.) and oil of peppermint, *q. s.* As an antacid and mild gastric sedative without sodium bicarbonate it is used in all types of gastric hyperacidity; and the dose is one or two tablets as required. Calcax is supplied in bottles of 100 and 1000 tablets.—*Amer. Professional Pharmacist*, 5 (1939), 719. (F. J. S.)

Feronex (Paul Plessner Co., Detroit, Mich.) are soft gelatin capsules containing in each freshly precipitated ferrous carbonate mass 0.389 Gm., 50 I. U. crystalline thiamin chloride and 20 Sherman-Borquin units riboflavin. If offers adequate, readily assimilable, and well-tolerated doses of ferrous iron, adequate doses of the required vitamins to enable the maximum required daily intake to be administered conveniently. The dose is one to three capsules three times a day. It is used as a hematinic in all conditions of iron deficiency, and as a tonic in general weakness, under-nutrition and similar disorders. **Feronex with Liver Concentrate** contains in addition in each soft gelatin capsule 1:125 liver concentrate, the equivalent of 12 Gm. of fresh liver. As it contains all the necessary agents and anti-anemic principals required in the regeneration of blood cells and hemoglobin, it is indicated for use in microcytic secondary anemia, in nutritional anemia, anemia of pregnancy and chlorosis, as a tonic in anorexia, general weakness, fatigability and under-nutrition. Either type is supplied in boxes of 84 and bottles of 500 capsules.—*Drug. Circ.*, 83, No. 11 (1939), 33. (E. V. S.)

Manadrin (Endo Products, Inc., New York) is an aqueous solution of 1% ephedrine base, buffered with mannitol, a polyhydroxy compound related to glucose and gluconic acid, to make it compatible with body fluids, eliminating irritancy commonly associated with ephedrine sprays and solutions. It is indicated in the treatment of nasal congestion of the common cold, affording comfort and facilitating drainage of the accessory sinuses. Manadrin not being an oil solution, the oil droplets which are immiscible with nasal secretions are not formed. It is an effective vasoconstrictor, immediately active with longer effect, is non-irritating and easily applied. Manadrin is supplied in one-ounce bottles, pints and gallons.—*Amer. Professional Pharmacist*, 5 (1939), 650. (F. J. S.)

New Remedies. The following new remedies have recently made their appearance on the market: **Acriflex,** an oil-in-water emulsion containing acriflavine 0.1, glycol 3.0, perfume 0.05, stearate cream to 100.0; **Ivax,** a liquid extract of apples containing ext. malorum (10 in 1) 46.5, sucrosum 28.0, aq. distillata ad 100.0; **Priovit,** pellets containing vitamin B_1 0.5 mg., vitamin B_2 0.25 mg., vitamin C 25.0 mg., factor P (citrin) 5.0 mg.—ANON. *Pharm. J.*, 143 (1939), 48. (W. B. B.)

New Remedies. The following new preparations have recently made their appearance: **Lutocyclin Oral,** tablets containing anhydro-hydroxy-progesterone 5 gr. per tablet; **Percorten,** which is desoxycorticosterone acetate in sesame oil (in ampuls); **Sulfphonamide-P Ointment A and H,** which contains 5% *para*-aminobenzene sulfonamide in solution and incorporated in an absorbable base from which it will not crystallize; **Thyrogan,** which is the thyroid-stimulating hormone from the anterior lobe of the pituitary.—ANON. *Pharm. J.*, 143 (1939), 236. (W. B. B.)

Phenobarbital and Bromides, Effervesc. (Burroughs Wellcome & Co., Inc., New York) consists of a compressed product which contains potassium bromide, gr. 3, sodium bromide, gr. 3, ammonium bromide, gr. 1 1/2, phenobarbital soluble, gr. 1/4, effervescent salts, *q. s.* It is used for the symptomatic treatment of epilepsy, delirium tremens, nervous insomnia and other convulsive states of central origin. Given orally in a glass of water, the product provides the prompt sedative effect of the combined bromides with the prolonged action of phenobarbital soluble. It dissolves rapidly in water with brisk effervescence of carbon dioxide which masks the taste of the other ingredients. The products are supplied in glass tubes of 25.—*Amer. Professional Pharmacist*, 5 (1939), 273. (F. J. S.)

Potassium Chloride Tablets (Endo Products, Inc., New York) consist of 5-grain tablets of potassium chloride. Potassium chloride is thoroughly effective in relieving the symptoms of severe urticaria. The clinical results in hay fever are conclusive; chronic sinusitis, and other apparently allergic diseases show decrease of discharge and pain. Potassium chloride appears to be preventive against food sensitivity; and it must not be given to persons suffering from Addisonian disease. Potassium Chloride Tablets are supplied in bottles of 100, 500 and 1000 tablets.—*Amer. Professional Pharmacist*, 5 (1939), 335. (F. J. S.)

Prolarmon Liquid (Maggot Products Co., Chicago, Ill.) is an aqueous solution containing the water-soluble and filtrable substance of comminuted blow-fly maggots (*Lucilia sericata*) 5%, boric acid 4%, chlorobutanol 0.5%, oxyquinoline sulfate 0.4% and sodium chloride 0.75%. It is valuable as a wet dressing in all infected wounds, in third degree burns, in indolent ulcers and whenever healing appears unduly retarded. Prolarmon Liquid is supplied in 4-oz. and 8-oz. bottles.—*Amer. Professional Pharmacist*, 5 (1939), 332. (F. J. S.)

Prolarmon Rectal (Maggot Products Co., Chicago, Ill.) combines the healing stimulant properties of Prolarmon Jell with the astringent influence of alum (0.25%) and the decongestant, vasoconstrictive action of ephedrine sulfate (0.25%). It is used in the palliative treatment of certain types of hemorrhoids. Prolarmon Rectal is supplied in single application tubes (boxes of eight) and in 1-oz. tubes.—*Amer. Professional Pharmacist*, 5 (1939), 393. (F. J. S.)

Stabisol (Bismuth Subsalicylate in Oil) (E. R. Squibb & Sons, New York) contains in each cc. 2 grains (0.13 Gm.) of bismuth subsalicylate, equivalent to 75 mg. of metallic bismuth, with 3% chlorbutanol (local anesthetic) and 0.03% mercurated chlorxylenol (antiseptic). The vehicle is 80% specially treated, decolorized olive oil and 20% oleate, containing small amounts (about 0.015%) of calcium oleate and water to aid in stabilizing the suspension. The average dose of Stabisol is 1 cc. once a week in courses lasting 8 to 12 weeks, depending upon the individual need and reaction. Stabisol is supplied in 60-cc. diaphragm cap containers.—*Amer. Professional Pharmacist*, 5 (1939) 273. (F. J. S.)

Syntrogel (Hoffmann-LaRoche, Inc., Nutley, N. J.) contains in each capsule aluminum hi-gel

(special aluminum hydroxide of high adsorptive capacity) 5 gr., syntropan (phosphate salt of 3-diethylamino-2,2-dimethylpropanol tropic acid ester) 0.15 gr., bismuth subcarbonate 2.5 gr., calcium carbonate (medicinal) 2.5 gr. and oil of peppermint 0.375 gr. It is generally indicated in any case in which either gastric hyperacidity or flatulence, or both, are symptoms; frequently gastric inflammations and ulcers are relieved. The dose is one or two capsules, with water, taken immediately upon the appearance of hyperacidity or flatulence; the dose may be repeated, if necessary, in cases of marked hyperacidity or gas formation. Syntrogel is supplied in cartons of 50 and 100 capsules.—*Amer. Professional Pharmacist*, 6 (1940) 47. (F. J. S.)

Thialixir (E. R. Squibb & Sons, New York) is a palatable, stable preparation containing 800 International units of vitamin B_1 per fluid ounce. It is a pharmaceutical vehicle for compounding liquid prescriptions and it is compatible with a wider variety of drugs than Elixir Lactated Pepsin. Because of its slight acidity, however, it is not compatible with carbonates and alkalies. It is very effective in masking the unpleasant taste of iodides, bromides, barbiturates and alkaloids. The dose is three fluid drachms (3 teaspoonfuls, 12 cc.); this supplies the average adult daily requirement for vitamin B_1, according to recognized authorities. Thialixir is supplied in 16 fluidounce bottles and in gallons.—*Amer. Professional Pharmacist*, 5 (1939), 272. (F. J. S.)

Thi-Amino (Od Peacock Sultan Park Co., 4500-view Pl., St. Louis, Missouri) contains thiamine hydrochloride (synthetic vitamin B_1 hydrochloride) 111 U. S. P. XI International units, and glycocoll (amino acetic acid) 30 grains in each tablespoon, alcohol 10%. It is used to correct and prevent deficiencies of vitamin B_1 and glycocoll such as impaired appetite, certain gastrointestinal disorders, improper nutrition, excessive muscular fatigue, and to counteract peripheral neuritis, alcoholic neuritis and myasthenis gravis. The dose is: adults, one tablespoonful three times a day; children, one or two teaspoonfuls according to age. Thi-Amino is supplied in 12-oz. bottles.—*Amer. Professional Pharmacist*, 6 (1940), 112. (F. J. S.)

Thyroid "Tabloid" U. S. P. (Burroughs Wellcome & Co., Inc., New York) consists of carefully selected, hand-dissected, desiccated thyroid gland of the sheep, standardized according to the U. S. P. XI. It is used in the treatment of conditions in which the basal metabolic rate is sub-normal, such as cretinism, myxedema and hypothyroid obesity; it is also given non-specifically for certain types of headache, constipation, occular conditions, nausea of pregnancy, etc. It is a general metabolic stimulant of all tissues; it raises the basal metabolic rate and increases destructive metabolism, causing loss of weight. In excessive doses, it produces tremor and tachycardia with flushing and sweating. "Tabloidl" Thyroid are supplied in $^1/_4$-grain, $^1/_2$-grain and 1-grain tablets in packages of 100 and 500.—*Amer. Professional Pharmacist*, 6 (1940), 45. (F. J. S.)

Torantil (Winthrop Chemical Co., Inc., New York) is desiccated kidney and extract of intestinal mucosa of hogs containing histaminase in tablet form. It is standardized biologically and one unit inactivates 1 mg. of histamine hydrochloride during incubation at 37.5° C. for twenty-four hours. It is used in prophylaxis and treatment of allergic conditions including asthma, hay fever (vasomotor rhinitis), gastro-intestinal disturbances, urticaria, angioneurotic edema, atopic dermatitis, eczema, serum sickness, hypersensitivity to insulin, drugs, and physical agents (cold, heat, light); also used in acne vulgaris. The dose is perorally, from ten to fifteen units three times daily, or as directed by the physician; the tablets should be swallowed whole before meals. Torantil is supplied in tablets of 5 units in bottles of 50 tablets.—*Amer. Professional Pharmacist*, 6 (1940), 44. (F. J. S.)

Vita-Kaps (Improved) (Abbott Laboratories, North Chicago, Ill.) contains in each capsule vitamin A, 10,000 U. S. P. units; vitamiu D, 1000 U. S. P. units; vitamin B_1 (thiamin chloride, 0.6 mg.), 200 International units; vitamin G (riboflavin, 100 gammas), 40 Sherman units; vitamin C (ascorbic acid, 25 mg.), 500 International units. Because of their high vitamin content, Vita-Kaps (Improved), are a useful therapeutic agent in all cases of clinically diagnosed or suspected single or multiple deficiencies of the vitamins contained in these capsules. The average daily prophylactic doses for vitamins A, B_1, C and D are provided by one capsule. Daily therapeutic doses are to be administered as directed by the physician. Vita-Kaps (Improved) are supplied in bottles of 25, 50, 100 and 250 capsules.—*Amer. Professional Pharmacist*, 5 (1939), 515. (F. J. S.)

BACTERIOLOGY

Alcohol as a Possible Vehicle of Infection with Gas Gangrene. Ethyl alcohol used as a disinfectant of syringes is not able to destroy bacteria such as those of *B. perfringens*.—G. Benzoni. *Gazz. ospedali clin.*, 69 (1938), 1107–1110; through *Chem. Abstr.*, 33 (1939), 2172. (F. J. S.)

Anthrax Vaccine. An injectable vaccine comprises viable anthrax spore material in a medium containing aluminum hydroxide.—Howard M. Winegarden, assignor to Cutter Laboratories. U. S. pat. 2,151,364, March 21, 1939. (A. P.-C.)

Antirabic Vaccination with Tissue Culture Virus. Examination of the commercial antirabies vaccines for the prophylactic immunization of dogs has revealed that the majority do not protect after the recommended single injection of the vaccine. Having found that Swiss mice were highly susceptible to rabies virus and could be immunized by intraperitoneal injections of the virus, Webster thus had available a method for testing the value of rabies vaccines for human and canine prophylaxis. The author has developed a tissue culture rabies virus by growing mouse brain virus in Tyrode's solution containing monkey serum and minced mouse embryo brain. After 95 mouse passages of the virus it has uniformally maintained its virulence in dilutions up to 1:10000. The virus keeps its potency for at least 60 days under favorable conditions of preservation. Eighty thousand intracerebral lethal doses of this virus are harmless when injected intraperitoncally into mice, and 14 days after inoculation mice are protected against 1000 lethal doses of the virus injected intracerebrally. The virus has been used to successfully immunize beagle puppies. Dogs injected intraperitoneally with 5000 to 20,000 mouse lethal doses resist the intracerebral injection of a lethal dose of the virus.—L. T. Webster. *Am. J. Pub. Health*, 28 (1938), 44. (T. C. G.)

Antiseptic Cream—Stabilized. A stable product contains an organic chlorine-yielding substance such as sodium *p*-toluenesulfonchloramide, an alkaline stearate (such as potassium stearate), a substantial excess of stearic acid, and sufficient tetradecyl, hexadecyl or octadecyl alcohol to prevent crystallization of the composition.—Michael G. Minaeff and Ronald C. Hughes, assignors to Zonite Products Corp. U. S. pat. 2,157,831, May 9, 1939. (A. P.-C.)

Antiseptic, Disinfecting and Preserving Compounds. Bactericidal agents are prepared containing a guanyl or biguanyl compound of the formula

RXC(:NRR″)NHR′ (where R stands for an aliphatic radical containing 10 to 16 carbon atoms selected from the group consisting of hydrocarbon radicals and of aliphatic radicals which contain oxygen and sulfur as members of the aliphatic chain, R′ stands for hydrogen, alkyl or the guanyl group, R″ stands for hydrogen or alkyl and X stands for oxygen or sulfur). Details are given of the preparation of a number of such compounds.—BRUNO PUETZER, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,156,193, April 25, 1939. (A. P.-C.)

Aspirin as an Antiseptic. The following experiments were tried: (1) A solution was prepared by dissolving 1 Gm. aspirin and 0.5 Gm. $NaHCO_3$ in 10 mils water with aid of heat. The solution is strongly acid to litmus, 0.93 Gm. $NaHCO_3$ being needed to neutralize 1 Gm. of the acid. Such a solution, heated just to boiling, quickly cooled, and sulfuric acid added to combine with sodium, extracted by four treatments with chloroform and one with carbon tetrachloride, yielded upon evaporation of the solvents 0.894 Gm. of well-defined crystals, indicating a preponderance of aspirin over the salicylic acid. (2) A broth was prepared by boiling together water, pieces of beef and vegetables; and forcibly straining through thin calico. Fifty mils were placed in each of five beakers (A-E). A was left plain. To B, solution (1) equivalent to 0.2 Gm. aspirin was added. To C, solution (1) equivalent to 0.4 Gm. aspirin was added. To D, 0.2 Gm. aspirin in fine powder was added and the mixture well stirred. To E, 0.1 Gm. aspirin was added and well mixed. After ten days A showed a slight fungoid growth and had a perceptibly sour odor; all the others were free from any signs of deterioration. After a month A had grown worse, while the remainder seemed to still be satisfactory.—D. B. DOTT. *Chemist and Druggist*, 122 (1940), 296. (A. C. DeD.)

Bacteria and Sulfanilamide Preparations in Vitro. The bacteria were cultivated in suspended drops in the presence of varying dilutions of the sulfanilamide compounds. The morphological changes produced in *Streptococcus hemolyticus* and *B. typhosus* are described. They are considered to be evidence of an immediate action of the chemicals on the organisms.—C. CALLERIO. *Biochem. terap. sper.*, 25 (1938) 441–444; through *Chem. Abstr.*, 33 (1939), 2172. (F. J. S.)

Bactericidal, Cleansing and Preserving Compounds. Details are given of the production and properties of various benzylquinolinium and piperidinium derivatives. These products are in general suitable for disinfecting surgical instruments, bandages, etc., for use as wetting and cleansing agents, in cosmetics, gargles, etc., or as preservative agents.—HANS HAHL and FRIEDRICH LEUCHS, assignors to ALBA PHARMACEUTICAL CO. U. S. pat. 2,152,047, March 28, 1939. (A. P.-C.)

Bactericidal Metal Pectinates. Pectinates formed of metals such as nickel, lead, copper, manganese, cobalt, zinc and silver may be used as therapeutic bactericides in salves, ointments, aqueous solutions, etc.—PHILIP B. MYERS, assignor to SARDIK, INC. U. S. pat. 2,155,361, April 18, 1939. (A. P.-C.)

Bacterium Coleræ-Suis—Acute Salpingitis Due to. A married woman of thirty-three, who worked in a butcher's shop, developed a pyosalpinx which was found to be due to *Bact. coleræ-suis*. The bacteriological and serological findings are described. None of the persons associated with the patient became infected with the organism.—R. HERRING and W. F. NICHOLSON. *Lancet*, 236 (1939) 1154. (W. H. H.)

Chinosol Sulfate—Action in Vitro of, on Trypanosomum Congolense. It was observed that all the guinea pigs that were injected with blood containing only citrate, but no chinosol, died from trypanosomiasis, even after 24 hours of contact. On the other hand, all the controls that were injected with blood containing both citrate and chinosol, even though the contact was but of a moment's duration, were still living at the end of 90 days, and at no time were trypanosoma detected in the general circulation.—L. E. LEYNEN. *Bul. Inst. R. Col. Belge*, 9 (1938), 343–346; through *Chimie & Industrie*, 41 (1939), 1146. (A. P.-C.)

"Chlorophyllan"—Growth of Bacterial Groups Under the Influence of, Obtained from Plants. Chlorophyllan can be considered an accessory food substance. It is not fat-soluble and is heat-stable, withstanding 120° for 30 minutes. It is important in the biological activities of many bacteria, and when added in minute amounts to a normal culture medium it changes the morphology of the individual cell and of the colony. Such characters as roughness, sliminess or pigment formation may be enhanced.—J. W. WIRTZ. *Zentr. Bakt. Parasitenk., I Abt., Orig.*, 143 (1938), 45, 57; through *Chem. Abstr.*, 33 (1939), 2173. (F. J. S.)

Colloidal Metals—Inhibition of Complement by. Colloidal solutions of various metals destroy complement. The amount of the solutions required for this action varies widely with the kind of metal, with individual animals and, for each animal, with each sample of blood examined. Destruction of complement is determined by the content of protein in the serum. Colloidal copper destroys complement more easily if the globulin, in relation to albumin, is increased. The removal of 62.5% of globulin by dilution with distilled water and carbon dioxide destroys complement in a serum. The removal of a part of the globulin affects complement from guinea pigs differently in different animals. Albumin and globulin may mutually replace each other, so that serums with different albumin/globulin ratios may have identical complement contents. Treating serum with ethyl ether influences the complement by its action on globulin.—E. LUHRS. *Z. Immunitäts.*, 95 (1939), 70–88; through *Chem. Abstr.*, 33 (1939), 3871. (E. G. V.)

Electrical Process for Rendering Liquids Bactericidal. An electric current at 35 to 110 volts is passed through liquids such as water, milk, beer, etc., by means of pure silver electrodes.—J. CARLIER. Belg. pat. 431,801, Jan. 31, 1939. (A. P.-C.)

"Esters" as Preserving Agents for Foods and Other Easily Decomposable Materials. Esters of *p*-hydroxybenzoic acid are recommended as preservatives; they yield both bactericidal and antioxidant effects.—T. SABALITSCHKA. *Z. Untersuch. Lebensm.*, 77 (1939), 256–261; through *Chem. Abstr.*, 33 (1939), 4327. (F. J. S.)

Gonadotropic Antibodies—Studies on. Rabbits were immunized daily during a period of over one year with 250 RU of purified prolan from pregnancy urine. The sera of the animals showed the following properties: The antigonadotropic reactions, as measured by the rat test, underwent a continuous increase until a titer of 300 PAU per cc. was attained. The complement fixation reaction with prolan, prosylan, (from mare's blood or human or animal hypophysis) and human serum remained constantly negative. The precipitin reaction with prolan, prosylan (human hypophysis) and human serum was negative throughout the time. The attempt to induce a precipitation by addition of cholesterol, incubation at 42° C. and mechanical shaking, failed. The flocculation test according to Ramon in respect of prolan-antiprolan was negative. Rabbits were immunized daily during a period of over one year with 100 RU purified prosylan from mare's blood (antex). The sera of the test animals showed the

following properties: Antigonadotropic actions as tested on infantile female rats, set in only after a quarter of a year; the subsequent rise of titer was very slow, the maximum of 100 PSAU per cc. being attained after 14 months. A positive complement fixation reaction was only induced after daily immunization for one-half year with the appearance of peculiar transient antibodies in the serum. The transient character of these antibodies could be recognized from the phenomena: The inconstancy of their occurrence in the serum; the antibodies were present on certain days, on others they had disappeared from the serum. On continued removal of blood, the body stock of these antibodies was exhausted within a week, though at this time the antigonadotropic activity of the serum was unchanged and the presence of accessory complement binding antibodies to horse protein could still be demonstrated. The instability of the serum on storage: A positive antibody reaction could be maintained in stored potent sera at most for one week; after this time the antibodies were without effect; attempts to preserve the transient antibodies in the antiserum by different methods of storage failed. Analysis of immune reactions induced by injection of antex revealed the existence in the antisera of two distinct antibodies: Transient antibodies to gonadotropic hormone. These were found to be non-species specific and non-organ specific *i. e.*, the antibodies obtained on treatment with prosylan of mare's blood reacted with a prolan preparation from pregnancy urine and with prosylan prepared from hypophysis of different animal species, but not with hormones other than the gonadotropic. Hence they are hormone specific. Constant antibodies to horse protein: There were found to be strictly species specific and gave no reaction with protein of animal species other than the horse. The separation of the two antibody groups was easily accomplished by storage of the antisera. On this treatment the unstable hormone specific antibodies disappear, antibodies specific to horse protein persist. The precipitin reaction of the antex-antisera to prolan or purified antex was constantly negative; when crude antex was used instead of prolan a positive reaction was obtained presumably because the crude preparation contained horse protein. Attention is drawn to the difference between the antigonadotropic substances and the group of the complement binding antibodies to gonadotropic hormone. The former are of constant occurrence in the sera and are stable on storage; they possess a high organ and species specificity. The latter group of antibodies on the other hand is transient, *i. e.*, of inconstant occurrence in the serum and unstable on storage, these antibodies are hormone specific but not organ or specific. It is concluded therefore that the complement binding potency gives no indication whatsoever on the antigonadotropic activity. Both the antigonadotropic factor and the complement binding antibodies to gonadotropic hormone must be classified as immune bodies, but they do not fit in any of the categories of antibodies at present recognized in serology.—F. SULMAN. *Arch. intern. pharmacodynamie*, 61 (1939), 319. (W. H. H.)

Immunochemistry—Researches in Synthetic. A review is given of recent advances in synthetic immunochemistry. The changes in specificity of natural immune bodies produced by chemical alterations of the molecule are discussed. Landsteiner's method of creating new specificities by diazo coupling is considered, also Avery and Heidelberger's work on the polysaccharides of the pneumococci. Harington has studied methods of coupling groups to protein which are linked by more natural groupings than the diazo group. This was done by coupling O-β-glucosidotyrosine in such a manner that the tyrosine carboxyl group gives peptic formation with free amino groups of the protein. Protein derivatives containing 6–12% glucose can be prepared in this manner. With the aid of this method the question why gelatin and insulin are not antigens was sought. Unlike most of the proteins which are antigens and contain carbohydrate, insulin and gelatin do not contain carbohydrate. The glucosidotyrosyl group had a strong dominating hapten character. The glucosidotyrosyl derivatives of gelatin or insulin were good antigens. The lack of antigenic property of insulin is due to its lack of carbohydrate in the molecule. Further work is described in which thyroxine was coupled to proteins and yielded thyroxyl proteins which were strong antigens. Serum of animals immunized to these proteins were antisera which could passively immunize other animals to the normal action of thyroglobulin or of thyroxine. Nearly complete resistance was obtained to the action of a dose of thyroxine which would normally have raised the metabolism 60–70%.—C. R. HARINGTON. *Dansk Tids. Farm.* 13 (1939), 304. (C. S. L.)

Lactoflavine Product—Characterization of, in Aspergillus Niger. The authors found that the mycelium of *Aspergillus niger* cultivated upon a nutritive liquid weak in magnesium content is tinted with yellow fluorescent pigment which was left diffused in the medium. The formation of this pigment is characteristic of the magnesium deficiency; it is not obtained by restricting the other elements; it is however increased if, with the deficiency of magnesium, a simultaneous deficiency of iron is made, and in a general fashion it is favored by a modification of the medium which retards the development of the fungus. These authors showed that *Aspergillus niger* was free of lactoflavine in a correct balanced medium, and that they synthesized this pigment in the case of magnesium insufficiency, revealed it as a different functioning of the cellular oxydations.—J. LANOLLAY and F. LABOREY. *Acad. Sci.*, (March 27, 1939); through *Presse méd.*, 36 (1939), 688. (W. H. H.)

Lead Salts—Experimental Research upon the Antisyphylitic Action of. The author studied the action of lead carbonate and acetate upon syphilis in rabbits, upon trypanosome and recurrent fever in mice. The author compared the action of the preparations of salts of bismuth and silver with those of lead acetate upon syphylis in the rabbit and found survival cures with bismuth in less than three weeks, with lead acetate in less than five weeks. The silver salts were inactive. The activity of the lead salts is evident and this experiment shows that the activity of metals has nothing to do with their atomic weight. The action of the lead salts is not tied to its spirochetic action but to its durable action. Lead acetate is inactive against trypanosomes and recurrent fever. The author compared the given results by the Fuchs and the Wassermann reaction. The positivity of the immunity reaction is manifested also when the Wassermann is very strongly positive.—M. KUMASAWA. *Fuknoka Acta Medica*, 34 (Dec. 1938); through *Presse méd.*, 39 (1939), 104. (W. H. H.)

Microbiology—Is Sterilization by Cold Possible in? Grape must ferments after the action of narcotics at diminished pressure and in the absence of oxygen. Pasteurized must inoculated with yeast ferments in spite of the same treatment although the action is much delayed. *Staphylococcus* is not destroyed by this treatment.—A. MIRIMANOFF. *Arch. Sci. phys. nat.*, 21 (1939), 20–23; through *J. Soc. Chem. Ind.*, 58 (1939), 983. (E. G. V.)

Pantothenic Acid as a Growth Factor for the Dochez NY5 Strain of Hemolytic Streptococcus. Pantothenic acid is active in the growth of the Dochez NY5 strain of hemolytic streptococcus;

the data is presented in a table.—Y. SUBBAROW and L. RANE. *J. Am. Chem. Soc.*, 61 (1939), 1616. (E. B. S.)

Phenylmercuric Glycolate. This compound, which is a germicide and fungicide, is produced by heating an aqueous suspension of phenylmercuric hydroxide or carbonate with glycolic acid.—RALPH P. PERKINS, assignor to DOW CHEMICAL CO. U. S. pat. 2,157,010, May 2, 1939. (A. P.-C.)

Pneumococcal Typing—Difficulties Encountered in. Sputum should be as fresh as possible, preferably not more than one hour old. Large amounts are not required since 0.25 cc. is often sufficient. The container in which the sputum is collected should not contain any type of antiseptic or preservative. Suitable typing material may be obtained from small children and infants by rubbing a dry, sterile cotton swab over the pharynx and placing the swab in a dry sterile glass tube. The Neufeld reaction has been found the most satisfactory of all the methods employed for typing. Rabbit antiserum having a titer of at least 1:200 should be used. Five different types of antiserum may be pooled in a group to facilitate the determination of which of the 32 types of pneumococci is present. The antisera should always be tested for cross reactions before being released for diagnostic use. A frequent difficulty is not using the correct proportion of serum and sputum. In using pooled serum in a group, from 10 to 40 times as much serum as sputum should be used. When using monovalent serum, from 4 to 10 times as much serum as sputum should be used. Hanging drop preparations have a number of advantages over flat slide preparations. Specimens which cannot be typed directly should be inoculated intraperitoneally into white mice and after 4 to 5 hours some of the peritoneal fluid is removed and typed by the Neufeld reaction.—A. W. WALTER. *Am. J. Pub. Health*, 28 (1938), 54. (T. C. G.)

Poliomyelitis—Pathological and Immunological Studies in. Experimental evidence leaves little doubt that the poliomyelitis virus travels in the body only along the nerve trunks. In addition to the usually accepted route of transmission *via* droplet infection, there is now considerable reason to believe that the gastrointestinal tract may serve as the portal of entry for the virus. Experimental and clinical studies indicate that infection does not always cause antibody production; that the infection may develop even though specific antibodies are present, and that resistance to the virus may occur without the presence of antibodies. The therapeutic use of convalescent serum in the preparalytic stage has not proved to be of value on the basis of statistical studies of the results. Active immunization of children with the various types of vaccines stimulates the production of specific antibodies. However, since it now appears that several antigenically different strains of the virus may exist, the problem of prophylactic vaccination is complicated. The use of nasal sprays for prophylaxis has thus far not proved to be effective, although they may not have had a fair trial. There are several sound objections to the use of these sprays.—M. BRODIE. *Am. J. Pub. Health*, 28 (1938), 746. (T. C. G.)

Pregnancy-Determining Antigen. An antigen specific to the determination of pregnancy by intradermal injection comprises a neutralized inorganic alkaline hydroxide extract of the fetal layer of placental tissue free from any portion of the maternal layer. Decinormal sodium hydroxide solution may be used in obtaining the extract, and hydrochloric acid and potassium dihydrogen phosphate for the neutralization.—BENJAMIN GRUSKIN, assignor to LAKELAND FOUNDATION. U. S. pat. 2,151,697, March 28, 1939. (A. P.-C.)

Scarlet Fever Immunization with Formalized Toxin. The principal objection to scarlet fever immunization with Dick toxin is that it usually causes severe reactions. To avoid this difficulty, Veldee has developed a formalized streptococcus toxin, similar to diphtheria toxoid, in the hope that the severity of the reactions might be reduced. This scarlet fever toxoid was used in immunizing some 5000 Dick positive children in various parts of Massachusetts. The toxoid having a residual toxicity of from 500 to 1500 S. T. D. per cc. was injected in doses of 0.1 cc., 0.5 cc. and 1.0 cc. at intervals of three weeks. The reactions were no more severe than those encountered with diphtheria toxoid. While immunization only produced reversal of the Dick reaction in about 50% of those immunized, an epidemiological study revealed a marked reduction of scarlet fever in those communities where immunization had been carried out (5 cases instead of the expected 45 cases in the 0–14 year age group and 4 cases instead of the expected 44 cases in the 5–14 year age group). It is therefore concluded that although scarlet fever toxoid is not nearly so effective as Dick toxin in reversing the Dick reaction, it may be of considerable value in reducing the incidence of scarlet fever in a community because no difficulty is experienced in inducing parents to have their children immunized with this innocuous product.—G. ANDERSON. *Am. J. Pub. Health*, 28 (1938), 123. (T. C. G.)

Serums—Desiccated. Biological products such as diphtheria antitoxic serum are preserved by freezing and subjecting the frozen material to a high vacuum to remove water after adding about 1.25% of sodium dihydrogen phosphate or like acidic or amphoteric electrolyte. Various examples are given, in connection with which use is made also of a phenolic preservative, citric acid, normal sodium hydroxide solution, glycine, acetic acid, potassium acid phthalate, normal hydrochloric and tartaric acid, to give a suitable p_H.—PETER MASUCCI, assignor to SHARP & DOHME. U. S. pat. 2,149,304, March 7, 1939. (A. P.-C.)

Silver Preparations—Bactericidal Power of, with Special Reference to "Argidal"-Boehringer. A suspension of *Es. coli* is killed in 1 minute by 20% Argidal. At the same concentration, staphylococci still show some growth after several hours. Streptococci are killed within 20 minutes by 0.5% Argidal; diphtheria bacilli, within 5 minutes by 1%; gonococcus growth in a 2% solution of protein is completely inhibited by a 10% solution of Argidal within 2 minutes.—H. G. ROTHE. *Arch. Hyg. Bakt.*, 121 (1938), 125–142; through *Chem. Abstr.*, 33 (1939), 2174. (F. J. S.)

Staphylococcic Anatoxin. Only three strains out of 250 gave an anatoxin with more than 10 Ramon-units per cc. The anatoxin obtained was purified by precipitation with trichloroacetic acid. The prophylactic effect of immunization with staphylococcic anatoxin in guinea pigs was observed and compared with vaccine and toxovaccine.—O. FELSENFELD. *Bratislav. Lekárske Listy*, 18 (1938), 578–581; through *Chem. Abstr.*, 33 (1939), 217 . (F. J. S.)