PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

CONTENTS

CHEMISTRY

ANALYTICAL (*Continued*)

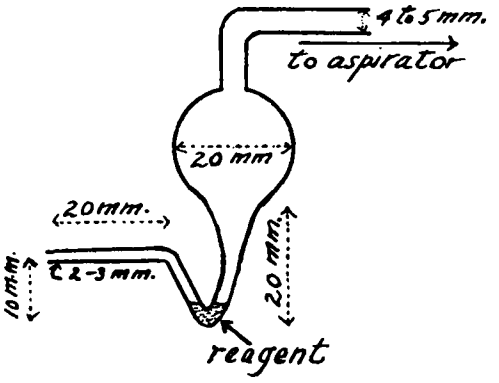
Metallic Impurities in Foodstuffs—Scheme for the Separation and the Determination of. The sample is prepared for analysis either by the wet oxidation process (I) or by ashing (II). If I is used and arsenic is suspected the digestion mixture is evaporated to fuming with ammonium oxalate solution, diluted, filtered and any insoluble residue boiled with concentrated hydrochloric acid after which it is filtered through the same filter as before and the filtrate added to the diluted digestion mixture (III). If II is used the ash is treated with concentrated hydrochloric acid evaporated to dryness and the residue dissolved in diluted hydrochloric acid (IV). To either (III) or (IV), 2 Gm. of citric acid and 0.01 Gm. of ferrous sulfate are added. The p_H of the solution is adjusted to 8 with ammonia water and hydrogen sulfide is passed into the solution. The precipitate (V) is filtered off, dissolved in dilute nitric acid and the iron (VI) precipitated by an excess of ammonia in the presence of ammonium sulfate. The precipitate (VI) contains the hydroxides of lead and bismuth adsorbed on the ferric hydroxide. Bismuth is tested for and determined as the yellow thiocyanate and lead is determined, after the removal of iron and bismuth, by the thiocyanate process. Tin is determined in the filtrate from (V) either as sulfide or colorimetrically by 4-methyl-1,2-dimercaptobenzene reagent. Copper is determined on a portion of the filtrate from (VI) directly with diethyldithiocarbamate. Zinc is determined in a second portion of filtrate by 8-hydroxyquinoline after removing any copper with hydrogen sulfide from an acid solution.—J. H. HAMENCE. *Analyst*, 62 (1937), 18. (G. L. W.)

5-Methyl-8-hydroxyquinoline—Use of, in Analysis. Addition of 5-methyl-8-hydroxyquinoline to a 5% sodium acetate-10% acetic acid solution, will show, by various color reactions, the presence of 1 part of ferric iron in 1,000,000, 1 part of divalent palladium in 1,000,000, 1 part of cupric copper in 300,000, 1 part of tetravalent titanium in 300,000, 1 part of molybdenum in 1,000,000, 1 part tungsten in 300,000; and in 0.2*N* sodium hydroxide 10% saturated with sodium tartrate solution it shows 1 part of copper or of ferrous iron in 2,500,000, and 1 part divalent palladium in 500,000. The sensitivity of other ions is less.—C. E. GIETZ and S. SA. *An. Assoc. Quim. Argentina*, 23 (1935), No. 122, 45–47; through *Chimie & Industrie*, 36 (1936), 703. (A.P.-C.)

Morphine—Determination of Small Amounts of, in Blood. Take one part of blood with 7 parts of water, add one part each of a 10% zinc sulfate solution and 0.5*N* sodium hydroxide solution and centrifuge after 10 minutes. Mix 20 cc. of the clear fluid, equal to 2 cc. blood, with 2.5 mg. scopolamine hydrobromide solution (one mg. per cc.). Precipitate the morphine with 0.4 cc. of Wavelet's solution (dissolve 7 Gm. sodium carbonate and 1 Gm. disodium phosphate in 25 cc. water, then add 3.5 Gm. freshly calcinated molybdic acid and 10 cc. nitric acid). Centrifuge after standing in a cold place for 1 hour and dissolve the precipitate in 1.5 cc. water and 10 drops of 2% ammonium hydroxide. The blue solution is compared colorimetrically with a standard. The latter is prepared from blood to which a definite quantity of morphine has been added. 0.002 mg. of morphine can be distinguished from a blank.—JAMES W. MULL. *Proc. Soc Exptl. Biol. Med.*, 35 (1937), 551. (A. E. M.)

Morphine and Its Derivatives—New Method for the Colorimetric Determination of. The method is derived from that of Folin and Malmros for the determination of glucose in blood, and is based entirely on the chemical reactivity of the phenolic hydroxyl of morphine. To 1 cc. of the alkaloidal solution add 1 cc. of 0.4% potassium ferricyanide solution and 1 cc. of 0.5% sodium carbonate solution; let stand 15 min. at not over 15° C. and add 1 cc. of ferric solution (5 Gm. ferric sulfate and 75 cc. of 85% phosphoric acid per L., with sufficient gamboge to prevent precipitation of the blue color formed by the reaction); development of the Prussian blue color is complete in a few sec., and is compared colorimetrically in yellow monochromatic light with a freshly prepared and similarly treated standard solution. Morphine and α-monoacetylmorphine can be detected at a concentration of 1:40,000; with pure solutions, in absence of reducing substances and by heating for 60 min. at 100° C., the sensitiveness can be increased to 1:300,000. By taking appropriate precautions, each constituent of a codeine-heroine-morphine mixture can be determined separately. The method can be used for the determination of morphine in opium, using a 0.1-Gm. sample, making to 1 L. and comparing with a 1:100,000 solution of morphine alkaloid.—G. RIZZOTTI. *Arch. farmacol. sper.*, 60 (1935), 545–563; through *Chimie & Industrie*, 36 (1936), 969. (A. P.-C.)

Mustard Gas—Simplified Gold Chloride Reaction for. The author has devised a simple method and a low-cost apparatus for the detection of mustard gas. The reaction of Obermiller (*Z. angew. Chem.*, 46 (1936), 162) using a 0.1% solution of gold chloride, in which the gold chloride unites with the dichlorodiethylsulfide to form a white to yellow precipitate, was selected. The microtrap shown in the illustration was designed and can be produced at a cost of 12 (Dutch) cents (about 7¢ U. S.). A small quantity (0.05 cc. gives good results) of 0.1% gold chloride solution is placed in the trap and air is drawn through the apparatus. If the reagent is forced into the pyriform chamber by the current of air, the drops quickly fall back into the trap, the pyriform shape insuring maximum gas absorption. An aspirator may be used in the laboratory, or a vacuum pump if the apparatus is to be used in the field. A mist-filter, made of cellulose (gas mask) paper may be inserted into the inlet tube. Such a filter prevents the passage of other warfare chemicals. A very sensitive and specific reaction was obtained with 0.012 mg. of mustard gas in a concentration of 4 mg./cu. M. when no mist-filter was used and in a concentration of 8 mg./cu. M. when the filter was used. Reactions were obtained with these concentrations in air and in earth, on wood and on brick with a surface distribution of 4 mg./sq. M. The method is also of value to trained gas scouts in the field. A simple laboratory method is also described by which mustard gas can be detected in ground samples several days after contamination in a much lower concentration than the normal distribution of 10 Gm./sq. M. of contaminated surface.—IR. H. L. LIGTENBERG. *Pharm. Weekblad*, 73 (1936), 1594. (E. H. W.)



Nitrates—Detection and Microdetermination of. Ten cc. of solution to be analyzed is adjusted to a p_H of 2–3.5, 1 Gm. of ammonium sulfate added and a sufficient quantity of water to bring it up to 20 cc. It is cooled in melting ice and 1 Gm. of zinc added and the mixture shaken. After remaining in the cold for three minutes the zinc is separated and 10 cc. of the liquid is placed in a 50-cc. graduated flask and 1 cc. of sulfanilic acid solution and 1 cc. of iodine solution in acetic acid are added. After three minutes, the iodine is eliminated with sodium thiosulfate avoiding an excess, 1 cc. of naphthylamine is added and the mixture is made up to 50 cc. The reagents are those of Blom (*Bull. soc. chim. biol.*, 18 (1936), 841). The same operation is carried out with solutions of sodium nitrate of $N/10{,}000$, $N/20{,}000$ and $N/40{,}000$. After twenty minutes, the coloration obtained is compared with those of the standards. If there is too great a difference between their intensities the reaction is repeated after making the proper dilution. With solutions containing 0.14 mg. to 1.40 mg. of nitric nitrogen per liter, the accuracy is $\pm$ 3%. The reaction is specific in the absence of nitrous acid, hyponitrous acid and hydroxylamine. If these are present only in a small proportion they are determined by the methods of Griess and Blom and deducted from the final result.—MAURICE LEMOIGNE, PIERRE MONGUILLON AND ROBERT DESVEAUX. *Compt. rend.*, 204 (1937), 683. (G. W. H.)

Odor and Flavor—Standardization of, Suggested Plan for. The writer gives a résumé of the considerations on the subject discussed by the Analytical Group of the Australian Chemical Institute. For determination of flavor the ideal state should be that: All extraneous odors which can reach the olfactory organs at the time of the test should be eliminated. The person carrying out the test should be in a normal physical state. The concentration of the substance being tested should be known. The following procedure is put forward as a basis for working standard methods: 1. The observer should determine his normal threshold to some chemical substance which can be obtained in a pure state, such as vanillin. This is carried out by making up various dilute solutions of vanillin, and the operator should taste these in the standard way commencing with the most dilute. The concentration at which the taste of vanillin just appears is his threshold for vanillin. This experiment repeated several times over a long period will give his normal threshold for vanillin. The object of this is so that the tester can always determine whether he is normal as

regards sense of taste at any particular time. 2. Wash the mouth with distilled water at 40° C. and wait till the flow of saliva appears. 3. The substance to be tasted is taken in 10-cc. sips. 4. The actual taste should be recorded in terms of a standard classification as suggested previously. 5. The after-taste, if any, should be noted in the same way. 6. Before the next test the mouth should be washed out with water at 40° C. and the saliva allowed to flow. 7. The tests should be carried out in a special room, which is well ventilated and removed from all possible sources of any extraneous odors. 8. The test should not be carried out within two hours of smoking or taking any strong tasting substance. 9. Wherever possible the concentration of substances present should be noted. In the determination of odors the same principles would apply except that the container holding the odorous substance should be of standard dimensions.—BERNARD HEATH. *Perfumery Essent. Oil Record*, 28 (1937), 52. (A. C. DeD.)

Oil of Lavandula Vera D. C.—Composition of. Oil of *Lavandula vera* cultivated in Crimea, obtained in 0.8% yield, boils under 15 mm. at 47° to 140° C., has a specific gravity at 20° C. of 0.892, refractive index at 16° C. of 1.4677 and acid number of 0.73. It contains about 8% of hydrocarbons (α-pinene and probably phellandrene); 1.6% of isoamyl alcohol and linaloöl; about 10% of ethylamylketone; and 55.35% of complex esters of isobutyl and isoamyl alcohols, linaloöl, geraniol and acetic, propionic, isovaleric and (probably) oleic acids. Contrary to French oil of lavender the Crimean oil contains no cineol, borneol, methylamylketone, nerol, coumarin, caryophyllene and farnesol.—V. V. WILLIAMS and V. S. SMIRNOV. *J. Obchtch. Khim.*, 6 (1936), 191–196; through *Chimie & Industrie*, 36 (1936), 975. (A. P. -C.)

Oil of Tagetes. Values differing from those previously given by Igolen (*Pharm. Abstr.*, 2 (1936), 248) are reported. *Tagetes erecta:* Sp. gr. (15° C.) 0.8883, optical rotation 8°32′, refractive index at 20° C. 1.4885, acid value 7, ester value 15.43, insoluble in 90% alcohol, soluble in all proportions in 95% alcohol. *T. signata:* Sp. gr. (34° C.) 0.0882, optical rotation 6°26′, refractive index at 27° C. 1.4895, acid value 12.6, ester value 23.85, soluble in all proportions in 90% alcohol with abundant precipitation. Oil of *T. signata* is partially solidified at atmospheric temperature, and the proportion of solid constituents was much higher in the present sample than in the previously reported one. *T. glandulifera:* Sp. gr. (15° C.) 0.903, optical rotation at 18° C. 4°46′, refractive index at 20° C. 1.4866, acid value 3.92, ester value 18.94, soluble in 0.1 volume of 90% alcohol with turbidity above 3 volumes. *T. patula:* Sp. gr. (15° C.) 0.888, optical rotation at 18° C. 3°35′, refractive index at 20° C. 1.5008, acid value 3.92, ester value 12.63, insoluble in 80% alcohol, soluble in 1.5 volumes of 90% alcohol. Constants of two new species are reported. *T. grandiflora:* (0.2% yield), sp. gr. (15° C.) 0.8959, optical rotation at 18° C. 6°44′, refractive index at 20° C. 1.4890, acid value 8.20, ester value 21.04, ester value after acetylation 67.33, insoluble in 80% alcohol, soluble in 0.1 volume of 90% alcohol with turbidity above 2 volumes. *T. lacera:* (2% yield), sp. gr. (15° C.) 0.9554, optical rotation at 18° C. −1°40′, refractive index at 20° C. 1.5355, acid value 0.84, ester value 18.25, ester value after acetylation 74.35, soluble in 2 volumes of 80% alcohol with precipitation of paraffins, soluble in 0.1 volume of 90% alcohol with turbidity above 4 volumes.—ÉTABLISSMENTS ANTOINÉ CHIRIS. *Parfums de France*, 14 (1936), 306. (A. P.-C.)

Olive Oil—Arachis Oil in, Detection of. Saponify 1 cc. of the oil with 5 cc. of 1.5*N* alcoholic potassium hydroxide by heating on a water-bath for 5 min. Add 50 cc. of 70% alcohol and 0.8 cc. of concentrated hydrochloric acid. Heat, if necessary, to dissolve the precipitate, and cool at the rate of about 1° C. per minute, stirring *continuously* with the thermometer until a turbidity forms. If this occurs below 9° C. arachis oil is absent.—NORMAN EVERS. *Chem. and Drug.*, 126 (1937), 231. (E. V. S.)

Opium Determinations—Correcting. Details are given for the method adopted for the quantitative separation of morphine obtained in solution, by the B. P., 1932, method of analysis of opium, after having separated the greater part of the alkaloid by treating the first calcium hydroxide extract of the sample with ammonium chloride in the presence of alcohol and ether. Ten samples of mother liquors were studied and reported. On the basis of the work performed it is proposed that the figures 0.66 Gm. per 100 Gm. of dried opium be added for the correction of results obtained by the calcium hydroxide method for the determination of morphine.—JITENDRA NATH RAKSHIT. *Ann. chim. anal. chim. appl.*, 17 (1935), 315; through *Chem. and Drug.*, 126 (1937), 59. (E. V. S.)

Peppermint—Japanese, Grown in Hungary. Four samples of the oil obtained from plants

grown in 1934 (1), 1935 (1) and 1936 (2) were examined for yield (0.26–1.60%), melting point of the crystalline product obtained (14–16° C.), density (0.8951–0.9029), $[\pi]_{20}^{D}$ (1.4590–1.4618), $[\alpha]^{D}$ (−37.5° to 40.5°), menthyl esters (4.8–8.0), total menthol (81.1–83.4), iodine number (44.2–48.6) and solubility in 70% alcohol (2.6–2.8). Dementholized oils for the same years gave the following constants: density 0.8876–0.8977, $[\pi]_{20}^{D}$ 1.4600–1.4620, $[\alpha]^{D}$ −25° to −30.0°, menthyl esters 7.7–13.2, total menthol 46.8–52.2, iodine number 64.3–81.9, solubility in 70% alcohol 3.0–3.3. Color reactions are discussed.—P. Rom. *Pharm. Monatsh.*, 18 (1937), 6–8. (H. M. B.)

Pepsin—Evaluation of, and Its Preparations. Neither viscosity measurements alone nor titration values can afford unequivocal conclusions respecting the quality of pepsin preparations. Even in the application of one and the same preparation in varying concentrations different digestive values result. However, it appears possible that estimation of viscosity titration value may yet yield a serviceable measure for the evaluation of peptic activity.—H. Eschenbrenner. *Pharm. Ztg.*, 81 (1936), 229–231; through *Chimie & Industrie*, 36 (1936), 967. (A. P.-C.)

Pharmaceutical Specialties—Amylolytic Value of. The method previously described (*Pharm. Tijdschr.*, No. 9 (1936); *Pharm. J.*, 136 (1936), 621) was used to determine the amylolytic value of 9 commercial pharmaceutical preparations. The values obtained for different preparations varied by several hundred per cent. The relative *in vitro* values are comparable with each other, even though they are smaller than the *in vivo* values.—Marguerite van Hauwaert. *Natuurw. Tijdschr.*, 19 (1937), 19–20; through *Chem. Abstr.*, 31 (1937), 1553. (E. V. S.)

Phenol—Colorimetric Method for the Determination of Traces of, in Water. A procedure is given in detail for a method in which phenols are converted into an indophenol by oxidation with hypochlorite in the presence of a freshly prepared solution of dimethyl-*p*-phenylenediamine. The color of the indophenol solution is compared with a color produced by the same method from a standardized solution of a suitable phenol. In the case of waters containing interfering colors of less than 0.15 p. p. m. of phenol the indophenol formed is quantitatively extracted with carbon tetrachloride and compared in this solvent with an indophenol solution prepared in the same manner from a standardized solution of phenol.—G. U. Houghton and R. G. Pelly. *Analyst*, 62 (1937), 117. (G. L. W.)

Phenol—Synthetic. A brief critical review of phenolsulfonic acid and of the phenyl chloride processes, with bibliography of 12 references.—Y. Mayor. *Rev. Gén. Mat. Plastiques*, 13 (1937), 7–12. (A. P.-C.)

Phosphorus—Determination of, in Silver Phosphate. The phosphate ion in sodium dihydrogen phosphate or in phosphoric acid after neutralization to methyl orange was precipitated by the addition of 5–10 cc. excess of 0.1*N* silver nitrate followed by 8 cc. of saturated sodium acetate solution added dropwise. The precipitate was filtered and washed, by decantation, with a saturated solution of silver phosphate until the washings gave only a faint test for silver ions. The precipitate was dissolved from the filter with about 30 cc. of hot 2*N* nitric acid into the original beaker. Sufficient 6*N* sulfuric acid was added to make the solution 1 to 2*N* with this acid; 3 drops of 0.1*N* ceric ammonium sulfate and 5 cc. of 0.5% starch solution were added and the silver ion titrated with 0.1*N* potassium iodide solution to a permanent blue-green end-point.—N. Rubin and W. N. McNabb. *Analyst*, 62 (1937), 123. (G. L. W.)

Plant Constituents—Detection of Lignified. A discussion mainly of the Schickh (*Angew. Chem.*, 49 (1936), 362) reaction using 2,6-diaminopyrine in concentrated hydrochloric acid, which colors lignin blue.—H. Patzsch. *Pharm. Zentralh.*, 78 (1937), 3. (E. V. S.)

Prussic Acid—Microdetermination of, in Drug Mixtures. The method suggested is essentially that developed by Schulek, involving distillation of the liberated hydrocyanic acid, conversion to sodium cyanide, treatment with phosphoric acid and bromine water, then with phenol and potassium iodide, and finally titration with 0.01*N* sodium thiosulfate (1 cc. = 0.000135 Gm. hydrocyanic acid).—C. A. Weissmann. *Pharm. Zentralh.*, 77 (1936), 361–363; through *Chimie & Industrie*, 36 (1936), 964. (A. P.-C.)

Refractive Index—Change in, with Temperature Variation. Determinations of the refractive indices of a large number of essential oils and perfumery chemicals have been made. A table shows the correction per degree of temperature for each of these. Samples may be tested at the temperature of the water used for circulating through the refractometer at the time of the

test and the appropriate proper correction will give the refractive index at 20° C.—L. W. BOSART. *Perfumery Essent. Oil Record*, 28 (1937), 95. (A. C. DeD.)

Röntgen Rays in the Service of Pharmaceutical Investigation. An illustrated article indicating the extent to which Röntgen rays may be successfully applied in pharmaceutical research, notably in the examination of the mineral constituents of rhubarb, the differences between natural and synthetic camphor, in the study of menthol and of mercuric oxide (both red and yellow).—ALFRED MOSIG. *Pharm. Zentralh.*, 77 (1936), 629; through *Chem. Abstr.*, 31 (1937), 504. (E. V. S.)

Rotenone-Containing Plants—Evaluation of. In order to test the several methods proposed for the chemical evaluation of derris root, the authors analyzed 7 samples of the drug by these methods and compared the results obtained with insecticidal potency. For the insecticide tests only *Aphis rumicis* was used. The chemical methods investigated included the determination of recrystallized rotenone by the method of Georgi and Teik, of ether extract dried to constant weight at 100° C., of methoxyl content of the ether extract, and the dehydro-derivatives from the ether extract by Takei's method. As there is a possibility of loss of dehydro-derivatives by Takei's method, this was modified by cooling the mixture, after the dehydration process, for several hours in an ice-chest; the separated crystalline dehydro-derivatives were collected and the filtrate shaken with water and ether to obtain a further yield of these derivatives in addition to these methods, a further analysis was carried out in which the rotenone was extracted by the method of Georgi and Teik and the dehydro-derivatives from the mother liquor and separated resin determined by Takei's method; for comparison of this method with the biological tests, the yields of rotenone and dehydro-derivatives were added together. In order to get a representative sample for these analyses, it was found necessary to reduce the root to a very fine powder. The results show that for samples of the same species the determination of recrystallized rotenone, ether extract or methoxyl content gives an approximate indication of relative insecticidal potencies; this, however, does not hold for samples of different species. The determination of total dehydro-derivatives or of rotenone, together with these derivatives from the residues after extraction of the rotenone, gives a fairly good indication of the relative potencies, both for samples of the same and of different species of derris root. The authors stress the importance of rigid standard technics being adopted for the chemical assays.—F. TATTERSFIELD and J. T. MARTIN. *Ann. Applied Biol.*, 22 (1935), 573; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 578. (S. W. G.)

Rotenone—Reactions of. II. When Dénigés reagent (HgO in H_2SO_4) is added to a solution of rotenone in sulfuric acid, a white precipitate insoluble in the cold is formed; on heating, the precipitate redissolves forming an intensely colored solution which may be made the basis of a colorimetric method for estimating rotenone. If the colored solution is treated with hydrogen sulfide, mercuric sulfide is precipitated and the rotenone is regenerated.—EMMANUEL POZZI-ESCOT. *Rev. cienc. facultad. cienc. biol., fis. mat. univ. Major de San Marcos* (Peru) 38, No. 417 (1936), 21–25; through *Chem. Abstr.*, 31 (1937), 1730. (E. V. S.)

Sandalwood Oil—Chemistry of Australian, Present Position of. A discussion including the following analysis of commercial Western Australian oil to indicate its quality: Sp. gr. 15/15° C. 0.9789; optical rotation −4.2°; refractive index (20° C.) 1.5074; soluble in 3 volumes 70% alcohol; ester number 13.4; ester number after acetylation 208.3; alcohols as santalol 96.8%.—A. R. PENFOLD. *Australas. J. Pharm.*, 52 (1937), 154. (E. V. S.)

Saussurea Lappa Clarke—Root of, Essential Oil of. Some oils distilled in the Chiris plant had constants differing appreciably from the extreme limits given in Gildemeister and Hoffmann. The following were obtained on oils of known origin and purity: specific gravity at 15° C. 1.0067, 1.012; optical rotation 7°15′, 9°10′; refractive index 1.5177, 1.5188; soluble in 0.1 volume of 90% alcohol with turbidity at 3 volumes; acid value 34.23, 30.8; ester value 88.9, 89.78; solubility in 3% sodium hydroxide 46%, 44%.—ÉTABLISSEMENTS ANTOINÉ CHIRIS. *Parfums de France*, 14 (1936), 271. (A. P.-C.)

Shaving Cream—Assay of Free Acidity in. A series of assays was made to note the reaction of soap by (1) colorimetric p_H, (2) electrometric p_H, (3) assay in 95% neutral alcohol and (4) assay in small volume of water. Results by different methods are compared. When bromthymol blue was the indicator there was 0.2% lower acidity than with phenolphthalein. Since the red color of phenolphthalein in the presence of alkali requires a p_H of 8.0, results with bromthymol

blue are more accurate. Detection of the neutralization point was more readily seen with this indicator than with phenolphthalein. Establishment of a definite procedure for this assay is desirable. Factors to be considered are: amount of sample; volume of solution; use of neutral alcohol, free from carbon dioxide; temperature of solution and indicator.—L. F. GABEL. *J. Am. Pharm. Assoc.*, 26 (1937), 134. (Z. M. C.)

Silver—Determination of, in Some Pharmaceutical Preparations. The silver content of Colargol, Electrargol, Silvol, silver proteinate, Silver Vitelinate, Neo-Silvol, silver nucleinate, Targesin, Agesulf and Albargin were determined by several known methods. The amount of silver determined differed from the stated content. Volumetric methods are preferable; the Volhard and Gay-Lussac methods give the best results. Gravimetric determination gives lower values than do volumetric methods, probably owing to loss of chlorine from silver chloride during calcination.—JUAN DE GUEVARA and JULIO LOPEZ. *Bol. soc. quím. Peru*, 2 (1936), 163–168; through *Chem. Abstr.*, 31 (1937), 1554. (E. V. S.)

Soap—Determination of Free Alkali in. After an examination of thirteen methods or variations of methods the following were adopted. *I. Determination of Total Free Alkali.*—One hundred cc. of methylated spirit (94.7% by volume) after boiling to remove carbon dioxide is cooled to 70° and neutralized with 0.1*N* alcoholic potassium hydroxide using 0.5 cc. of 0.5% phenolphthalein as indicator. Dissolve 10 Gm. of soap in thin shavings quickly with heating. Add 3 cc. (or more if necessary) of *N* sulfuric acid (A) and boil on a water-bath for at least ten minutes. Titrate at 70° with *N* sodium hydroxide. The excess of A should not be less than 1 cc. The total alkali is calculated as Na_2O or K_2O. *II. Determination of Free Caustic (Hydroxide) Alkali.*—(*a*) The free hydroxide alkali is directly titrated without filtration at 70° with *N* sulfuric acid after solution of 10 Gm. of soap as described in *I*. (*b*) To a solution of 10 Gm. of soap prepared as in *I* add 5 cc. of 10% aqueous barium chloride in a thin stream, mix and titrate at 70° with 0.1*N* hydrochloric acid. *III. Determination of Free Carbonate Alkali.*—(*a*) *For sodium soaps.* A solution prepared as in *I* but without phenolphthalein is filtered rapidly and washed thoroughly with hot neutral alcohol. The alcohol-insoluble carbonate is dissolved from the filter with hot water and the combined aqueous solution and washings titrated with 0.1*N* hydrochloric acid using methyl orange indicator. (*b*) *For potassium soaps.* This may be calculated by difference between the results of *I* and *II*(*b*) or may be determined as carbon dioxide.—REPORT NO. 3 OF SUB-COMMITTEE ON METHODS OF SOAP ANALYSIS. *Analyst*, 62 (1937), 36. (G. L. W.)

Sodium—Microcolorimetric Determination of, in Mineral Waters. The precipitation of sodium by the reaction of Barber and Kolthoff (*J. Am. Chem. Soc.*, 51 (1928), 1625) in hydro-alcoholic solution is satisfactory, the error being less than 1.4%. The results are in accord with those obtained by the chloroplatinic acid method, the difference being less than 1%. Potassium over 0.1 Gm. per L. interferes with the results and is removed by a method of B. and K. (*J. Am. Chem. Soc.*, 51 (1929), 3233), using ammonium perchlorate. Large amounts of lithium should be precipitated with ammonium fluoride; the phosphorus anion is removed as the uranyl phosphate which does not effect the colorimetric determination.—C. SUMULEANU and M. BOTEZATU. *Mikrochem.*, 21 (1936), 68–74. (E. V. S.)

Sulfur and Various Ketone Alcohols—New Reaction for Free, with Iron-Containing Glycerin. If glycerin is allowed to stand for several weeks with iron filings in the presence of air some of the iron will go into solution. If one mixes a solution of about 1 mg. of sulfur in 1 cc. of such an iron-containing glycerin with a solution of 5 to 10 mg. of a ketone alcohol (fructose, invert sugar, benzoin) in glycerin and heats the mixture for 25–35 seconds a black color results. This color disappears upon the addition of a few drops of hydrochloric acid but returns upon the addition of alkali; it is caused by iron sulfide. With this reaction it is possible to detect very small quantities of sulfur as well as the ketone alcohols. It gives better results in the differentiation between fructose and glucose than the reaction of Seliwanoff. The reaction proceeds as follows when benzoin, iron-glycerin and sulfur are used: $C_6H_5.CHOH.CO.C_6H_5 + S = H_2S + C_6H_5.CO.CO.C_6H_5$; $2C_3H_8O_3.Fe + 3H_2S = Fe_2S_3 + 2C_3H_8O_3$.—E. W. ZMACZYNSKI. *Z. anal. Chem.*, 106 (1936), 32; through *Pharm. Weekblad*, 73 (1936), 1717. (E. H. W.)

Tea Tree Oil. The essential oil of *Melaleuca alternifolia*, a native of Australia, has the following chemical and physical constants: Sp. gr. 0.8950–0.9050, $[\alpha] = 6.8–9.8°$, $n = 1.4760–1.4810$, ester number 2–7, after acetylation 80–90, soluble in 0.6–0.8 volumes of 8% alcohol, cineol under 10%. The oil has a pleasant odor and a high germicidal efficiency and suggests promise

in germicides, solvents, perfumes, dentifrices and mouthwashes. The method of collection is described.—ANON. *Drug and Cosmetic Ind.*, 40 (1937), 68–69. (H. M. B.)

Theophylline—Assay of. The following tentative method was adopted: A sample equivalent to 0.2–0.3 Gm. of theophylline is shaken in a separator with 5 cc. of 0.5*N* sodium hydroxide until dissolved. The solution is made acid to litmus with 0.5*N* hydrochloric acid. A 0.5 cc. excess of acid is added and 30 cc. of chloroform-isopropyl alcohol (3 + 1). After shaking 1 minute the lower layer is drawn off into a second separator containing 10 cc. of water acidified with hydrochloric acid. After shaking the solvent is filtered through cotton into a weighed flask. The extraction is repeated 6 times with 20 cc. of the chloroform-isopropyl alcohol solution, washing and filtering into the weighed flask as before. A final extraction is made with 10 cc. of the solvent. The combined extractions are evaporated to dryness after removal of the solvent, 2 cc. of absolute ether added, evaporated again and dried at 80° to constant weight. The residue is weighed as anhydrous theophylline. Multiply by 1.100 to obtain the weight of monohydrate.—*J. Assoc. Official Agr. Chem.*, 20 (1937), 82. (G. S. W.)

Umbelliferæ—Gumresins of. A brief review dealing with asafetida, sagapenum, gum ammoniac, galbanum and true opopanax. Oil of galbanum distilled in the Chiris plant from gums of unknown origin frequently had constants differing somewhat from those given by Gildemeister and Hoffmann and the following limits are given: specific gravity at 15° C. 0.8900 to 0.9195, refractive index at 20° C. 1.4820 to 1.4860, optical rotation 10° to 15°11′, ester value 9.80 to 19.95, acid value 0.98 to 3.08, soluble in 1 to 10 volumes of 85% alcohol (sometimes with turbidity). Oil of true opopanax obtained in 3% yield had: specific gravity at 15° C. 1.006 (determined on 1 cc.), optical rotation 0° (in alcohol solution), refractive index at 20° C. 1.5165, acid value 3.08, ester value 173.95, soluble in 10 volumes of 70% alcohol without turbidity and in 2 volumes of 75% alcohol without turbidity.—G. IGOLEN. *Parfums de France*, 14 (1936), 300–304 (in French and English). (A. P.-C.)

Water Analysis—Methods of. A review of selected, standard methods employed in water analysis with notes on procedure and comparison standards.—S. ANDERSSON. *Farm. Revy*, 36 (1937), 73, 89, 109, 129. (C. S. L.)

Water Content—Rapid Determination of, of Soaps and Other Organic Substances. This method, although empirical, is rapid and simple. Weigh out into a crucible, preferably of metal, 15 Gm. of stearic acid and 5 Gm. of soap sample and heat to 140°–145° for 45 minutes. The moisture content of the soap is calculated from the loss in weight corrected for the amount of stearic acid volatilized as determined by a blank. The method has possibilities of wider application as the stearic acid usually makes atmospheric oxidation negligible.—NIKOLAĬ SPASSKIĬ. *Seifensieder-Ztg.*, 63 (1936), 795–796; through *Chem. Abstr.*, 31 (1937), 2036. (E. V. S.)

PHARMACOGNOSY

VEGETABLE DRUGS

Atropa Betica. *Atropa betica*, a nightshade recently discovered in Spain, and very similar to *A. belladonna*, contains 0.77% total alkaloids, of which 0.58% is hyoscyamine and 0.18% atropine. The plant was extracted with cold alcohol and all operations were carried out at low temperature to avoid racemization.—E. GOMEZ. *An. Soc. Espanola Fis. y Quim.*, 34 (1936), 100–102; through *Chimie & Industrie*, 36 (1936), 970. (A. P.-C.)

Black Mustard Preparations of the Argentine Pharmacopœia. Mustard seed contains about 30% of oil exerting no therapeutic action, and it would be advisable to specify that the oil be removed, which would improve the keeping qualities. Fineness of grinding is of importance in the formation and yield of essential oil; a medium fineness, corresponding to 30-mesh, is advisable. The allyl isothiocyanate content should be fixed at 0.75 to 0.85%. The determination should be carried out by distilling into ammoniacal decinormal silver nitrate, filtering out the precipitate, and titrating the excess silver with ammonium thiocyanate in acid solution in presence of ferric alum indicator.—A. J. BANDONI. *Rev. Estud. Farm. Bioquim. (Buenos Aires)*, 25 (1935), 486–499; through *Chimie & Industrie*, 36 (1936), 778. (A. P.-C.)

Chamomile and Peppermint of 1936. Forty samples of chamomile from nine regions are examined and the per cent volatile oil, color and odor are reported. Eighteen samples of Mitcham and Thuringan peppermint from five regions are examined for per cent oil and odor.—HANNS WILL. *Apoth. Ztg.*, 51 (1936), 1855–1856. (H. M. B.)

Cnestis Polyphylla and Rourea Orientalis—Note Preliminary to the Pharmacological Study of Two Connaraceæ. The roots of both species contain 1 to 1.3% of resin, a phytosterol, a catechu tannin, choline, inorganic salts (among which potassium nitrate predominates), a glucoside insoluble in water but soluble in chloroform, another glucoside soluble in water and insoluble in chloroform and an acid saponin. No alkaloids were present. It was not determined which is the toxic principle of the roots.—J. BALANSARD. *Compt. rend. soc. biol.*, 121 (1936), 1007–1009; through *Chimie & Industrie*, 36 (1936), 968. (A. P.-C.)

Corn Silk. Fresh corn silk gave the following limiting values: fatty oil 1.85–2.55, essential oil 0.08–0.12, gummy substances 2.65–3.80, resin 2.25–2.78, alkaloid (in traces) up to 0.05, glucosidal "bitter substance" 0.80–1.15, saponins 2.25–3.18, brown dyestuff 1.0–1.8, tannins 11.6–13.2, reducing sugar 3.55–4.15, mineral substances 4.85–5.25 and moisture 11–15%, in addition to cellulose. The therapeutic action of corn silk infusion is largely due to the gummy constituents.—FRIEDRICH W. FRIESE. *Pharm. Zentralh.*, 77 (1936), 616; through *Chem. Abstr.*, 31 (1937), 504. (E. V. S.)

Digitalis Purpurea and Lanata—Activity of Different Varieties of, Cultivated in Argentina. Biological tests of different varieties of *Digitalis purpurea* and *D. lanata* of Italian, Hungarian, Spanish and Chilian Patagonian origin and cultivated in Argentina, showed that this country was perfectly suited to their cultivation. Potency increased rapidly to a maximum attained during the last months of the first year of growth, and then remained constant until the beginning of blossoming time which, in Argentina, occurs during the last days of October of the second year of growth. At a later stage of blossoming, and during fructification, there is a transient decrease in potency.—G. SPAGNOL. *Rev. sud-americano endocrinol., immunol., quimioterap.*, 19 (1936), 3–12; through *Chimie & Industrie*, 36 (1936), 781. (A. P.-C.)

Dioscorea Macabiha. The tubers of this monocotyledon, locally called "babanga" in Madagascar where the plant grows wild, are poisonous. They contain tannin, a sterol, a little choline, a glucoside soluble in water, a neutral saponin and an acid saponin, but no alkaloids or cyanogenetic compounds. The toxic principle was not identified.—C. GABRIEL and J. BALANSARD. *Compt. rend. soc. biol.*, 121 (1936), 1009–1012; through *Chimie & Industrie*, 36 (1936), 968. (A. P.-C.)

Drugs—Chemical Identification of. VIII. Tests for the identification of the following drugs are given: cantharides, cinchona bark, uva ursi, opium, nutgall and iceland moss. Some of the tests are on a micro scale.—L. ROSENTHALER. *Pharm. Acta Helv.*, 12 (1937), 7. (M. F. W. D.)

Drugs—Examination of, Contribution to. H. discusses Oleum Cacao and reports his examination of turpentine oil which includes the fractionation of 9 samples of the oil from seven sources, densities, optical rotations and per cent of fractions at 155–165° C.—KURT HANDKE. *Apoth. Ztg.*, 52 (1937), 3. (H. M. B.)

Ephedra Sinica—Distribution of Alkaloids in. *Ephedra sinica* contains, in addition to *l*-ephedrine, pseudoephedrine, *l*-norephedrine, *l*-methylephedrine and *d*-norpseudoephedrine. The roots and seed of the plant contain no alkaloids. In summer the pith contains 8.45% of alkaloids, in autumn 13.5%. The total alkaloid content of the whole plant is 1.08% in summer and 1.33% in autumn. The alkaloids can be extracted with ether in presence of saturated sodium carbonate solution; after addition of hydrochloric acid and evaporation to dryness in vacuum at 45° C., the residue is extracted with cold anhydrous chloroform.—M. TARLÉ. *J. Chinese Chem. Soc.*, 3 (1935), 377–380; through *Chimie & Industrie*, 36 (1936), 966. (A. P.-C.)

Epimedium Macranthum (Yin-yen-ho)—Leaves of, Chemical Investigation of. The leaves of Epimedium are prescribed for sterility. Alkaloids are shown to be absent. A total of 68.2 Kg. of powdered material is extracted with alcohol and distilled in steam yielding 7.8 Gm. of essential oil. The nonvolatile portion yields: glucose, ceryl alcohol, hentriacontane, phytosterol, a flavone-glucoside $C_{27}H_{32}O_{12}$, m. p. 273–274°, and also palmitic, stearic, oleic and linoleic acids.—YOUH-FONG CHI and YEE-SHENG KAO. *J. Chinese Chem. Soc.*, 4 (1936), 312–321; through *Chem. Abstr.*, 31 (1937), 1155. (E. V. S.)

Ginseng. An analysis of a sample of red ginseng rootlets from Korea showed a normal ash except for a higher phosphoric acid content. Alkaloids were not detected; the petroleum ether extract contained a small amount of easily saponifiable fat. Saponin is present.—A. HEIDUSCHKA. *Pharm. Zentralh.*, 78 (1937), 2. (E. V. S.)

Gleditschia Australis Hems—Note on. The grains of the fruit contain 38.41% of gum. This gum is responsible for the antitoxic action against poisoning by heavy metals. The pods contain about 3% of sapogenins having no action on the frog, and about 28.8% of saponins having considerable hemolyzing action. The latter substance is toxic to frogs in doses of 5–6 mg./100 Gm. of animal. About 0.5% of a yellow color principle is also present.—FRANCK GUICHARD. *Bull. soc. pharm. Bordeaux*, 74 (1936), 168–170. (S. W. G.)

Hamamelis Virginica—Constituents of. Dried witch hazel leaves contain 0.18 to 0.20% of choline. Their physiological action is due to choline, a saponin and a glucoside.—F. MERCIER and J. BALANSARD. *Compt. rend. soc. biol.*, 121 (1935), 671–672; through *Chimie & Industrie*, 36 (1936), 777–778. (A. P.-C.)

Hashish—Beam's Reaction for. A positive Beam reaction was obtained on a 22-year-old sample of hashish which had been stored under conditions favorable to the destruction of cannabinol (oxidation, dampness, etc.). Samples of Greek hashish gave the same reaction as Turkish hashish. The reaction is given equally well with aqueous 10% caustic potash as with alcoholic; the concentration of the potash solution does not affect the reaction, nor does the rate of evaporation of the petroleum ether extract; gentle warming after addition of the potash accelerates the formation of the color. Twenty-four aromatic vegetable substances which might be present in pastry or confectionery in no case gave color reactions exactly similar to that obtained with hashish; in every case an experienced analyst could readily distinguish the color from that obtained with hashish. A mixture of aromatic vegetable products of the same composition as that tested by Rende (*Ann. Fals.*, 25 (1932), 332–336) gave a color that could not be confused with the color obtained with the same mixture plus hashish. It is concluded that the Beam reaction, though far from ideal, can give reliable results if carried out carefully and properly interpreted; when possible, it should be confirmed by microscopical examination and physiological tests.—M. J. PAPAVASSILIOU and S. N. LIBÉRATO. *Ann. Méd. Légale Criminol. Police Sci.*, 16 (1936), 455–465. (A. P.-C.)

Herba Betonicae—New Adulteration of. The possibility of distinguishing between this herb and *Stachys alpina* in cases of admixture is discussed, with the suggestion that if the hairs, isolated from the under side of leaf fragments, yield the lignin reaction the true drug is present, since the adulterant gives no such reaction.—FRANZ BERGER. *Pharm. Zentralh.*, 77 (1936), 749; through *Chem. Abstr.*, 31 (1937), 1158. (E. V. S.)

"Hseh-Tsuang" Seeds—Principle Constituents of the Chinese Drug. This drug has been used as a tonic in China. From the petroleum ether extract is obtained a crystalline compound $C_{12}H_{14}O_2$, m. p. 82.5–83.5°, basic in character and containing double bonds. The ether extract yields an oil, refractive index 1.4885, containing oleic acid 46.25%, β-linoleic acid 45.81% and saturated fatty acids 4.56%. The drug contains no alkaloids.—TENG-HAN TANG. *J. Chinese Chem. Soc.*, 4 (1936), 324–334; through *Chem. Abstr.*, 31 (1937), 1155. (E. V. S.)

Hydrastis. Description of wild and cultivated plants including yield and cost.—ANON. *Chem. and Drug.*, 126 (1937), 65. (E. V. S.)

Leaf Drugs—Examination of. The method employed is to add to the cut leaves a solution of an alkali, then a solution of sodium perborate until the leaves become of a light green color, then washed with water, and boiled with alcohol when the structure as well as the stomata and hairs can easily be viewed under a microscope. Further details and microphotographs are given in the original article.—PAL ROM. *Magyar Gyógyszerésztud. Társaság Értesitője*, 11 (1935), 664; through *Chem. Zentralb.*, 107 (1936), 1660. (G. B.)

Medicinal Plants and Drugs—Study of Some Egyptian. The following drugs have been studied with regard to geographic distribution, collection, marketing, morphology, therapeutic activity and constituents: *Hyoscyamus muticus*, *H. albus* var. *Desertorum* (Aschers), *Ammi visnaga*, *Ammi majus* L., *Bryonia oretica* L., *Ephedra alte*, *Lotus Arabicus* and El H'Adjar el Hindi or El H'adjar Higazi, *Glossostemon Bruguieri*, *Corchorus olitorius*, *Salvadora Persica*, *Euphorbia prunifolia*, *Orobanche Ramosa*, *Withania obtusifolia*, *Withania somnifera* and *Canavalia obtusifolia*.—IBRAHIM R. FAHMY, *et al.* *J. pharm. Belg.*, 18 (1936), 435–437, 453–455. (S. W. G.)

Mistletoe—American. Brief reference is made to the history of the use of mistletoe in medicine. In the present study, American mistletoe was submitted to proximate analysis and some details of the experimental work are given as well as a percentage tabulation of constituents found. Tannin, starch, pentosans and saponins are present, probably also some derivatives of

choline, but alkaloids were not found.—F. J. DESANTIS and E. V. LYNN. *J. Am. Pharm. Assoc.*, 26 (1937), 219. (Z. M. C.)

Pepper—Unusual Adulterant for. Magnesium carbonate to the extent of 8 and 7% was found in two samples labeled, respectively, Pepper and White Pepper. The adulterant was detected by the large increase in weight of the ash on recarbonization.—J. T. DUNN and H. CHARLES L. BLOXAM. *Analyst*, 62 (1937), 121. (G. L. W.)

Physostigmine-Containing Plants—Unknown. Physostigmine is found occurring in various Dioclea species, namely: *D. lasiocarpa* Benth., *D. macrocarpa* Hub. (2.85% in seeds), *D. violacca* Benth. (1.58% in seeds), *D. reflexa* Hook. and *D. bicolor* Benth.—FRIEDR. W. FRIESE. *Pharm. Zentralh.*, 77 (1936), 378. (E. V. S.)

Plant Substances—Distribution of, in the Capillary Picture. VI. The Synthesis of Capillary Pictures and "Synthetic" Capillary Pictures. Of the carbohydrates, only the sugars are present in tinctures and in general the sugars are in the central, most highly colored zone. The tannins are not as unitary as the sugars and they are found in the second middle zone, and frequently in the top zone. In the presence of alkaloids, the tannins are in the lowest zone, together with the alkaloids. Humin may be present in tinctures which involve the whole plant and it colors the whole capillary picture. Chlorophyll separates in the middle zone, and may be brown. Resins are also present in the middle zone. The location of fatty oils is dependent on the amounts and types of alkaloids present. Glucosides of hydroxymethylanthraquinone are distributed for the most part in the middle, second and third zones. Glucosides of hydrocyanic acid are distributed over the whole capillary picture. The greater part of the strophanthins and saponins are found in the second zone while mustard oil glucosides are in the first and second zones. Coumarin derivatives appear throughout the picture while flavones are for the most part in the middle zones. Enzymes are present in the top zone. From the capillary picture a synthetic picture may be prepared which is very similar to that of the natural product.—A. KUHN and G. SCHÄFER. *Pharm. Zentralh.*, 77 (1936), 717; through *Squibb Abstr. Bull.*, 10 (1937), A494. (E. V. S.)

Salacia Brachypoda (Miers) Peyr. A botanical description and chemical analysis of this Brazilian plant. It contains an alkaloid, salacianine.—O. DE ALMEIDA-COSTA and O. DE LAZZARINI PECKOLT. *Rev. quim. farm. (Rio de Janeiro)*, 1 (1935), 97–103; through *Chimie & Industrie*, 36 (1936), 778–779. (A. P.-C.)

Stramonium—Preliminary Study of Cultivated. Dried *Datura stramonium* leaves (cultivated in Shanghai) had 15.18% ash (instead of 18 to 20% required by the pharmacopœias) and 0.195% alkaloids (instead of 0.25% as required by the Chinese and the British Pharmacopœias).—P. N. TSAO and S. Y. CHEN. *J. Chinese Chem. Soc.*, 3 (1935), 372–376; through *Chimie & Industrie*, 36 (1936), 966. (A. P.-C.)

Tamus Communis—Study of. The rhizome of this drug is used empirically to some extent in the treatment of bruises, pains, rheumatism, etc., by the laity. The author gives a morphological description of the rhizome and also an anatomical description accompanied by diagrams. In its anatomical features it resembles certain branched monocotyledons and contains very long, fine crystals of calcium oxalate. The drug called by the names of Virginia creeper and seal of Notre Dame in France is also the rhizome of *Tamus communis*. The drug should not be considered as harmless and its use in the treatment of pains and rheumatism by rubbing with it should be advised against.—R. CORTESI. *Pharm. Acta Helv.*, 12 (1937), 1. (M. F. W. D.)

"Tu-hao"—Chemical Examination of the Chinese Drug. "Tu-hao" or *Angelica grosseserrata* has been prescribed as a stimulant. Seven Kg. is extracted with alcohol and distilled in steam, yielding 6.6 Gm. of essential oil. From the nonvolatile fraction are obtained: glucose, a phytosterol, m. p. 142–143°, and also palmitic, stearic, oleic and linoleic acids. Alkaloids are absent.—YUOH-FONG CHI and YUNG-MAO LEE. *J. Chinese Chem. Soc.*, 4 (1936), 305; through *Chem. Abstr.*, 31 (1937) 1155. (E. V. S.)

Ultraviolet Radiation—Cheap Source of. The Argon glow lamps, costing $.50 apiece, offer a convenient and cheap means of affording ultraviolet light for use in identifying many drugs. The results, while not as fine as those obtained with expensive ultraviolet lamps, nevertheless, are pronounced and sufficiently striking to create great student attention and interest. Directions for constructing a suitable display case for use with the lamps are given.—MARIN S. DUNN. *Am. J. Pharm.*, 108 (1936), 420. (R. R. F.)

Vegetable Constituents—Distribution of, in the Capillary Picture. IV. The Capillary

Pictures of Seeds and Fruits. Further notes on the separation of plant components by capillary action. The substances discussed include *Aesculus Hippocastanum, Argostemma Githago, Anacardium occidentale,* belladonna seeds, calabar, cocculus, coffee, colchicum seed, *Datura metel,* guarana, ignatia, kola, *Nigella damascena,* nux vomica, sabadilla, staphisagria, stramonium seed, *Strophanthus gratus* and tonca. The general characteristics of the capillary picture of seeds are discussed.—A. KUHN and G. SCHÄFER. *Pharm. Ztg.*, 82 (1937), 31; through *Squibb Abstr. Bull.*, 10 (1937), A459. (E. V. S.)

ANIMAL DRUGS

Pituitary of Cattle—Comparative Pharmacognosy of Anterior and Posterior Lobes of. Reference is made to a previous paper on powdered pituitary. The studies have been continued with the aim of finding methods which will simplify the problem of distinguishing powdered products. Macroscopic description and illustrations are given for the whole pituitary gland of cattle. Histological features of sections are described and differences pointed out between the anterior lobe, pars intermedia and pars mervosa. Distinctions between the powdered desiccated anterior and posterior lobes are given as well as methods for preparing them for examination. The most diagnostic elements of the anterior lobe are the two kinds of chromophile cells; the most diagnostic elements of the posterior lobe are the pituicytes.—HEBER W. YOUNGKEN. *J. Am. Pharm. Assoc.*, 26 (1937), 108. (Z. M. C.)

PHARMACY

GALENICAL

Agar and Mineral Oil—Emulsions of, Suitable for Internal Use. In preparing an emulsion of an aqueous solution of agar and mineral oil, the constituents of the emulsion are broken up and dispersed while maintaining the temperature of the mass above the hydrating temperature of the agar (suitably at above 35° C.) and until the desired physical structure of the emulsion has been produced, and the mass is then sprayed within a confined chamber against a stream of air properly controlled as to volume, temperature and humidity quickly to reduce the temperature of the particles of the mass to a point below the hydrating temperature of the agar, to produce a stable emulsion of predetermined fluidity and phase proportion. An apparatus is described in the specification.—EDWIN F. HULBERT. U. S. pat. 2,068,136, Jan. 19, 1937. (A. P.-C.)

Aspirin—Decomposition of, in Mixtures. Several workers have shown that solutions of acetylsalicylic acid in water undergo hydrolysis in the presence of citrates, acetates and bicarbonates of the alkali metals. It has been reported that solutions of aspirin decomposed to the extent of about 10% the first day, or approximately 75% in two weeks. It was concluded that the use of stock mixtures of aspirin in aqueous solution is inadmissible; stock mixtures should be freshly prepared.—ANON. *Pharm. J.*, 138 (1937), 176. (W. B. B.)

Belladonna Plasters. In view of the confusion in the various kinds of Emplastrum Belladonnæ which still seems to exist, the author reviews the progress of the plaster through the various British Pharmacopœias and Codexes. The idea of a feasible method of standardization is discussed; the author doubts whether a weight-on-area idea could be made a feasible method of standardization, as even in a variation of 1-1000th inch in thickness of the coating, the variation in the quantity of alkaloids would be considerable. Again, thicker coats of plaster material are required on felt and flannelette, owing to extra base being taken up by the spongy nature of the backing, so that to make the amount per square inch constant would not be a commercial proposition. According to the author, nothing would be gained, as the effect of the plaster depends on the quantity of medicament present in actual surface area.—E. BERRY. *Pharm. J.*, 138 (1937), 162. (W. B. B.)

Boric Acid—Studies in. Commercial 3% solutions of boric acid are not always sterile, showing bacterial counts ranging from 444 to 56,800 per cc. When made with sterile water, boric acid solutions remain sterile for several months.—H. SCHNEGG and K. WEIGAND. *Zentr. Bakt. Parasitenk., II. Abt.*, 95 (1936), 154–167; through *Chem. Abstr.*, 31 (1937), 1161. (E. V. S.)

Cod Liver Oil Emulsions—Antagonism of Emulsifying Agents. The antagonistic effect among emulsifiers which individually produce the same type of emulsion, *i. e.*, oil-in-water emul-

sions or water-in-oil emulsions in many cases when mixed together, break such emulsions. In the preparation of emulsions of pure Norwegian cod liver oil for pharmaceutical purposes several interesting cases of antagonism of emulsifiers were observed. Both bile salts and gum acacia when present alone produce stable emulsions; but when these are present together no emulsion forms. With turkey-red oil, lecithin and sodium oleate, it was found that when mixed with gum acacia, the emulsion formed liberates oil slowly at the top although when gum acacia is present alone, no such separation is observed. Gelatin, egg albumin, saponin, Irish moss, agar-agar and gum tragacanth when mixed with gum acacia, instead of causing liberation of oil, stabilize the emulsion to that effect. C. classifies emulsifiers into three groups: (1) emulsifiers with low internal and superficial viscosity like sodium oleate; (2) emulsifiers with low internal and high superficial viscosity like saponin; and (3) emulsifiers with high internal and superficial viscosity like gum acacia. A general conclusion is drawn from the experimental study that emulsifiers of group (1) antagonize with the other groups and cause liberation of the oil at the top. Emulsifiers of groups (2) and (3) do not have mutual antagonistic action. If, however, a large amount of gum acacia is used with group (3) emulsifiers, the emulsions lose consistency, become thin and water separates at the bottom quickly. Detailed experimental results are given.—NIRMALAPADA CHATTERJEE. *J. Indian Chem. Soc.*, 13 (1936), 563–570; through *Chem. Abstr.*, 31 (1937), 1551. (E. V. S.)

Collyria in Pharmacy. A comprehensive review of the subject with special emphasis on the type of glass for ampuls, sterilization and antiseptic agents, isotonicity and electrode potentials. Formulas are proposed which are claimed to be isotonic, adjusted to an optimum p_H (7.8) or to neutrality, perfectly sterile and to be stable. 112 references are given.—FRANZ HENRIOUL. *J. pharm. Belg.*, 18 (1936), 529, 547, 569, 591, 616, 638, 653, 669, 691, 713, 735, 757, 775, 885, 903. (S. W. G.)

Cream and Ointment Making. The manufacture of these two types of preparations is practically identical requiring similar equipment and involves the same operations of melting, mixing and milling. The equipment and its operation are discussed.—FRANCIS CHILSON. *Drug and Cosmetic Ind.*, 40 (1937), 62–65. (H. M. B.)

Diothane Solutions—Stability of. III. Report is made of the changes which diothane solutions undergo on aging. Experiments were conducted in pyrex glass, in soft glass with and without acid, the latter two sterilized. Distilled water sterilized in soft glass showed a change in p_H of 7.1 to 7.7. The decrease in p_H in non-alkaline containers, the precipitation of diothane-free base is explained by (1) hydrolysis of the salt and (2) saponification of the free base to yield piperindinopropanediol, carbon dioxide and aniline. Change is not sufficient in normal aging or sterilization to alter physiological activity. If the solution is sufficiently alkalinized to precipitate significant quantities of the free base, the anesthetic activity obviously is lessened. All local anesthetics of the amino ester type on which data are available show similar hydrolytic decomposition. Cocaine hydrochloride, procaine hydrochloride, stovaine and alypine undergo similar changes. Diothane solutions which for any reason have become colored or cloudy should not be used.—E. S. COOK and J. H. RIDER. *J. Am. Pharm. Assoc.*, 26 (1937), 222. (Z. M. C.)

Drug Extraction. X. The Swelling of Powdered Drugs in Liquids. Tests have been made on eighteen drugs in a series of hydroalcoholic liquids. They are digitalis, uva ursi, castanea, belladonna leaves, buchu, gentian, glycyrrhiza, cimicifuga, nux vomica, celery fruit, juniper berry, rhus glabra, cinchona, cascara sagrada, cocillana, euonymus, colchicum corn and aconite. Results are tabulated and discussed. All except celery fruit swelled in alcohol, the average swelling being 12% in 10 minutes. Swelling usually increased with time but the greatest amount occurred in the first 10 minutes. Results tend to confirm the opinion that each drug must be studied individually to determine the best menstruum and the best method of extraction.—WILLIAM J. HUSA and GEORGE R. JONES. *J. Am. Pharm. Assoc.*, 26 (1937), 20. (Z. M. C.)

Drug Extraction. XII. The Effect of Variation in Proportion of Moistening Liquid on the Percolation of Jalap. Mention is made of earlier work along this line, experimental data are reported in detail and results are discussed. It was concluded that the efficiency of extraction of jalap is greater when 250 cc. of moistening liquid is used for 1000 Gm. of drug than when the drug is packed in the dry state. As the proportion of moistening liquid is further increased there is a decrease in efficiency of extraction.—WILLIAM J. HUSA and PAUL FEHDER. *J. Am. Pharm. Assoc.*, 26 (1937), 220. (Z. M. C.)

Drug Extraction—Effect of Air Content on. The author concludes that extraction of drugs in the absence of air results in more complete extraction since the solvent is not prevented from entering the drug cell by the air which is normally present there. The apparatus for the extraction of the drug consists of a tube which is evacuated and fitted with a clamp so that the solvent may be dropped on the drug very slowly, *e. g.*, one drop on 100 Gm. drug per minute. When chamomile is extracted by the above method, the extract is dark in color and corresponds to complete extraction of the drug. When the process of extraction is carried out more rapidly, the extracts are correspondingly lighter in color, and the darker colored product is not obtained even when the extract is allowed to stand for 8 or even 14 days. In the extraction of a drug sample, *e. g.*, with 500 cc. of the solvent, the weighed amount of the drug is extracted slowly with the solvent, the solvent removed and the drug extracted a second time with the same amount of solvent. The first extract is put aside and the second extract is used for the first extraction of a second equivalent amount of the same drug.—E. KESSLER. *Pharm. Ztg.*, 81 (1936), 1308; through *Squibb Abstr. Bull.*, 10 (1937), A192. (E. V. S.)

Drug Extraction—Nature of, What is the? A "refutation" of Kessler's views (see previous abstract) concerning the influence of air in the drug on the process of extraction. B. can see no value in removing the air; and states that if such a process does actually have the effect of introducing more solvent, this would have a diluting effect on the tincture so prepared.—H. BREDDIN. *Pharm. Ztg.*, 82 (1937), 78; through *Squibb Abstr. Bull.*, 10 (1937), A493. (E. V. S.)

Ergot—Extracting, with Liquid Ammonia. By the use of liquid ammonia for extracting ergot (which need not be ground for this purpose), there is obtained an extract of the physiologically active material of ergot which may if desired be obtained from the extract by mere evaporation of the ammonia, but is preferably converted into a tartrate by addition of tartaric acid before all the ammonia is removed, to ensure stability of the product. Ether may be used for dissolving the ergot active material from the ammonia extract.—ELMER H. STUART, assignor to ELI LILLY AND CO. U. S. pat. 2,067,866, Jan. 12, 1937. (A. P.-C.)

Galenical Preparations—Redundancy of, and Their Rationalization. The author summarizes: The suggestions made are that an attempt be made to simplify the galenical preparations of the B. P., so as to ensure that there shall be available for each drug a liquid and solid extract, as a suitable and economical means of administering such, with uniform dosage. In short, that the pharmacopœia shall take cognizance of the economical methods of administration represented by the commercially produced galenicals that are now extant.—H. FINNEMORE. *Australas. J. Pharm.*, 52 (1937), 150. (E. V. S.)

Light—Action of, on Drugs. The author reviews the composition of light and its ability to cause rearrangement or polymerization: cleavage, *e. g.*, peroxide, ergosterol, vitamin B_2, lactoflavin, etc.; synthesis, *e. g.*, the formation of hydrochloric from chlorine and hydrogen; decomposition and specifically oxidation, *e. g.*, in alkaloids, ether, chloroform, etc.; and reduction, *e. g.*, its action on silver preparations. Peroxide may be analyzed for available oxygen by treatment with iodide and acid followed by determination of the liberated iodine. The liberation of oxygen may be inhibited by the use of colored glass or by stabilizers, *e. g.*, phosphoric acid, sulfuric acid, urea, acetanilid, methyl *p*-hydroxybenzoate (nipagin), etc. Alcohol (1%) may be used according to the G. P., for the stabilization of ethyl bromide, ethyl iodide, amyl nitrite, etc. The G. P. lists the following substances as susceptible to oxidation: ether, chloroform, bromoform, iodoform, pyrogallol, epinephrine, ethereal oils, formaldehyde, paraldehyde, phenol, betanaphthol, sodium salicylate, resorcinol, santonin, apomorphine, etc. Addition of 1% absolute alcohol inhibits the oxidation. The presence of oxidation products may often be determined by the color of the product. Silver preparations are reduced to metallic silver by the action of light, and similar results occur with preparations of calomel, ferric chloride and potassium permanganate. Examples for the determination of the composition of the products after exposure to light are given.—R. BRUNNER. *Pharm. Zentralh.*, 77 (1936), 695, 721, 756, 783; through *Squibb Abstr. Bull.*, 10 (1937), A447. (E. V. S.)

Magnesium Phosphate—Tribasic. In an endeavor to satisfy a demand for tribasic magnesium phosphate of reasonably uniform density a considerable variation was met with in various products on the market. Since the therapeutic value in respect of absorbing capacity and ability to neutralize probably depends upon physical character as well as chemical composition, it was thought desirable to examine the available material and, if possible, devise a simple

test which would act as an index of basicity. The results yielded by ten samples in comparison with figures calculated for a hypothetical product consisting of $Mg_3(PO_4)_2$ and 30% free and combined water are included in a table. The following supplementary test was devised: *Method.*—Weigh 1 Gm. of sample into a titration flask and pipette 10 cc. *N* sulfuric acid. When solution is complete add 2 Gm. of sodium chloride and 2 Gm. of ammonium chloride. Titrate the clear solution with *N*/4 sodium hydroxide, using phenolphthalein as indicator. NOTE: The end-point is quite sharp, especially if the precipitate, formed during the titration, is allowed to settle after each addition when practically at the end-point.—R. A. CRIPPS and D. N. GORE. *Pharm. J.*, 138 (1937), 77. (W. B. B.)

Novocaine and Adrenaline—Injection of. The question of what is the right way to sterilize a solution of novacaine and solution of adrenaline hydrochloride is not an easy one to answer. There has been so much written on the thermolabile nature of adrenaline and novacaine that most people are nervous of subjecting either of these two substances to the action of heat. It is believed that a temperature of 80° C. maintained for about 10 minutes would have no detrimental action on either the adrenaline or the novocaine, providing the p_H of the solution is on the acid side.—ANON. *Pharm. J.*, 138 (1937), 120. (W. B. B.)

Ointment Bases from the Standpoint of Emulsion. Adeps suillus with 10% of cetyl alcohol has been recommended as the ideal base for ointment; it is capable of absorbing over 100% of water. The difference between water-in-oil and oil-in-water emulsions is discussed. The absorption of salicylic acid from various ointments, some containing water, others water-free, is tabulated, the absorption being indicated by urinary excretion. The absorption was at least (0.29%) from lard and most (11.8% of the quantity administered) from an oil-in-water emulsion containing about 80–90% water. Lanolin, D. A. B. 6, Ungt. Cetylicum, Swiss pharm., and several proprietaries are mentioned as suitable for the preparation of emulsion ointments. Economy is considered as well as therapeutic effectiveness.—W. BRANDRUP. *Pharm. Ztg.*, 82 (1937), 111; through *Squibb Abstr. Bull.*, 10 (1937), A585. (E. V. S.)

Pills—Dosage of, Error of. The pill masses are worked up with powdered yeast and powdered licorice root as excipients. Experiments are reported on valerian pills and pills containing cascara and aloes (Sagralin pills and Pilulæ aperientes, Withii). The weights of the pill mass immediately after preparation and two and a half hours thereafter are reported, the water content determined and the accuracy of dosage. Drying in the air is found practically as satisfactory as drying over lime or sulfuric acid. From weighings of 6,000 pills, the deviation from mean weight is found to be 2%. The error of dosage is at most ±1–2%.—A. T. DALSGAARD. *Dansk Tids. Farm.*, 11 (1937), 21. (C. S. L.)

Quinine Sulfate—Manufacture of. A brief outline of steps in commercial production.—ANON. *Merck Rep.*, 46, No. 2 (1937), 22. (E. V. S.)

Senna—Fluidextract of, Study of Precipitation in. The history of fluidextract of senna is briefly reviewed. Experimental work included preparation of fluidextracts by the methods of U. S. P. IV to X and recording observations of them at intervals of many months. A tabulation shows ages of fluidextracts and amounts of precipitate. The conclusion reached was that fluidextract of senna continues to precipitate over long periods of time and that the practice of allowing thirty days before filtration and bottling for the trade is inadequate for this fluidextract.—KARL L. KAUFMAN and C. O. LEE. *J. Am. Pharm. Assoc.*, 26 (1937), 124. (Z. M. C.)

Sodium Salicylate and Bicarbonate Solutions—Stabilization of. Addition of 0.5% of neutral sodium citrate to solutions of sodium salicylate and bicarbonate prevents them from blackening by oxidation.—A. CAPELLETI. *Rev. quím. farm. (Rio de Janeiro)*, 1 (1935), 121; through *Chimie & Industrie*, 36 (1936), 779. (A. P.-C.)

Solution of Iodine, B. P.—Weak, Note on. Attention was directed to what seemed an excess of iodine in the official weak solution of iodine. It arose in connection with the following prescription: Tincture iodine 3 drams, water, *q. s.* 8 oz. Shortly after dispensing it was noticed that there was a precipitate of iodine, and either an excess of iodine or a deficiency of potassium iodine in the solution was suspected. Both ingredients, however, were found to be within the official limits. A variation of amounts of these ingredients in experiments showed that by increasing the potassium iodide content to 20 Gm. in place of 15 Gm. per L., the objection would be eliminated.—H. W. BLAIR. *Chem. and Drug.*, 126 (1937), 283. (E. V. S.)

Squills—Optical Activity of Preparations of. Several samples of Acetum Scillae, B. P., and

Tinctura Scillae, B. P., were found to be levo-rotatory. To this is attributed the high optical readings on samples of Oxymel Scillae, B. P. The author suggests that the standard of the B. P. be changed to take into account the optical activity of squill preparations.—L. McGRAGHAN. *Analyst*, 62 (1937), 192. (G. L. W.)

Tablets—Incompatibility in. Incompatibility has been shown to exist between dimethylpyrazolone (phenazone) and quinine, and mixtures of acetylsalicylic acid and phenacetin. The composition of some proprietary tablets which have acquired a yellow discoloration and became brown spotted was stated to be dimethylaminophenazone, phenacetin, caffeine, salicylate and quinine; an "improved" formula is to omit the salicylate and substitute phenylandroninic acid and acetylsalicylic acid. The authors conclude that incorporation of quinine, especially, and also mixtures of acetylsalicylic acid and phenacetin, with phenylcinchoninic acid, caffeine and dimethylaminophenazone should be avoided. In commercial samples of the proprietary tablets (not kept at 35°) appreciable quantities of salicylic acid and acetic acid were found to be present.—ANON. *Pharm. J.*, 138 (1937), 104. (W. B. B.)

Terpeneless Oils—New Method of Production of. A new extraction method has been developed, which avoids the application of temperatures above 55° C. and permits the manufacturer to obtain terpeneless oils of the highest purity in a nearly quantitative yield. The substance to be extracted is brought into contact with two-solvents led in counter-current and which solvents are only partially soluble in each other. This two-solvent process was used for the isolation of the oxygenated constituents of a lemon oil, an orange oil and a ginger oil, the experiments being done in a very simple glass apparatus. The apparatus consisted of a cylindrical glass tube, about 2 meters long and 4 cm. in diameter, in which the two phases passed each other in countercurrent, the heaviest phase flowing by gravitation, as the tube was given as lightly inclined position, while the other phase ran in the opposite direction, under a slight pressure. The base material was introduced about in the middle and it was treated with pentane as solvent for the terpenes and diluted methyl alcohol as solvent for the oxygenated compounds. These two solvents were fed into the tube, each at one end. At regular intervals gauzes were fixed in the tube which separated the tube in a number of mixing spaces in which the two phases were mixed thoroughly by a stirrer and settling spaces in which the two phases were allowed to separate by gravitational action into two layers. The products discharged from the apparatus were the pentane phase containing the terpenes of the essential oil and on the other side of the tube the alcohol phase in which the oxygenated constituents were dissolved. Both products were freed from solvent by distillation. The pentane was distilled from the limonene under atmospheric pressure, but the alcohol was distilled off under reduced pressure (about 10 cm. Hg) in such a way that the temperature of the liquid was invariably below 55° C. to prevent deterioration of the valuable oxygenated constituents. When about 80% of the alcohol had been evaporated the extract separated off. At this point the distillation was stopped and a further yield of extract was obtained by shaking out the remaining liquid with five parts by volume of brine, by which procedure the oxygenated constituents separated out as an oily top layer. By this method the authors obtained terpeneless and sesquiterpeneless extracts of the essential oils in a very high yield and with remarkable properties.—W. J. D. VAN DIJCK and A. H. RUYS. *Perfumery Essent. Oil Record*, 28 (1937), 91. (A. C. DeD.)

Tincture of Digitalis—Use of Preservatives with. Small proportions (0.3 to 0.40%) of stabilizers such as phloroglucinol, *o*-dihydroxybenzene, tetramethylammonium and camphoric acid are used with fluidextract of digitalis or the like.—VINCENT A. LAPENTA. U. S. pats. 2,069,529 and 2,069,530, Feb. 2, 1937. (A. P.-C.)

PHARMACOPŒIAS AND FORMULARIES

British Pharmacopœia, 1932, Supplement. The contents of the supplement which appeared on December 29, 1936, are discussed.—C. A. ROTHENHEIM. *Pharm. Monatsh.*, 17 (1936), 236. (H. M. B.)

Estland Pharmacopœia. On January 30, 1937, the first edition of the Estland Pharmacopœia appeared as the result of the efforts of an organization committee which began work in 1934. Previous to this time, two old Russian and an old German pharmacopœia had been used. The first edition of the Estland Pharmacopœia contains articles and procedures selected from several recent European pharmacopœias and represents a very definite improvement over the old conditions. The new pharmacopœia contains 758 pages of which 26 pages are devoted to general

information, 78 pages to tables and data and 28 pages to the index. A further review of the pharmacopœia is included in the article.—H. SALASOO. *Pharm. Presse*, 42 (1937), 87. (M. F. W. D.)

Pharmacopœa Estonica Editio Prima. Description of the first edition of the Estonian Pharmacopœia (Eesti Farmakopöa) published Jan. 30, 1937.—H. SALASOO. *Pharm. Ztg.*, 82 (1937), 221; through *Squibb Abstr. Bull.*, 10 (1937), A694. (E. V. S.)

Pharmacopœia—Addendum to. The appearance of the Addendum 1936 to the British Pharmacopœia 1932 is in line with the general activity in pharmacopœial matters which follows from the increasing need for the official standardization and definition of drugs. Certain aspects of pharmacopœial revision are discussed in detail by the author (Secretary of the British Pharmacopœia Commission). Such topics as sterilization, vitamin A and accuracy of biological assays are discussed in short detail. The advantages possessed by calcium gluconate over the inorganic salts of calcium are mentioned. Comments on certain miscellaneous substances (calcium chloride, citrated ferrous chloride, tryparsamide, mersalyl, ergometrine, liquid extract of stramonium, dry extract of stramonium and aqueous solution of iodine) are included. Brief comment is given on the subject of standardization of tablets, and the view is taken that it is not within the scope of the B. P. to state standards for the degree of accuracy of pharmacopœial drugs in accordance with prescriptions, or other formulas, or to attempt to describe methods whereby it can be shown whether pharmacopœial drugs have been used in such dispensing or not.—C. H. HAMPSHIRE. *Pharm. J.*, 138 (1937), 157, 191. (W. B. B.)

Pharmacopœia—Extra, Review of the New. The publication of Volume I of the twenty-first edition of the Extra Pharmacopœia marks a fresh development in the long life of this work. This volume is the first of a completely new edition to be produced and published entirely by the British Pharmaceutical Society. It should be understood that the Extra Pharmacopœia covers a field entirely different from that of the Codex; one volume is complementary to the other. The Codex is an official publication; it is recognized by the British Ministry of Health, by the British Home Office and by other British government departments. By the very nature of the book the Extra Pharmacopœia falls into a different category. Its scope is different, and one of its most valuable features is the inclusion of a very large amount of information on out-of-the-way and rarely used therapeutic substances. Unlike the Codex, the information is not confined to a description of drugs, chemicals, etc., as they are used in Great Britain and in the Dominions. Reference to a large number of foreign pharmacopœias, particularly those recently issued, is made, and at the heading of each monograph the names are given, where available, by which the substance is known officially in other countries. References to proprietary medicines are now given, and a chapter on animal substances has been included. The chapter on vaccines, sera, toxins and antitoxins has been enlarged, and a great deal of new information incorporated.—ANON. *Pharm. J.*, 138 (1937), 126. (W. B. B.)

NON-OFFICIAL FORMULÆ

Cathartic. Ninety-six parts of sugar and 16 parts of corn syrup are dissolved in 22 parts of water; 200 parts of mineral oil are added while heating to 262° F.; calomel and phenolphthalein with 14 parts of glycerin, 5.5 parts of gelatin and 24 parts of water are added to the syrup-oil mixture with heating and stirring. The mass is allowed to cool and sets to a resilient body which can break down at normal body temperature without addition of water to free the mineral oil, calomel and phenolphthalein.—CHARLES L. LENTZ. U. S. pat. 2,972,589, March 2, 1937. (A. P.-C.)

Cleansing Cream—Tested Formulas. Cleansing by these creams is discussed. Two types, the translucent liquefying types and the white cold cream types, are described. The following tested formulas are offered:

Mineral Oil	65.0	65.0	43.5	62.5	49.0	39.8
Petrolatum	15.0	12.0	11.4	18.75	....	12.0
Paraffin	20.0	18.0	6.0	12.50	7.0	12.0
Cetyl Alcohol	....	1.0	....	.....	1.0	....
Spermaceti	....	4.0	....	.....	....	....
Borax	....	....	0.3	.....	0.4	0.2
Water	....	....	34.5	.....	34.6	32.0
Beeswax	....	....	4.3	6.25	8.0	4.0

The paraffin used is of the 125/127 quality and the mineral oil has a viscosity of 65/75.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 40 (1937), 66, 69. (H. M. B.)

Enteric Coating. A composition consisting of 10 lb. abietic acid, 3 oz. methyl abietate, 1 pint oleic acid and 12 oz. of benzoic acid is used as an enteric coating for pills, tablets, etc.—FRANK R. ELDRED, assignor to REED AND CARNRICK. U. S. pat. 2,071,511, Feb. 23, 1937. (A. P.-C.)

Ephedrine. The uses of this drug are discussed with the conclusion that certain synthetic products which have threatened to displace it are either more toxic or therapeutically inferior. The following formulas are offered: (1) Ephedrine sulfate 30 Gm., chlorbutanol 5, physiological salt solution *q. s.* 1,000 cc. (2) Ephedrine sulfate 20 Gm., solution epinephrine hydrochloride 100 cc., chlorbutanol 5, physiological salt solution *q. s.* 1,000 cc. The sulfate rather than the hydrochloride is recommended in all formulas since it stings much less. (3) Ephedrine 10, oleic acid 20, oil rose geranium 1, liquid petrolatum *q. s.* 1,000 cc. Warm the ephedrine and oleic acid on a water-bath at about 40° C. until the oleate is formed. Add the oil and finally the mineral oil previously heated to 110° C. for 30 minutes and then cooled to 40° C. and agitate until a clear solution results. The latter procedure is to expel certain peroxides in the mineral oil which change the ephedrine, manifested by the garlic, ammoniacal odor of standing solutions. In spite of claims to the contrary ephedrine alkaloid will not remain in clear solution in mineral oil but the formed oleate is permanently soluble. The salting out or cloudiness of many oil inhalants is due to the lack of oleic acid in the formula and not because the alkaloid was not dry. The following formulas show how a vegetable oil may be used. (4) Ephedrine alkaloid 10, oil sweet almond 100, oil rose geranium 1, liquid petrolatum *q. s.* 1,000 cc. (5) Ephedrine alkaloid 10, oil sweet almond 100, camphor 6, menthol 6, oil thyme 3, liquid petrolatum *q. s.* 1,000 cc. (6) Ephedrine alkaloid 10, camphor 6, menthol 6, oil thyme 3, benzocaine 5, neutral vegetable oil *q. s.* 1,000 cc. (7) Ephedrine sulfate 20, eucalyptol 1, tragacanth 10, glycerin 150, water 819. Dissolve the alkaloid in water and add the remaining ingredients. Mix and agitate occasionally in a closed container for about a week. Dispense in tin tubes. (8) Ephedrine alkaloid 1, lanolin anhydrous 40, olive oil 10, petrolatum 49. Dissolve the alkaloid in the previously melted lanolin and oil, add the petrolatum and maintain at 40° C. on a water-bath until homogeneous. Dispense in tubes. Aromatics may be added. (9) *For Asthma.*—Ephedrine sulfate $^3/_8$ gr., phenobarbital $^1/_2$ gr., lactose *q. s.* tablet or capsule. (10) *For Dysmenorrhœa.*—Aspirin 3 gr., acetophenitidin 2, ephedrine sulfate $^1/_8$. Make capsule or tablet. (11) Amidopyrine 3 gr., phenobarbital $^1/_4$, ephedrine sulfate $^1/_8$. (12) *For Bronchitis.*—Sodium citrate 40 gr., potassium guaiacolsulfonate 20, benzycin 20, ephedrine sulfate 1, syrup thyme *q. s.* 1 oz. (13) Potassium guaiacolsulfonate 20 gr., benzycin 20, tartar emetic $^1/_{15}$, ephedrine sulfate 1, syrup thyme *q. s.* 1 oz.—L. STAMBOVSKY. *Drug and Cosmetic Ind.*, 40 (1937), 58, 84, 103. (H. M. B.)

Ferrous Chloride—Pills of, Manufacture and Investigation of. A method is described for the preparation of pills containing 50 mg. of ferrous chloride per pill. The formula is as follows: Reduced iron 1.3, hydrochloric acid 7, honey 1.3, acacia 1, glycyrrhiza 5, to make 60 pills. These pills as well as Blaud's pills and several commercial preparations were subjected to quantitative analysis. A potentiometric method is described by which it is possible to determine ferrous iron besides ferric iron and small quantities of reducing organic matter by titration with permanganate. The method of Rupp-Romijn did not give very constant results when used to analyze Blaud's pills. The method of Knop (titration with dichromate) applied to the analysis of Blaud's pills as well as to pills of ferrous chloride gave results agreeing perfectly with those obtained by the potentiometric titration with permanganate. The pills of ferrous chloride were practically unchanged after being kept for a month in a closed bottle.—J. A. C. VAN PINXTEREN and W. P. VAN DER POL. *Pharm. Weekblad*, 73 (1936), 1617. (E. H. W.)

Lubricating Creams—Tested Formulas for. Absorption, emollients, beneficial additional substances such as cholesterin, lecithin, vitamins and hormones and preservation are discussed with reference to this type of creams. The following tested formulas are offered: (1) Beeswax 9 Gm., paraffin 8, cetyl alcohol 1, hydrogenated oil 5, lanolin 5, mineral oil 16, vegetable oil 15, borax 0.6, water 40.4. This produces a white cream of medium consistency with a very slight graininess. (2) Glyceryl monostearate 12, cetyl alcohol 0.5, lanolin 7, vegetable oil 10, water 70.5 produces an off-white, medium soft cream completely absorbable. (3) Spermaceti 5, cetyl alcohol 2, lanolin 20, hydrogenated oil 50, water 23 producing a dull finish, yellow-

white, hard cream. (4) Beeswax 10, paraffin 6, cetyl alcohol 0.5, lanolin 10, mineral oil 37, borax 0.5, water 36 yielding a white, medium soft, lustrous cream. (5) Paraffin 10, lanolin 40, mineral oil 20, water 30 giving a medium hard, stringy, yellowish cream. (6) Paraffin 10, lanolin 35, mineral oil 15, vegetable oil, water 25 giving a yellowish hard cream. These formulas yield creams of two types (*a*) completely absorbable where it is necessary to choose emulsifiers from the group of animal and vegetable products to assure complete absorption and (*b*) partially absorbable. The procedure for the beeswax creams is as follows: Add the borax dissolved in water to a melted mixture of the fats and oils, stir rapidly at first and slowly until cold. Creams with glyceryl monostearate can be made by two procedures: (1) melt all the components together, including water and stir until cold or (2) heat the oily and water-soluble components separately and then mix. In the case of absorption base and lanolin creams melt the fatty mixture at a low temperature and slowly stir in the water a little at a time. It is recommended that all oils be heated first and the fats and waxes dissolved in the hot oils thus avoiding the use of higher heat.—JOSEPH KALISH. *Drug Cosmetic Ind.*, 40 (1937), 202–203, 212. (H. M. B.)

Skin Preparations—Useful. The following formulas are offered: *For Contact Dermatitis.*—Ivory soap flakes 7.48, glycerin 26.40, sodium silicate 24.20, tragacanth 0.21, oil of lemon 0.16 and water 41.60. *For Fungus Infection of the Feet.*—(1) Benzoic acid 6 Gm., salicylic acid 4 Gm., acetone 30 cc., industrial methylated spirit to make 120 cc. This may be used in place of, or alternated with compound benzoic acid ointment. (2) Copper nitrate 2.6 Gm., benzoic acid 6 Gm., acetone 45 cc., industrial methylated spirit 170 cc., water to make 250 cc. Apply twice daily. *For Psoriasis.*—Liquor pix carbonis 4 Gm., ammoniated mercury 0.6 Gm., paraffin ointment to make 30 Gm.—*The Prescriber* (October 1936); through *Australas. J. Pharm.*, 52 (1937), 23. (E. V. S.)

Soft Soap Liniment, Soft Soap and Soap Liniment. The author submits a formula for liniment of soft soap which yields a product free from the objectionable odor from linseed oil, has the same soap content as the U. S. P. one and contains less alcohol. Procedure: Mix cottonseed oil 305 cc., oil of lavender 20 cc., alcohol 200 cc., 10*N* potassium hydroxide 65 cc. and 10*N* sodium hydroxide 32 cc. till clear, then add water to make 1000 cc. Filter. Soft soap is easily made by a modification of U. S. P. method. Mix the oil with the 10*N* solutions and stir occasionally until an emulsion is formed, then set the mixture aside for twenty-four hours. No heating is necessary. At the end of this time add water to make 1000 Gm. Potassium hydroxide may be reduced somewhat by using the following procedure: Mix cottonseed oil 430 Gm., 10*N* potassium hydroxide 100 cc. and 10*N* sodium hydroxide 50 cc., stirring occasionally for three hours, then set aside for twenty-four hours. Add enough warm water to make 1000 Gm. Variations in soaps cause variations in soap liniment, U. S. P. Instead of using olive oil castile soap, the liniment may be made from the required amount of olive oil and sodium hydroxide. Besides being less difficult to prepare there is less precipitate. The only difference in the product is the presence of the small amount of glycerin formed. Following procedure is given: Add olive oil 64 cc., to a solution of oil of rosemary 10 cc., alcohol 700 cc. and camphor 45 Gm., then add 10*N* sodium hydroxide solution 18 cc. and when clear, water to make 1000 cc. After twenty-four hours filter.—CYRUS L. COX. *J. Am. Pharm. Assoc.*, 26 (1937), 154. (Z. M. C.)

Unguentum Diachylon. R. discusses the various formulas for this ointment especially that of Hebra and offers the following formula: Lead plaster 40, white vaseline 50, anhydrous lanolin 5, distilled water 5. Melt the constituents, stir until cool and after standing for 24 hours stir again or pass through a mill.—PAUL RUNGE. *Apoth. Ztg.*, 51 (1936), 1819–1820. (H. M. B.)

DISPENSING

Anesthetic Substances—Aqueous Solutions of. To increase the viscosity of solutions of water-soluble salts of substances having an anæsthetic action with organic hydroxycarboxylic acids without unduly increasing the specific gravity, soluble derivatives are used. *E. g.*, 12 Gm. of hydroxyethylmethylcellulose is triturated and covered with 228 cc. of boiling water, stirred and cooled to a uniform solution; 75 Gm. of dimethylaminoethyl-*p*-butylaminobenzoate is treated at 50° C. with 56.5 Gm. of quinic acid in 1400 cc. of water, cooled, mixed with 500 cc. of the cellulose solution, 200 cc. of alcohol are added and made up to 9.4 L. with distilled water, let stand for 24 hrs. and centrifuged. A clear solution is obtained having a specific gravity of

1.0009 and a viscosity 2.2 times that of water.—MAX BOCKMÜHL and WILLY LUDWIG, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,061,544, Nov. 24, 1936. (A. P.-C.)

Bactericidals—Water-Soluble. Clearly water-soluble solutions of phenolic compounds possessing inherent bactericidal properties, but in themselves insoluble or sparingly soluble in water, are obtained by deproteinizing a sulfonated fatty oil, dissolving therein the phenolic compound with the aid of heat and adding sufficient polyhydric alcohol to dissolve the residual amounts of protein remaining after deproteinization of the oil.—PAUL GOEDRICH. U. S. pat. 2,073,057, March 9, 1937. (A. P.-C.)

Colloidal Solutions—Preparation of. Ascorbinic or iso-ascorbinic acid are recommended as reducing agents in obtaining colloidal solutions of various metals, such as gold, silver, platinum, palladium, selenium, tellurium, molybdenum and tungsten. Either of these acids has the advantage over other reducing agents of being more complete and rapid in action. A high degree of purity is also attained, although in some cases it may be desirable to dialyze for the removal of low-molecular-reaction products or unused acid. The addition of alkali in some cases is recommended. The general procedure is to prepare a very dilute aqueous solution of the metal salt, acid or oxide, sometimes heating to the boiling point and then adding the acid (0.5 or 0.3%). Thus for gold, 1 cc. of $^1/_2$% chloroauric acid is diluted with 100 cc. water; 6 cc. 0.1*N* potassium carbonate solution added; the mixture is boiled and 5 cc. of 0.5% ascorbinic or iso-ascorbinic acid added, then again brought to boiling point. A clear reddish to violet solution of colloidal gold is thus obtained practically free from unreduced gold compounds, as proved by the Thiessen ammonia test. For platinum use 1 cc. of 0.3% potassium or ammonium platinic chloride solution and 2 cc. of 0.5% acid solution added at room temperature; add 4 cc. 0.1*N* sodium hydroxide to the colloidal product.—H. BRINTZINGER. *Kolloid-Z.*, 75 (1937), 2; through *Chem. and Drug.*, 126 (1937), 288. (E. V. S.)

Disguises—Some Useful. A group of prescriptions using disguising vehicles such as syrups of glycyrrhiza, cherry, cinnamon, acacia and aromatic eriodictyon, iso-elixir and glycerin.—BERNARD FANTUS. *Merck Rep.*, 46, No. 2 (1937), 9. (E. V. S.)

Emulsions. The article deals with the definition and classification of emulsions.—CHARLES O. LEE. *Pharm. Archives*, 7 (1936), 53. (A. C. DeD.)

Gonadotropic Hormonal Substances—Method of Purifying. Blood plasma or serum made from the blood of an animal of the equine group during early pregnancy is diluted with 5 to 9 volumes of water. The p_H of the diluted plasma is adjusted to 2 to 4.5. Aluminum hydroxide having from 17 to 38% of bound water is added to adsorb the hormonal substances, and after removing the aluminum hydroxide the hormonal substances are liberated therefrom.—EDWIN L. GUSTUS, assignor to THE UPJOHN CO. U. S. pat. 2,072,258, March 2, 1937. (A. P.-C.)

Iodized Oil—Emulsion of. The following formula for an emulsion of iodized oil for the X-ray examination of empyema cavities is given: Neo-hydriol (May and Baker), 20 cc.; sterile mucilage of acacia, 30 cc.; ti-tree oil, 1 cc.; sterile distilled water, *q. s.* 100 cc. The mucilage of acacia is prepared according to the B. P., using distilled water instead of chloroform water; sterilize by heating in an autoclave at 110° C. for one hour. The mucilage froths considerably during sterilization, hence use a securely plugged and roomy flask. As the emulsifying power of the mucilage seems to be somewhat impaired by the sterilization process, the use of an efficient hand homogenizer is recommended to insure that a good emulsion is obtained. The mucilage is put into a sterile mortar and the ti-tree oil mixed with the Neo-hydriol is added in successive portions, with trituration before each addition. The cream obtained is thoroughly homogenized, being "thinned" if necessary, by the addition of a little sterile water. Then the rest of the sterile water is added. A thin milky-white emulsion is obtained, which shows no sign of creaming or separation. Tested, after being kept for four months in a white glass-stoppered bottle exposed to light and frequently unstoppered to allow access of air, the emulsion showed no trace of free iodine and was found to be sterile.—ANON. *Pharm. J.*, 138 (1937), 164. (W. B. B.)

Ipecac Preparations—Aqueous. Reference is made to the recent summary on this subject by F. Gstirner (*Pharm. Zentralh.*, 76, No. 28, 29 (1935); *Chem. Abstr.*, 29 (1935), 6360) in which connection it is now generally conceded that ipecac infusions are only satisfactorily possible by use of relatively large quantities of water. If a concentrated infusion is desired, a double 1-hr. extraction on the steam-bath is necessary with addition of a small amount of hydrochloric acid. For stabilizing, 10% ethanol will suffice. Since ethanol precipitates a portion of the alkaloids,

experiments are indicated for other preservatives. The method of H. Madsen (*Pharm. Ztg.*, (1931), 76) is again recommended.—B. SCHWENKE. *Pharm. Zentralh.*, 77 (1936), 673; through *Chem. Abstr.*, 31 (1937), 505. (E. V. S.)

Pectin—Substitute for Ointment Bases. Pectin, obtainable from apple peelings, turnips, berries, etc., is recommended in Germany as a substitute for imported fats, vaselines, resins and waxes in ointment bases. Satisfactory ointments were prepared by adding the pectin ground with a little alcohol to the medicinal agent desired in water and glycerol on the water-bath or at room temperature. Formulas are given for zinc oxide-talc, tumenol, ichthyol and sulfur ointments and for astringent ointments containing aluminum acetate or menthol. The preparations should be stored in well closed containers.—ALFRED MOSIG. *Pharm. Zentralh.*, 78 (1937), 1; through *Squibb Abstr. Bull.*, 10 (1937), A355. (E. V. S.)

Pyroxylin and Pharmaceutical Collodions. Pyroxylin and collodions prepared from it have always been very variable in character, particularly with regard to viscosity, and this variation has given rise to many difficulties in dispensing and formulation. The British Pharmacopœia 1914 in its monograph on pyroxylin gave a method for preparation and specified a solubility in an alcohol-ether mixture, but neither the test nor the method was of any value in controlling the quality of the product. The 1932 pharmacopœia omitted any detailed method of preparation, but introduced control tests of solubility in an alcohol-ether mixture and in acetone, a minimum limit for the viscosity of a solution in acetone and a limit test for nitrogen content. It was decided to investigate the efficiency of the pharmacopœial standards for the control of pyroxylin and to examine the various medicated collodions with respect to their efficiency as preparations for prolonged skin medication. The conclusion reached from a consideration of many types of medicated collodions was that it was only when separation of the medicament from the film occurred that the preparation had any value, and such value as it did have was not superior to that obtained by the use of any ordinary aqueous or alcoholic solution of the medicament. Experiments were made with a view to defining a method which would be suitable for the preparation of small quantities of pyroxylin, and it was found that the following process produced a pyroxylin suitable for pharmaceutical use: Ten Gm. of absorbent cotton wool was immersed in a cooled mixture of 100 cc. conc. nitric acid and 100 cc. conc. sulfuric acid, and kept cool by immersion of the vessel in cold running water. The wool was well puddled for 10 minutes with a glass rod, then allowed to stand for 50 minutes, removed, pressed, drained on a Buchner funnel and thrown into 5 liters of distilled water, manipulating quickly beneath the surface to prevent undue rise of temperature by the dilution of the acids. The product was washed until free from acid, boiled for 3 periods of an hour with successive changes of distilled water, rinsed, drained and dried at room temperature. This produced a good pyroxylin, with a nitrogen content of 11.8 to 12.2% and a viscosity of more than 3 poises in a 3% solution in acetone.—H. BERRY and L. G. GOODWIN. *Pharm. J.*, 138 (1937), 193. (W. B. B.)

Sodium Tetrathionate—Preparation and Preservation of. Sander's method for preparing sodium tetrathionate is modified as follows: (1) the alcoholic iodine solution is placed in a glass-stoppered flask, (2) the aqueous sodium thiosulfate is placed in any receptacle. The two solutions are kept at 5° for a half-hour. No. 2 is poured into No. 1 gradually, shaking after each addition and allowing to stand in the cold for fifteen minutes between each addition (about four or five additions). This procedure yields a pure tetrathionate. Solutions of this salt are not stable. For therapeutic purposes the required dose of the salt should be placed in a vial and dissolved just before it is used. Another alternative is two vials, one containing 10 cc. of 20% thiosulfate, the other, 10 cc. of 10% iodine (in 13% sodium iodide). These are mixed at the moment of use.—B. CACCIAVILLANI. *Boll. soc. ital. biol. sper.*, 11 (1936), 754–756; through *Chem. Abstr.*, 31 (1937), 2354. (E. V. S.)

PHARMACEUTICAL HISTORY

Caesar and Loretz, Halle (Saale)—Fiftieth Anniversary with. Historical.—ANON. *Apoth. Ztg.*, 52 (1937), 23–24. (H. M. B.)

Dispensing Yesterday and Today. The author mentions that a great many prescriptions as written today are almost identical with prescriptions written forty years ago. About thirty-five years ago, when no solution of adrenaline hydrochloride was available, the pharmacist had to prepare an extract of suprarenal gland for use as eye-drops, and this was made by obtaining from the

pork-butcher some fresh glands, disintegrating them in a mortar with broken glass and extracting the active principle. Solutions of cocaine hydrochloride, sometimes with phenol and witch hazel, were commonly prescribed as nasal sprays, but now they are being replaced by preparations of ephedrine or oily solutions of menthol and camphor. Other examples of unusual prescriptions are mentioned.—E. STABLER. *Pharm. J.*, 138 (1937), 161. (W. B. B.)

Ernest Schwartz—Fiftieth Anniversary of the Death of the Painter and Apothecary. Historical.—S. MAROHN. *Apoth. Ztg.*, 52 (1937), 70–71. (H. M. B.)

Scheele. III. The Contract of Köping. A historical discussion of the facts leading up to the sale of the apothecary's privilege in Köping to Scheele by Sara Margaret Sonneman.—OTTO ZEKERT. *Pharm. Monatsh.*, 18 (1937), 1. (H. M. B.)

Schöpfer Court and City Apothecaries—History of the, at Innsbruch. Historical.—ANON. *Pharm. Post*, 70 (1937), 67–70. (H. M. B.)

Still-Room Plants—Notes on. A historical sketch derived from Pliny's "Natural History" and Gerard's "Herball."—ANON. *Chem. and Drug.*, 126 (1937), 350–351. (E. V. S.)

PHARMACEUTICAL LEGISLATION

Equipment—Minimum Pharmacy. The Board of Pharmacy of Oregon has drawn up a new set of regulations in which the minimum equipment of drug stores is specified. The list is given. An additional regulation requires new clean bottles and corks to be used in the filling of all prescriptions for liquids.—ANON. *Pharm. J.*, 138 (1937), 130. (W. B. B.)

MISCELLANEOUS

Alcohol—Denatured for Scientific Uses. A discussion with formulas.—WALTER MEYER. *Apoth. Ztg.*, 52 (1937), 22. (H. M. B.)

Apparatus Used in Pharmacy. A review.—FRIDO KORDON. *Pharm. Post*, 70 (1937), 34–37, 46–49. (H. M. B.)

Carotene—Use of, in Cosmetics. Attention is drawn to the remarkably successful results obtained by the use of carotene (pro-vitamin A) in cosmetics.—R. M. GATTEFOSSÉ. *Parfumerie Moderne*, 30 (1936), 473, 475. (A. P.-C.)

Citric Acid—Isolation of, from Potato Tubers. The starch, proteins and sulfate were removed from the juice of potato tubers and the citric acid was obtained, first as a sodium salt, and then liberated as an acid. Recrystallization from ethyl ether gave a product, m. p. 152°. Derivatives were made.—JOHN D. GUTHRIE. *Contrib. Boyce Thompson Inst.*, 8 (1936), 295–296; through *Chem Abstr.*, 31 (1937), 2256. (E. V. S.)

Colloid Chemistry and Pharmacy. The author reviews the colloidal properties of medicaments, the influence of the size of the particles on solubility with specific reference to salicylic acid, and the effect of particle size on the therapeutic activity. He concludes from determinations on mercuric chloride that there is a paralleled relationship between particle size and pharmacological activity. The properties of colloidal preparations depend on the size of the particles, which may be determined from the Tyndall effect by fractionation using ultrafiltration, speed of settling on centrifuging and by measuring the intensity of light deflection. The number of particles in 1 cc. and the linear measurements in $m\mu$ follow: protargol 9.7×10^6, 27; silver proteinate 6.6×10^6, 31; collargol 9.2×10^6, 21; colloidal silver 3.9×10^6, 28; lyogen 5.5×10^6, 25; Liquor Aluminii acetici 4.5×10^6, 5.43; Liquor Ferri albuminati 6.6×10^5, 3.74 and Liquor Ferri oxychlorati dialysati 8.9×10^6, 1.11. In silver preparations the stronger solutions flocculate much sooner than the more dilute solutions. Physical determinations on colloidal solutions assist in determination of physiological activity. From determinations of bactericidal action, D. concludes that in disinfection with adsorption agents, the ions, the difficultly soluble salts and the colloid are all involved.—RICHARD DIETZEL. *Pharm. Zentralh.*, 77 (1936), 733, 751; and *Kolloid-Z.*, 77 (1936), 220; through *Squibb Abstr. Bull.*, 10 (1937), A511. (E. V. S.)

Color Measurement of Opaque Surfaces. A method is described in detail by which the amount of light scattered normally from a test surface in various parts of the spectrum is expressed as a percentage of the amount of light similarly scattered from a standard white surface under the same conditions. The results of measurements at different wave-lengths are plotted in a graph against the wave-lengths and this leads to a curve describing the color. The paper includes a description of (*a*) the instrument, (*b*) the standard white surface, (*c*) the color filters, (*d*)

the method of measuring the color, (*e*) the method of measuring the color of pastes, powders and liquids such as creams, soft fats, potted meats, powders of all kinds, paints, mayonnaise, etc.—E. R. BOLTON and K. A. WILLIAMS. *Analyst*, 62 (1937), 3. (G. L. W.)

Colorimetric Standards. VIII. Solutions for Arny's Series. Specifications for preparation and use of the Co-Fe-Cu, or acidic series are in U. S. P. XI. Colorimetric characteristics have been re-examined. Experimental work is given in detail. Spectral transmission curves are shown for the stock solutions, for grayish, fawn, yellow, green and pink blends. It is pointed out that materials that match in daylight may not by artificial light. In order to extend the range there is need for solutions which are redder than cobalt compounds and bluer than cupric compounds. A table shows trichromatic values (red, green, violet) and monochromatic values (brightness, dominant wave-length, purity).—C. J. KASLINE and M. G. MELLON. *J. Am. Pharm. Assoc.*, 26 (1937), 227. (Z. M. C.)

Cosmetics—Notes on. A general discussion for the pharmacist or small manufacturer on the formulation of powders, creams, hair preparations and brushless shaving creams. The action of and considerations to be given to the varied ingredients are explained. Formulas for these varied types are given.—ANON. *Chem. and Drug.*, 126 (1937), 342. (E. V. S.)

Dental Soaps. Polemical with Camille André who attributes to the use of dental soaps the marked increase in pyorrhea.—R. M. GATTEFOSSÉ. *Parfumerie Moderne*, 30 (1936), 421, 423. (A. P.-C.)

Dentifrice. Basic and acidic phosphates are used together in such proportions as to form a buffer giving a p_H above 7 but not above approximately 9, to avoid producing disagreeable alkaline taste reactions in the mouth, together with a saponaceous base material such as soap, glycerin, suitable abrasive material, etc.—MELVILLE SAHYUN. U. S. pat. 2,069,157, Jan. 26, 1937. (A. P.-C.)

Deodorizing Composition. A mixture of a soluble chlorite and an acidifying agent is briquetted with a filler of lower solubility whereby disintegration of the briquettes when in contact with water is retarded.—GEORGE PAUL VINCENT, assignor to THE MATHIESON ALKALI WORKS, INC. U. S. pat. 2,071,094, Feb. 16, 1937. (A. P.-C.)

Disinfectants and Antiseptics—Scientific Advances in 1936 in. The 1936 advancements were developmental rather than original. This review with 63 references offers criticism on those publications which appeared most significant to the author. The topics covered are: methodological studies, phenol derivatives, coal-tar products, chlorine and chlorine compounds, quinoline derivatives, mercury compounds, antiseptic dyes, perborate, oligodynamic action, soaps and detergents, biological materials, thiocyanates, ointments and related products, cadmium proteinate, potassium cyanide and radiant energy and irradiated materials.—EMIL KLARMANN. *Soap*, 13 (1937), 104; through *Squibb Abstr. Bull.*, 10 (1937), A237. (E. V. S.)

Disinfecting and Preservative Agents. Sulfonium compounds are used having the formula Y-(R)-S-(X)-Z, in which Y and Z are open-chain or ring radicals, R is an aliphatic or aromatic-aliphatic radical and X is an acid radical or a halogen. Inert fillers may be used.—CHEMISCHE FABRIK VON HEYDEN. A. G. Belg. pat. 417,301, Oct. 31, 1936. (A. P.-C.)

Drug Specialities and Galenicals—Examination of. A general examination including the manufacturer, how marketed, reactions (odor, specific gravity, acidity or basicity, volatile matter, etc.), composition, etc., of the following preparations: Actirheum-Liniment, Ohlepin-Einreibung, Schäfer-Einreibe, Lebens-Elixir Tatar, Kalobiolax, Venecin, Cineral, Salogena, Hydropsal, Promptex, Praecutan (neutral soap preparation), Extr. Chamomillæ, Lissaboner Gesundheits- und Lebentee, Frischer grüner Pflanzen-Extrakt and ethereal tincture of valerian.—W. PEYER and J. BREINLICH. *Pharm. Zentralh.*, 78 (1937), 20. (E. V. S.)

Drugs—Grinding. Mills and their application in drug grinding are discussed.—FRANCIS CHILSON. *Drug Cosmetic Ind.*, 40 (1937), 198–201. (H. M. B.)

Foams—Mechanical Properties of. Saponin foams may be destroyed not by excess pressure from all directions but by unilateral pressure causing strong deformation of the foam membrane.—A. SIEHR. *Kolloid-Z.*, 78 (1937), 156; through *Squibb Abstr. Bull.*, 10 (1937), A573. (E. V. S.)

Fungicide and Bactericide. A stable fungicidal and bactericidal composition consists of a mixture of acid with alkali or alkaline earth chlorites.—MAURICE C. TAYLOR, assignor to THE MATHIESON ALKALI WORKS, INC. U. S. pat. 2,071,091, Feb. 16, 1937. (A. P.-C.)

Gases—War, Protection against. The Use of Indicators. The Swiss and Italian armies have provided each soldier with a vaseline salve containing 5% of chloramine as a protection against mustard gas. During a gas attack it is important to know what noxious substance is being used. There are several test papers for the recognition of the presence of poison gases. A reagent of general utility is moist congo-red paper, which is turned blue by phosgene, nitric oxide, chlorine and mustard gas. Several test papers which are more specific in action have been devised. Chlorine, for instance, can be detected in the concentration of 1 in 150,000 with paper dipped in the following solution: Starch, 1; zinc chloride, 2; potassium iodide, 2; water, *q. s.* 100. To keep the papers moist, it is advantageous to impregnate them with ammonium thiocyanate, since they will not work if quite dry. It is important that they be stored in a tightly closed container away from the light. Formulas for other solutions, in which test papers are dipped to permit identification of various poisonous gases, are given.—ANON. *Pharm. J.*, 138 (1937), 188. (W. B. B.)

Germicidal Composition. A composition of matter having germicidal properties includes essentially free iodine peptized by ferric iodide, the latter being present in sufficient amount to stabilize the system.—RAYMOND C. MCQUISTON, assignor of 25% to ERROLD B. THOMAS and 25% to CALVIN B. SMITH. U. S. pat. 2,073,021, March 9, 1937. (A. P.-C.)

Hair Curling. Various details of a device and mode of operation employing chemicals such as charcoal, calcium and sodium or potassium nitrate, which liberate heat upon treatment with water.—PAUL G. GAIRE. U. S. pat. 2,068,174, Jan. 19, 1937. (A. P.-C.)

Hair Tonics and Shampoos—Preparation of. A brief review is given of the various purposes of hair waters. Several formulas are given for preparing general hair tonics, disinfectant tonics and shampoos.—M. SCHWEIZ. *Apoth.-Ztg.*, 75 (1937), 101. (M. F. W. D.)

Hair Waving—Permanent. The hair is impregnated with a solution of a sulfide such as an ammoniacal solution of barium or sodium sulfide having a concentration not substantially in excess of 6%, and is coiled and heated for a short time at a temperature sufficiently high to set the wave but not above 100° C. (suitably with conjoint use of keratin, etc.).—FREDERIC MAEDER. U. S. pat. 2,068,809, Jan. 26, 1937. (A. P.-C.)

Ho or Shui Oil in Perfumery. Ho oil has an odor reminiscent of linaloe oil which it is replacing and spike lavender oil but with an additional camphoraceous note. Ho oil is distilled in Japan from a plant of doubtful botanical origin, but which is a member of the Lauraceæ. Ho oil is white, in contradistinction to spike lavender oil, and specific gravity (15.5°) is 0.861 for average samples. It is an important source of linaloöl and its esters, but these have been criticized due to the camphoraceous odor. The linalyl acetate obtained from the oil is used frequently in the preparation of artificial bergamot oil. In addition, ho oil is used as a substitute for linaloe oil, bois de rose and Spanish spike lavender oil. It appears to have certain insect repellant properties and is worthy of trial in soap perfumery. An anti-insect sting formula is ho oil 5, ammonia solution (0.880) 5, alcohol 80, water 10; filter if necessary. The market position is also given.—ANON. *Chem. and Drug.*, 126 (1937), 345. (E. V. S.)

Ichthyol, Thiol and Tunenol. The production, properties and application of these preparations are reviewed. Fourteen references.—TH. RUEMELE. *Pharm. Zentralh.*, 77 (1936), 564; through *Chem. Abstr.*, 30 (1936), 8523. (E. V. S.)

Injection—Therapeutic Agents Suitable for. White, crystalline products, very easily soluble in water with a neutral reaction, insoluble in ether, petroleum ether and benzene, and which have a sweetish taste with a bitter after-taste are produced by reaction of 1,3-dimethylxanthine and a water-soluble salt (such as the sodium or magnesium salt) of *m*-hydroxybenzoic acid, in water.—WALTER KROPP, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,066,731, Jan. 5, 1937. (A. P.-C.)

Insect Repellent and Exterminator. A solution of a diaryl substituted guanidine, pyrethrum extract and a fatty acid, in a non-aqueous solvent.—GEORGE G. WITTWER and MAHLON H. BEAKES, assignors to AMERICAN CYANAMID CO. U. S. pat. 2,071,484, Feb. 23, 1937. (A. P.-C.)

Iodine. A review.—ISABEL BENNEY. *Drug Cosmetic Ind.*, 40 (1937), 182–184, 188, 213. (H. M. B.)

Metal Abietates—Therapeutic Compounds Containing. Silver, bismuth, mercury or zinc abietate is dissolved in an essential oil which is a solvent for the abietate, and is dispersed in a

lower alkyl ester of abietic acid and a petroleum hydrocarbon.—ALLEN L. OMOHUNDRO and EMIL C. FANTO, assignors to MCKESSON & ROBBINS, INC. U. S. pat. 2,070,915, Feb. 16, 1937. (A. P.-C.)

Parasiticides—Alkaloidal Compounds Suitable for Use as. An alkaloidal material containing a pyridine ring, such as nicotine, coniine, bipiperidyl and their compounds and salts, is caused to react with a gum or resin, such as kamala, tragacanth, agar-agar, Indian gum or shellac (preferably using an excess of the gum or resin if the product is to be administered to animals as a parasiticide). The products, such as kamala nicotinate, coniinate and dipiperidylate, and the like, are claimed as new compounds.—FRANK F. LINDSTAEDT, assignor to HERCULES GLUE CO., LTD. U. S. pat. 2,065,190, Dec. 22, 1936. (A. P.-C.)

Perfumes—Synthetic Floral. Formulas and blending notes are given for the pharmacist who may desire to prepare perfumes on a small scale. Formulas are given for clover bouquet, rose, gardenia, violet, narcissus and jasmine.—ANON. *Chem. and Drug.*, 126 (1937), 352. (E. V. S.)

Pests—Material for Combating. Peat having hydrocyanic acid absorbed thereon is used as a pest-combating agent.—PAUL STRICKER, assignor to SOCIETY OF CHEMICAL INDUSTRY in Basle. U. S. pat. 2,072,226, March 2, 1937. (A. P.-C.)

Pharmacy—Research Work in. Research work in pharmacy at the present time appears to be governed by several well-defined factors. Much of it has only an incidental bearing on the craft and is derived from other branches of science. Pharmacy mainly derives its research, according to the author, either from workers in the allied professions of chemistry such as those of the analyst or biochemist, or from the laboratories of manufacturing houses who naturally choose subjects of particular interest to themselves.—C. E. WATERHOUSE. *Pharm. J.*, 138 (1937), 162. (W. B. B.)

Preservation—Chemical. The author reviews the history of the preservation of foods and discusses the use as preservatives of salts, salicylic acid, formic acid, sulfurous acid and its salts, benzoic acid and esters of *p*-hydroxybenzoic acid, *e. g.*, ethyl, methyl (nipagin), propyl (nipasol), benzyl (nipabenzyl) and a mixture of the ethyl and propyl esters (nipacombin). The value of the "nipa esters" in the preservation of pharmaceuticals has been reported previously and the author reviews his own work on the bactericidal action of the compounds. Confirmatory evidence from other authors is given. Sixty-two references.—TH. SABALITSCHKA. *Pharm. Ztg.*, 81 (1936), 1301; through *Squibb Abstr. Bull.*, 10 (1937), A257. (E. V. S.)

Preserving Foods—Types and Amounts of Chemicals Suitable for. P. reviews the types and amounts of preservatives legally allowable and points out that in the preserving of meats, boric acid and its salts, sulfurous acid and its salts, formaldehyde, alkali and alkaline earth hydroxides or carbonates or dyestuffs are not permitted and formic, nitrous and benzoic acids and their salts, aluminum and sodium acetate, sodium phosphate, etc., are not recommended. Chemical preservatives for milk are forbidden. Substances which are not of much value include: salt, acetic and tartaric acids, sugar and smoke, lime and water glass for eggs and sulfuric acid for bakers' yeast; saltpeter, carbon dioxide, acetic, lactic, tartaric and citric acids and their salts. Preservatives should be used only when necessary, *e. g.*, boric acid in small amounts in anchovies, caviar, crabs, etc. In the D. A. B., the following are considered: esters, *e. g.*, ethyl or propyl *p*-hydroxybenzoate and their sodium salts; mixtures of benzoic and *p*-chlorobenzoic acids and their sodium salts, sulfurous acid, boric acid, 25% formic acid solution, methenamine, potassium pyrosulfite, sodium sulfite and a 30% peroxide.—JOHANNES PRESCHER. *Pharm. Zentralh.*, 77 (1936), 657, 740; through *Squibb Abstr. Bull.*, 10 (1937), A157. (E. V. S.)

Pyrethrin Insecticide. For making an insecticidal extract, pyrethrum flowers are immersed in a petroleum distillate such as petroleum naphtha (suitably in a proportion of about 2.5 to 0.1 gal. of the distillate per lb. of flowers and for less than 1 hr., *e. g.*, 20 to 30 min.), and the liquid extract is separated from the residue of the flowers.—IRVING E. MUSKAT, assignor to GULF RESEARCH AND DEVELOPMENT CO. U. S. pat. 2,066,737, Jan. 5, 1937. (A. P.-C.)

Pyrethrin Spray—Use of, as Insecticide in Warehouses. A study of the life histories of the moths *Plodia interpunctella* and *Ephestia elutella* in warehouses shows that the full grown larvæ winter in the crevices of the fabric of the warehouses and emerge as moths the following year to infest any goods that are present, so that a large proportion of the infestation of goods arises from the infested premises. The period from egg to adult is from 357 to 367 days; the hibernating

caterpillars begin to pupate in May and the moths emerge early in June, the pupal period varying from three to five weeks; emergence continues till the end of July. The moths emerge and pair at night; the incubation period of the egg is about seven days, in June and July. Toward the end of August the first caterpillars become full grown; they then migrate to a suitable crevice to open a cocoon; this migration continues till the end of November. Many reach cracks in the warehouse and establish themselves for the winter. Very efficient barge fumigation has completely destroyed all infestation of Australian dried fruits taken into the warehouses, and the problem remained to clear the warehouses of infestation. Fumigation was too expensive and a new method has been developed. The proposed insecticide consists of a pyrethrum spray made by adding a preparation containing about 6.5% of pyrethrins I and II in mineral oil to a refined white oil; the spray contains about 1.6% of total pyrethrins in white oil. A specially designed atomizer for spraying with this oil-pyrethrum preparation is described and the method of application is discussed in detail, as also is the efficacy of the application.—C. POTTER. *Ann. Applied Biol.*, 22 (1935), 769; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 608. (S. W. G.)

Radium and the Curies. A history of radium is sketched and the physics of the rays emitted is outlined. Alpha rays are said to correspond to 99% of the total energy, are non-penetrating and consist of atoms and helium. The beta rays are said to be negatively charged electrons with a velocity of 186,000 miles per second; the gamma rays are described as active penetrating rays that can be detected after their passage through 20 cm. of lead.—H. BURLINSON. *Pharm. J.*, 138 (1937), 162. (W. B. B.)

Research Products and Specialities for 1936. A review dealing with vitamins, hormones, solutions for injections, bloodletting and styptics, and a group of new specialties. Fifty-three references.—KONRAD SCHULZE. *Apoth. Ztg.*, 52 (1937), 65–69, 100–103. (H. M. B.)

Roses—Odor of. A discussion of the relationship of the artificial to the natural odor of rose. Pointers are given for the perfumer in blending the rose odor and advice in the use of allied chemical compounds. Thus phenylacetic acid will give a honey odor similar to the natural otto of rose, phenylethyl valerianate, a fruity odor and the corresponding acetate, the leaf effect desired in floral perfumes.—ERNEST J. PARRY. *Chem. and Drug.*, 126 (1937), 337. (E. V. S.)

Seed Disinfectants—Water-soluble. An insoluble phenol mercuricyanide is rendered soluble in water by the conjoint use of a trialkali phosphate, and an alkali *p*-toluenesulfonate such as that of sodium may also be used in a dry initial mixture formed, as a solution promoter.—KARL MEMMINGER, assignor to FAHLBERG-LIST A.-G. CHEMISCHE FABRIKEN. U. S. pat. 2,066,895, Jan. 5, 1937. (A. P.-C.)

Shaving Accessories. An after-shaving lotion to sell well should be clear, actively antiseptic and mildly astringent, possibly slightly acid, mildly anæsthetic and hygroscopic. Suggested ingredients include oxyquinoline sulfate up to 1%, chlorothymol up to 0.1%, menthol or thymol up to 0.2% or sodium salicylate up to 0.5% for antiseptic value; 50% alcohol, aluminum acetate up to 1%, aluminum chloride 0.25%, alum 0.75%, zinc sulfate 0.1%, zinc phenolsulfonate 0.75% and betanaphthol benzoate 0.1% as astringents; boric acid 3%, and lactic, citric or phosphoric about 0.2% for acidity; 0.5% phenol to allay itching; 2–5% glycerol. In a discussion of after-shave talcs, the importance of color is emphasized. Many powders appear dark enough, but on application in a thin film, they are only off-white. The use of zinc and titanium oxides and the insoluble soaps in powder is discussed. A "he-man" toilet soap is suggested; it might be offered in a waterproof shell to serve as its own dish. In preparing kits containing several preparations, the size of the packages should be gaged so that all run out at about the same time. In a choice of odor for men's cosmetics, a fugitive character is most desirable. A mild deodorant added to "after-shaving talc" increases the amount used. Low lotion bottles with sprinkler top and non-skid features are advantageous as are straight sides on a cream jar; talc cans should not be too tall.—RALPH H. AUCH. *Soap*, 13 (1937), 29; through *Squibb Abstr. Bull.*, 10 (1937), A309. (E. V. S.)

Soft Soap Specifications. A new specification has been issued by the Medical Department of the U. S. Army for its soft soap requirements. All material employed shall be of U. S. P. quality. Soft soap shall contain not less than 1.91% potassium hydroxide which represents 85% of hydroxide and not less than 4.63% of sodium hydroxide which represents not less than 95% of the hydroxide. The other components shall be in the same proportion as those described in the U. S. P. XI. Stringy, non-homogeneous, opaque mass shall be cause for rejection. The applicable

tests are those given in the U. S. P. under their respective headings with certain described modifications of detail; spectrographic analysis; and any others. The solubility test shall show a residue of not more than 0.05% in a 1:20 water solution using 10 Gm. of soap. Packaging is in 1 lb. jars with screw cap and in 25 lb. steel pails; inadequate or poorly capped or second-hand or dirty (inside and outside) containers, shall be cause for rejection. The control laboratory number must be on the label. The proper marking of the cases is described.—*Soap*, 13 (1937), 65; through *Squibb Abstr. Bull.*, 10 (1937), A309. (E. V. S.)

Starch in Soap. A specially treated "industrial starch," when added to soap to the extent of 10–16% increases the lathering power and tends to prevent loss of water on storage. A soap free from starch which lost 11.6% of water on storage for four weeks, when admixed with 20% starch, lost only 4.9% of water under the same conditions of storage. The use of starch in soap has been criticized on the ground that objectionable reducing substances are liable to be formed by the action of soap or alkali on the starch, but K. and S. conclude, as the result of chemical tests, and also actual washing tests on a number of different fabrics, that there is little, if any, evidence that the addition of starch to soap renders it unsuitable for washing colored fabrics.—KRONER and STEINHOFF. *Seifensieder-Ztg.*, 63 (1936), 172; through *Perfumery Essent. Oil Record*, 28 (1937), 112. (A. C. DeD.)

Sulfosalicyclic Acid—Behavior of, on Melting. Seen under the microscope when rapidly heated, the crystals melt at 110° to 115° C., become crystalline again on further heating and finally melt at 224° C.—R. FISCHER. *Pharm. Ztg.*, 81 (1936), 243–244; through *Chimie & Industrie*, 36 (1936), 967–968. (A. P.-C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Acetyl-D3-choline—Preparation and Properties of. In order to learn the influence on the pharmacological action of the substitution of deuterium for hydrogen, acetylcholine was selected since its pharmacological action can be measured quantitatively and its action is dependent on the acetyl group. Acetyl-D3-choline was prepared by the action of anhydrous potassium trichloroacetate on deuterium oxide potassium amalgam. The acetyl-D3-chloride was converted into β-bromethyl-acetate-D3 by means of ethylene bromhydrin and then into the acetyl-D3-choline bromide by treatment with trimethylamine. It was impossible to detect a difference in the action of acetylcholine and acetyl-D3-choline on isolated frog hearts. In blood pressure tests on cats, 30% higher doses of acetyl-D3-choline bromide were necessary in order to produce the same degree of action as acetylcholine bromide. Acetyl-D3-choline bromide also showed about a 30% weaker action on isolated leech muscles sensitized by eserine.—H. ERLENMEYER and H. LOBECK. *Helv. Chim. Acta*, 20 (1937), 142. (G. W. H.)

Adonis Vernalis—Glucosides of, Preliminary Note on the Biologic Determination of. The intravenous injection, into two series of 5 chloralosed dogs, of solutions containing 0.2 mg. or 0.1 mg. adonidoside/cc. at the rate of 0.025 mg./Kg./min. killed the dogs in 25–32 min., the M. L. D. being 0.70 mg./Kg. The intravenous injection into 6 chloralosed dogs of a solution containing 0.2 mg. adonivernoside/cc. at a rate of 0.07 mg./Kg./min. killed the dogs in 25–30 min., the M. L. D. being 1.75 mg./Kg. In all cases the solutions were prepared by dissolving the crystalline substance in 95% alcohol to make a 0.5% solution, and then adding physiological salt solution until the desired dilution was obtained.—FERNAND MERCIER and S. MACARY. *Compt. rend. soc. biol.*, 124 (1937), 459; through *Squibb Abstr. Bull.*, 10 (1937), A600. (E. V. S.)

Ascorbic Acid—Failure of Acetylsalicylic Acid to Affect Excretion of, in Urine. The ingestion of acetylsalicylic acid in daily doses of 0.6 to 2.6 Gm. does not influence the excretion of vitamin C in the urine in adults.—JOHN B. YOUMANS, MARVIN B. CORLETTE, HELEN FRANK and MILDRED CORLETTE. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 73. (A. E. M.)

Cardiac Glucosides (Calotropin, α-Antiarin, Emicymarin, Folinerin and Sarmentocymarin)—Potency of Five Additional. The five substances were assayed and studied as previous ones have been. Results of the work are given in several tables and there is some discussion of the chemistry of the compounds. It was found that α-antiarin is definitely less potent than β-antiarin. Calotropin has exactly the same potency as ouabain. Folinerin is highly emetic and like digitoxin it has a very slow but persistent action. Sarmentocymarin has the same structure

for its aglucone as digoxin possesses a potency similar to digoxin in cats.—K. K. CHEN, ROBERT C. ANDERSON and E. BROWN ROBBINS. *J. Am. Pharm. Assoc.*, 26 (1937), 214. (Z. M. C.)

Drugs—Effect of, on the Capillary Circulation. The effect of various drugs on the rate of capillary blood flow in children is described. Atropine, which paralyzes parasympathetic tone, increases the rate of flow; adrenaline and strychnine, which constrict arterioles, decrease it. Tonitrin has a specific contractile effect on the capillary wall.—E. V. LEDERER. *Arch. exp. Path. Pharmak.*, 182 (1936), 372–383; through *Physiol. Abstr.*, 21 (1937), 937. (E. V. S.)

Ephedra—Sardinian. Ephedra Altissima Desf, Ephedra Vulgaris Rich, Ephedra Nebrodensis Tin. Sardinian ephedra contain various active principles: those of *E. altissima* have no midriatic action on the pupil of the dog or cat but are toxic for the frog; those of *E. vulgaris* and *E. nibrodensis* present the biological characteristics and chemical reactions of substances of the type of ephedrine. Chen's method is not well adapted for the extraction of the active principles of the three species. During extraction the active principles undergo marked changes.—MARIA MULAS. *Boll. soc. ital. biol. sper.*, 11 (1936), 743–744; through *Chem. Abstr.*, 31 (1937), 2354. (E. V. S.)

Ephedrine, Acetylcholine, Pilocarpine and Pituitrin—Response of the Exteriorized Spleen to. Injections of acetylcholine, pilocarpine, ephedrine and pituitrin (S) into the saphenous vein causes significant contraction of the exteriorized spleen in the conscious dog. In two single observations, chloroform inhalation caused contraction and sodium amytal caused relaxation of the exteriorized spleen.—JOHN E. DAVIS. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 71. (A. E. M.)

Lead and Nicotine—Combined Action of. The inhibiting action of lead on the frog heart is stronger than that of nicotine, but the inhibiting action of a mixture of the two is not as strong as that corresponding to the sum of the two ingredients taken separately; the action of lead seems to predominate. During the elimination of the lead-nicotine mixture the heart regains its activity more easily than during the elimination of either constituent alone (especially lead).—R. M. SKLIANSKAIA. *Arch. Gewerbepathol.*, 6 (1935), 270–303; through *Chimie & Industrie*, 36 (1936), 728. (A. P.-C.)

Lobelia Inflata L. and Some Similar Species—Pharmacodynamic Action of the Total Alkaloids in Galenic Preparations of. The alkaloids of *Lobelia urens, L. Cardinalis, L. syphilitica* and *L. erinus* have an action similar to that of *L. inflata* as far as influence on blood pressure and respiration are concerned. Neither is there a qualitative difference between total alkaloids, lobeline hydrochloride and the galenic preparations. The hydrochloric acid salt is more efficient than the total alkaloids and these in turn are more so than extracts. The tincture is more effective than the total alkaloids. The different species vary in strength, *L. erinus* having a rather weak action.—M. CARON. *Bull. sci. pharmacol.*, 43 (1936), 193–204; through *Chimie & Industrie*, 36 (1936), 971. (A. P.-C.)

Lu-Jung—Pharmacological Action of. V. Alcoholic or extracts made with physiological saline of lu-jung showed little or no toxic or beneficial effects in rabbits. Both extracts weaken the contractions of the isolated frog heart. The alcoholic extract in large quantity increased tonus and amplitude of rabbit intestinal movements. The active principle was adsorbed by animal charcoal.—TETSUO MINESHITA. *Folia Pharmacol. Japon.*, 23 (1937), 157–174 (Breviaria, 22–23); through *Chem. Abstr.*, 31 (1937), 2354. (E. V. S.)

Quinidine—Pharmacological Action of. Quinidine paralyzes the vagus nerve and depresses ventricular conduction. When it is administered to patients who have ventricular fibrillation, 60% returned to normal.—S. BEN-Ascher. *J. Med. Soc. New Jersey*, 33 (1936), 639–642; through *Chem. Abstr.*, 31 (1937), 2292. (E. V. S.)

Sodium Evipan—Effects of, on Certain Functions of the Digestive Tract, Salivary and Pancreatic Secretion and Intestinal Movements. Evipan anesthesia decreases the flow of saliva produced by nerve stimulation. It does not affect the flow of pancreatic juice after the injection of secretin. The effects on intestinal movements are irregular.—A. TOURNADE and ED. JOLTRAIN. *Compt. rend. soc. biol.*, 121 (1936), 908–909; through *Chimie & Industrie*, 36 (1936), 965. (A. P.-C.)

Strophanthus Preparations—Bioassay of. Four tinctures were prepared and assays studied periodically over more than a year by the U. S. P. X one-hour frog method, the over night lethal frog method, the cat method and the colorimetric method of Knudson and Dresbach. Results

are discussed. The conclusions reached are reported in considerable detail. 1. The U. S. P. frog method, the cat method and the Chapman and Morrell modification of the lethal frog method gave evidence that they yielded the same type of quantitative information. 2. Inconsistencies in results are believed to be due to inherent characteristics of the methods. 3. The U. S. P. X one-hour method is the least reliable. 4. The Chapman and Morrell modification of the lethal frog method is recommended in principle as the official method because it yields accurate and reproducible results. 5. The cat method is less accurate than the over night lethal frog method, but serviceable where cats are available. 6. None of the methods gave evidence of loss of potency in the tinctures during about a year. 7. The U. S. P. X method of extraction of drug does not yield tinctures of the official potency. An excess of drug must be used. 8. It has not been possible to obtain strophanthus which would meet U. S. P. requirements. Official potency requirements should be reduced to 50 or 60% of U. S. P. X requirements.—WILLIAM H. HUNT and MARVIN R. THOMPSON. *J. Am. Pharm. Assoc.*, 26 (1937), 23. (Z. M. C.)

Thevetin—Persistence of Effect of. Thevetin is more rapidly eliminated than most substances with digitalis action.—H. B. HAAG and W. A. PENNINGTON. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 33. (A. E. M.)

TOXICOLOGY

Arsenic—External Action of, on Insects. Arsenicals are generally considered as stomach poisons. Experiments on the pilgrim cricket, *Schistocerca gregaria*, have shown that certain salts of arsenic, especially sodium arsenite, have a toxic action by simple contact. Two factors play an essential rôle; the degree of subdivision of the powder used and the humidity of the atmosphere. A high humidity considerably accelerates the rate of action of the poison especially with the slightly soluble salts.—PIERRE LEPESME. *Compt. rend.*, 204 (1937), 716. (G. W. H.)

Barbiturates—Studies on. XVI. Barbiturate Poisoning Treated with Picrotoxin. The authors report the results of the treatment of two cases of barbiturate poisoning with picrotoxin (I). In the first case, the patient had taken at least 75 gr. phenobarbital (II). Blood tests showed the presence of 0.036, 0.030, 0.020 and 0.014 mg. II/cc. on 4 days during which treatment was given. Treatment consisted of injections of 10 cc. solutions of I, and a total of 167 mg. was given intravenously. Distinct awakening phenomena followed administration of I and denarcotization was successful but the patient died from respiratory involvement. In a second case, following ingestion of 58.5 gr. amytal, a total of 24 mg. of I was given intravenously or intramuscularly and the patient recovered completely. The authors recommend the administration of 5 mg. I when barbiturate poisoning has been confirmed, increasing the dosage to 10 mg. if awakening effects are not produced in 20–30 minutes after a second injection of 5 mg. I. Toxic symptoms to I include twitching and medication should be discontinued until the patient becomes lethargic, when I is given again in doses of 3–5 mg. A 0.2% aqueous or physiological saline solution is recommended. Treatment should be continued until the patient becomes conscious.—WILLIAM S. MURPHY, HAROLD V. CONNERTY, ALOYSIUS J. CONNOLLY and THEODORE KOPPANYI. *J. Lab. Clin. Med.*, 22 (1937), 350; through *Squibb Abstr. Bull.*, 10 (1937), A358. (E. V. S.)

Benzene Poisoning—Chronic, and Vitamin C. The similarity in symptoms between scurvy and chronic benzene poisoning suggests that in the latter condition the symptoms may be due to avitaminosis caused by increased use of vitamin C. This theory is supported by a case of chronic benzene poisoning exhibiting abnormally high ascorbic acid requirement.—AUGUST MEYER. *Z. Vitaminforsch.*, 6 (1937), 83; through *Squibb Abstr. Bull.*, 10 (1937), A553. (E. V. S.)

Carbon Tetrachloride Poisoning. In carbon tetrachloride poisoning the urine is highly colored, there is a high icteric index, bromosulfonophthalein is retained and the ratio of ester to total cholesterol is disturbed. Intravenous injections of dextrose and calcium salts, supplemented by insulin and papaverine, were effective in overcoming spastic anuria. The increase in industrial use of carbon tetrachloride makes this a formidable industrial hazard.—G. G. DAVIS. *Ind. Med.*, 6 (1937), 24–29; through *Chem. Abstr.*, 31 (1937), 2292. (E. V. S.)

Dermatitis—External Causes of. The author lists the compounds causing contact dermatitis including organic compounds, drugs, plants, cosmetics and industrial irritants. 245 references given.—LEONARD F. WEBER. *Arch. Dermatol. Syphilol.*, 35 (1937), 129; through *Squibb Abstr. Bull.*, 10 (1937), A328. (E. V. S.)

Dry Ice Burn of Throat. Swallowing of dry ice in a 15-year-old boy caused excruciating pain in the throat, persisting for about a week, and congestion and swelling of the face. Examination of the throat on the third day after the accident showed a slightly mottled appearance with no ulceration, blebs or blisters. The literature, which does not include a similar case, contains reports of the production of neuritis of hands and arms, and of cancer in mice, by carbon dioxide ice.—PHILIP S. STOUT. *Laryngoscope*, 46 (1936), 922; through *Squibb Abstr. Bull.*, 10 (1937), A381. (E. V. S.)

Fluorine Compounds—Crude Toxicity of. The oral and subcutaneous toxicities of fluorides, bifluorides, hydrofluoric acid, fluosilicic acid and its salts, and potassium fluotitanate, have been determined for the fish, frog and guinea pig. Hydrofluoric acid is apparently the most toxic, and aluminum fluosilicate and fluoride and the fluorides of cerium, lead, strontium and calcium are the least toxic.—PIERRE SIMONIN and ANDRE PIERRON. *Compt. rend. soc. biol.*, 124 (1937), 133; through *Squibb Abstr. Bull.*, 10 (1937), A573. (E. V. S.)

Hydrazine Derivatives—Pathological Studies on the Organic Effects of Various. Rats injected with lethal or slightly sublethal doses of benzylphenylhydrazine, α-ethyl-β-propylacrolein phenylhydrazone, butylphenylhydrazine and formylphenylhydrazine developed lesions in the liver, heart, pancreas, spleen, kidney, testis and brain, in addition to hemorrhage, edema, hyperemia and infarcts. The acrolein derivative was the most toxic.—W. C. HUEPER. *J. Ind. Hyg. Toxicol.*, 18 (1936), 17–37; through *Chimie & Industrie*, 36 (1936), 728. (A. P.-C.)

Luminal Illness in the Form of Dermatitis Exfoliativa. A $5^1/_2$-year-old epileptic was taken ill 12 to 13 days after the institution of a luminal cure (twice daily—0.05 Gm.). There was fever, and 3 days later papules appeared on the skin of the face, hands and feet. Temperature 39.5° C. The patient became delirious and was taken to hospital. The skin showed distinct dermatitis exfoliativa. Local treatment was given with tannin and borolanolin; also general treatment and infusion of glucose. The child died 3 days later. It is probable that an injury to the liver played a part in the death of the child. He was the son of the landlord of an inn, and took alcohol frequently. There was no histological examination.—MARCIA HECKMANN. *Z. Kinderheilk.*, 57 (1935), 358; through *Medico-Legal Criminol. Rev.*, 4 (1936), 239. (A. P.-C.)

Mercuric Chloride—Poisoning from. The distribution of mercury in the organs of three people who died from mercuric chloride poisoning has been studied. The greatest concentration was found in the kidneys (average 3.8 mg. per 100 Gm. of moist organ); the liver had one-half to two-thirds as much, the spleen one-seventh, the intestines one-ninth; heart, muscle and lungs each about one-fifteenth, and finally the brain one-twenty-seventh. These figures are similar to others recorded.—T. SOLLMANN and N. E. SCHREIBER. *Arch. Internal Med.*, 57 (1936), 46; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 589. (S. W. G.)

Poppy Heads—Toxicity of Ripe. H. Fühner observed that extracts of ripe poppy heads if injected subcutaneously into white mice had a toxicity greater than that due to the morphine present, and that the poisoning was also qualitatively different. With the fractions containing no morphine the paralytic effect when tested on frogs appeared to be due to codeine. The increased frequency of the respiration when tested on mice was found to be due to thebaine. Thus codeine and thebaine, both belonging to the phenanthrene group, are present as well as morphine, whereas neither narcotine nor papaverine, belonging to the isoquinoline group, could be found. There is no difference in potency between ripe and unripe poppy capsules.—R. BUNGE. *Arch. exptl. Path. Pharmakol.*, 179 (1935), 465; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 623. (S. W. G.)

Sodium Salicylate—Toxicity of, Experiments on. A 10% solution in physiological salt was injected intravenously into dogs at such a rate that 20 to 30 min. was required to inject the dose used. The minimum lethal dose was 1.0 to 1.06 Gm. per kilo body weight. If artificial respiration was used, the lethal dose was 1.22–1.27 Gm. per kilo. If digitalin was first injected, the lethal dose was 1.13 to 1.46 Gm. per kilo. If the sodium salicylate was dissolved in saturated sodium bicarbonate solution, instead of physiological sodium chloride solution, the lethal dose was 1.43 to 1.54 Gm. per kilo.—J. DELPHAUT. *Compt. rend. soc. biol.*, 121 (1936), 1012–1015; through *Chimie & Industrie*, 36 (1936), 968. (A. P.-C.)

Veronal Poisoning—Therapy of. A differentiation between mild poisoning with 5,5-diethylbarbituric acid in which awakening is obtained by the usual agents, and severe poisoning in which the patient cannot be aroused and where anuria usually occurs on the third day. Cases of

the latter group may be treated by daily subcutaneous infusions of several liters of Ringer's solution. Twenty references.—GEORG SACK. *Deut. med. Wochschr.*, 62 (1936), 2082; through *Squibb Abstr. Bull.*, 10 (1937), A324. (E. V. S.)

THERAPEUTICS

Adrenalone—Chloro and Fluoro Compounds Related to. The preparation of 3-chloro and 3-fluoro derivatives of adrenalone are given. Pharmacological studies show these compounds to possess weak vasopressor properties, the fluoro derivative being the weaker. No comparisons of toxicities are given.—HAROLD L. HANSEN. *J. Am. Chem. Soc.*, 59 (1937), 280. (E. B. S.)

Amebiasis—Medical Management of. Remedies for amebiasis may be classified in 4 groups, the ipecac-emetine group, the arsenicals, the hydroxyquinoline group and the miscellaneous group. The first group included ipecac, emetine hydrochloride and emetine bismuth iodide; the second group includes N-acetyl-4-hydroxy-*m*-arsanilic acid (Acetarsone), 4-formyl-4-hydroxy-*m*-arsanilic acid (Theparsol), N-carbamyl arsanilic acid (Carbarsone), and arsphenamine; the third group includes sodium 8-hydroxy-7-iodo-5-quinolinesulfonate (Yatren) and 5-chloro-7-iodo-8-quinolinol (Vioform); and the fourth group includes bismuth subnitrate, bismuth subcarbonate, alkylresorcinols, *Chaparro amargosa*, kurchi bark and Auremetin, a mixture of emetine hydrochloride, aurmaine hydrochloride and iodine. Drugs of the first two groups have been the most popular.—ARTHUR E. MAHLE. *Illinois Med. J.*, 71 (1937), 33; through *Squibb Abstr. Bull.*, 10 (1937), A319. (E. V. S.)

***p*-Aminobenzenesulfonamide—Acidosis with the Administration of.** Two cases of clinical acidosis due to the administration of Prontylin in large doses are reported. Fifteen consecutive cases treated with this drug showed a consistent though variable drop on the carbon dioxide combining power of their blood plasma.—HAMILTON SOUTHWORTH. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 58. (A. E. M.)

***p*-Aminobenzenesulfonamide—Derivatives of, Chemotherapy of Streptococcal Infections by.** A study was made of the relation between chemical constitution of a large series of *p*-aminobenzenesulfonamide derivatives and related compounds and their prophylactic and curative power against *Streptococcus hemolyticus* (human strain) infection in white mice. Ten lethal doses of the microörganism were used, while the drugs were given orally or subcutaneously in daily doses of 0.0025 Gm./20 Gm. for two consecutive days. Changing the position of the amino group in *p*-aminobenzenesulfonamide from *p*- to *m*- or *o*- resulted in almost complete loss of therapeutic action, while replacement of the sulfonamide group by NH_2, CN, HO_3S, H_2O_3 As or NH_2CO gave complete inactivation. Alkylation in the sulfonamide group did not supress activity but decreased it in the case of the higher groups in proportion to the weight of the substituted alkyl radical; additional acetylation in the *p*-amino group still further decreased therapeutic activity. Thus N-methyl ++, N-ethyl ++, N-butyl ±, N-allyl +, N,N-dimethyl ++, N,N-diethyl ++ and N,N-dipropyl ±; the values for the corresponding acetylated compounds were +, +, ±, ±, ±, +, +, ±, respectively, where ++ = protective action in all animals evidenced either by retardation of death or by definite survival, + = protective action in all animals evidenced by retardation of death but with only exceptional survival, and ± = inconstant retardation of fatal result. Replacement of the amino group in *p*-aminobenzenesulfonamide by a hydroxyl resulted in practical, that by a methyl in complete inactivation. Substitutions in the amino group were more or less successful, the following activities being noted for benzenesulfonamides: *p*-formamido- +, *p*-acetamido- +, *p*-(carbethoxyamino)- +, *p*-(4′-hydroxyphenylazo)- +, *p*-(4′-hydroxy-*m*- or *o*-tolylazo)- +, *p*-(2′,4′-dihydroxyphenylazo)- ++, N,N-diethyl-*p*-(2′,4′-dihydroxyphenylazo)- +, *p*-(4′-hydroxy-*m*- or *o*-anisylazo)- +, *p*-(2′,4′,6′-trihydroxylphenylazo)- +, *p*-(4′,6′-dihydroxy-2′-ethoxyphenylazo)- +, *p*-(2′, 6′-diethoxy-4′-hydroxyphenylazo)- +, *p*-(2′,4′-dihydroxy-5′-ethyl, propyl, or hexylphenylazo)- +. Introduction of a third function in the benzene nucleus of *p*-aminobenzenesulfonamide, especially in *m*-position to the sulfonamido was detrimental to therapeutic activity. Replacement of the sulfonamido group in the azobenzenesulfonamides above by sulfonic or arsonic acid or by various other substituents gave complete inactivation. A large group of other inactive compounds is listed. The preventive or curative power of *p*-aminobenzenesulfonamide was also demonstrated in rabbits suffering from experimental streptococcal septicemia, death being re-

tarded and survival obtained in $^1/_2$ to $^1/_3$ of the infected animals. One-third to the peroral dose was found to be active intravenously. The toxicity of this compound could not be determined because the acidity of the solution did not permit inoculation of very large doses. Actually, however, *p*-aminobenzenesulfonamide is practically non-toxic, for even large doses (5 Gm. orally/-Kg. rabbit) did not produce any deleterious results attributable to intolerance to this substance. It was also demonstrated that rabbits surviving streptococcal infection after treatment with *p*-aminobenzenesulfonamide do not acquire any immunity against reinfection from which they die in the same time as the controls.—J. TREFOUËL, MRS. J. TREFOUËL, F. NITTI and D. BOVET. *Ann. Inst. Pasteur*, 58 (1937), 30; through *Squibb Abstr. Bull.*, 10 (1937), A281. (E. V. S.)

Anesthetic—Vasopressor, Local. O. reviews previous work on local anæsthetics and reports the synthesis of α-(3,4-dihydroxyphenyl)-β-(*p*-aminobenzoyl-β-diethylaminoethanol)-α-ethanone hydrochloride (epicaine), which is a local anæsthetic and vasopressor. Non-alkaloidal local anæsthetics owe their action to the benzene nucleus, a carboxyl esterification and the presence of an amino group para to the above carboxyl. The author has shown that sympatheticomimicity is greatest in a compound in which the phenyl hydroxyls are in the 3,4-positions; there is a 2-carbon side-chain, a β-carbon hydroxylated, and an α-carbon hydrogen substituted by some indifferent molecule, *e. g.*, an amine, and preferably a levorotatory isomer. The new anæsthetic has all the above requisites. By Rider's method using the frog's sciatic plexus, the above anæsthetic produces definite sensory anæsthesia within 1 min. in 0.25% strength. Its action on the cat's blood pressure, the uteri of the guinea pig and cat, the gut of the cat, rabbit and monkey, the excised frog's eye and the pupil in the intact cat is sympatheticomimetic in type. A more complete report on the pharmacological properties of the drug will be given later.—RAYMOND. L. OSBORNE. *Science*, 85 (1937), 105; through *Squibb Abstr. Bull.*, 10 (1937), A171. (E. V. S.)

Apple and Apple Products—Use of, in the Treatment of Summer Diarrheas and Dysenteries. The value of apple, both fresh and dried, has been investigated. Apple acts by supplementing the acid in the stomach when it is low, by acting as a buffer and as a protective colloid in the intestine and, best of all, by providing rich sources of materials for conjugation purposes. The tannin, vitamins A and C, and organic acid content of the apple can account for only a small amount of its therapeutic value. The authors believe the main healing property to be in the pectin component.—ELIZABETH M. BRADWAY, IRA A. MANVILLE and AVOCA S. MCMINIS. *Northwest Med.*, 35 (1936), 441; through *Squibb Abstr. Bull.*, 10 (1937), A174. (E. V. S.)

Ascorbic and Dehydrascorbic Acid—Soluble Organo-metallic Complexes of, in Which the Iron Is Replaced by Copper or Titanium. New Studies on the Action with Respect to Cancers. Titanico-sodium complexes of ascorbic and dehydrascorbic acids have been prepared and the latter has been used against neoplasms of the tongue, breast and stomach in daily intravenous doses of 0.025 Gm. The action is inconsistent and the complex is not well tolerated by some individuals. Because of the strong reducing action of ascorbic acid, only the cupri-sodium complex of dehydrascorbic acid could be prepared as well as copper complexes with barium and lead. These are well tolerated but appear less active than the iron complexes. They have been used to advantage alternately with the iron complexes in the treatment of neoplasms of the breast, stomach and rectum.—FERNAND ARLOING, ALBERT MOREL and ANDRE JOSSERAND. *Compt. rend.*, 204 (1937), 824. (G. W. H.)

Australian Sandalwood Oil—Therapeutic Value of. A study of the results obtained in the treatment of 41 cases of gonorrhea showed that Australian sandalwood oil is fully equal to the Indian oil.—KI FUJII. *Parfumerie Moderne*, 30 (1936), 485–491. (A. P.-C.)

Bile Acids—Hepatic Excretion in Man of the Various, Following Their Oral Administration. The oral administration of cholic acid was more effective than that of desoxycholic acid in raising the concentration and total output of bile acids in the hepatic bile.—HENRY DOUBILET. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 50. (A. E. M.)

Bismuth Preparation for Treatment of Syphilis. Bismuth ethyl camphorate has been found to be effective and safe in the treatment of syphilis by Francis M. Thurmon in the Boston Dispensary. The drug is used in conjunction with the arsenicals. It is soluble in fats, although it has a lower bismuth content than most liposoluble bismuths. The chemical composition is 0.04 Gm./cc. of bismuth combined with 0.02 Gm. of benzyl alcohol and 0.10 Gm. of camphor, dissolved in sweet almond oil. It was found to be particularly effective in reversing previously serofast and seroresistant cases. Of 155 seropositive cases, courses of treatment with bismuth

ethyl camphorate reversed the serologic picture in 50%. Therapeutic shock did not occur in the treatment. There was not a single case of abscess formation at the preferred site of injection. The general conclusions drawn were that bismuth ethyl camphorate is of low toxicity and that it is well borne by children and by pregnant women. Acute toxicity experiments showed that the drug was tolerated intramuscularly in doses somewhat larger than 250 mg. of metallic bismuth per Kg. ration.—ANON. *Australas. J. Pharm.*, 52 (1937), 106. (E. V. S.)

Chaulmoogra and Carpotroche Preparations for the Treatment of Leprosy. The fatty acids of the oils from chaulmoogra and *Carpotroche brasiliensis* give with antipyrine and water emulsions suitable to be injected after dilution with water or physiological saline. Over fatty soaps, prepared by partial saturation with normal sodium hydroxide, give either emulsions or solutions depending on the quantity of antipyrine added. The antipyrine or sodium hydroxide may be substituted by diethylamine or diethylglyoxalidine in order to obtain solutions. Ethylurethane, resorcinol, thymol sodium and guaiacol sodium are also suitable to bring the acid soaps into solution.—ORESTE CALCAGNO. *Semana méd. (Buenos Aires)*, 43, II (1936) 798. (A. E. M.)

Chemotherapy—Studies on. II. Chemotherapy of Experimental Pneumococcus Infections. *p*-(2′,4′-Diaminophenylazo)-benzenesulfonamide (Prontosil, I) in oil and aqueous solutions of disodium 7-acetamido-2-(*p*-sulfamylphenylazo)-1-naphthol-3,6-disulfonate (Prontosil soluble, II) gave slight or negative results when tested on experimental Types 1, 2 and 3 pneumonia produced in mice. *p*-Aminobenzenesulfonamide (III), on the other hand, showed consistent chemotherapeutic activity on 7 strains, prolonging life 3–12 hours (controls died 18–36 hrs. after infection). A small per cent of each group of animals survived permanently. III was given in oil solution, the dose being 0.5–1 Gm./Kg. Its toxicity is quite low, the M. L. D. being 6 Gm./Kg. Within 3–4 hrs. after 2 Gm./Kg., there is marked spasticity of the extremities. Increasing spasticity, excitability and incoördination occur with larger doses. These symptoms disappear within 12 hrs. Doses of 1 Gm./Kg. twice daily for two days followed by 0.5 Gm./Kg. twice daily for three days are not toxic; 1.5 Gm./Kg. and 0.75 Gm/Kg. given as above produce a loss of weight for the first few days; while 2 Gm./Kg. and 1 Gm./Kg. given as above kill 50% of the animals. No chemotherapeutic acitivity was observed with *o*-, *m*- or *p*-aminobenzenesulfinic acids; *m*-amino-, *m*-nitro- or *p*-acetylaminobenzenesulfonamides; *p*-aminobenzenesulfinic acid; *p*-aminobenzenesulfonyl chloride; and benzoylsulfimide. Tables are given.—SANFORD M. ROSENTHAL. *Pub. Health Rept.*, 52 (1937), 48; through *Squibb Abstr. Bull.*, 10 (1937), A178. (E. V. S.)

Cinchona Alkaloids in Pneumonia. IV. Derivatives of Ethylapocupreine. Ethylapocupreine and its hydroxy-, butoxy- and phenoxy-derivatives have been prepared and described. Pharmacological data show the hydroxy derivative to have the least toxicity, while its antipneumococcic activity compares favorably with optochin.—C. L. BUTLER, ALICE G. RENFREW, LEONARD H. CRETCHER and B. L. SOUTHERN. *J. Am. Chem. Soc.*, 59 (1937), 227. (E. B. S.)

Counterirritants. Factors explaining the relief offered by these medicaments are discussed. Degrees of skin irritation caused by them are (1) rubefaction or reddening caused by rubefacients, (2) vesication by vesicants and (3) blister production by epipastics. Physical methods and drugs having these properties are listed and are prescribed to (1) relieve muscular, neuralgic and rheumatic pains as well as those associated with visceral conditions, (2) promote sweating, (3) relieve congestion and inflammation, (4) promote absorption, (5) relieve cerebral congestion and (6) overcome collapse and tympanites. Twenty-one formulas are offered.—A. RICHARD BLISS, JR. *Drug Cosmetic Ind.*, 40 (1937), 192–195. (H. M. B.)

Endocrines in Modern Therapy. The presidential address before the pharmaceutical section of the Australian and New Zealand Association for the Advancement of Science.—BYRON L. STANTON. *Australas. J. Pharm.*, 52 (1937), 139–150. (E. V. S.)

Iron—Administration of. The authors are of the opinion that ferrous chloride surpasses all other forms of iron in the treatment of anemia. From 2.5–7.5 gr. of this salt is equal in effect to 6–10 gr. ferrous sulfate; 30–50 gr. reduced iron; 60–90 gr. iron and ammonium citrate; or the same amount of Blaud's pill. Iron given by intramuscular injection is almost valueless. —LUCAS and HENDERSON. *The Prescriber* (June 1936); through *Australas. J. Pharm.*, 52 (1937), 112. (E. V. S.)

Malaria—Drama Of. A general discussion of the mosquito, *Anopheles quadrimaculatus*, including description, of the cycle of the parasite and of quinine in malaria. Photographs of

the stages are included.—M. R. DINKELSPIEL. *Merck Rep.*, 45, No. 3 (1936), 10; No. 4, 10; 46, No. 1 (1937), 10. (E. V. S.)

Malonates and Barbiturates—Formation of, Conditions Affecting the Halogen Alkyl Derivatives. A discussion of the optimum conditions for the formation of a number of malonates and barbiturates is given. β-Iodoethyl and γ-bromopropyl isoamylbarbiturates were prepared and studied pharmacologically. These appeared to be the best tolerated and produced the most uniform depression of the compounds studied.—GLENN S. SKINNER. *J. Am. Chem. Soc.*, 59 (1937), 322. (E. B. S.)

Methylene Blue—Fungicidal Preventive Properties of, in Pathological Animals. Chickens suffering from a malady having symptoms of white diarrhea but shown to be due to a fungus *Monilia albicans*, were cured when fed on wheat treated with methylene blue. It was also shown that 1 Gm. of methylene blue per 100 Gm. of feed, protected pullets against *Trichomonas gallinarium*. Sheep suffering from eating fungus-bearing sorghum were cured when the feed was soaked in 1% methylene blue solution.—RENE SALGUES. *Compt. rend.*, 204 (1937), 721. (G. W. H.)

Mustard Gas—Prophylaxis and Therapy of Skin Lesions Caused by. Dichlordiethylsulfide causes wounds which develop slowly to severe resistant suppurating ulcers. Attempts made in order to prevent the gas from penetrating the skin by the use of ointments have not been successful. The action of the mustard gas can be reduced by quick oxidation. The authors found that the treatment with oxidizing substances, such as iodine, methylene blue and eosin, applied as 1% solution in glycerin, had a good effect. Suppuration and necrosis was less than in the controls even if the treatment was started as late as five hours after the skin was burnt. Yet the healing was still very slow. Expansion of the necrosis could often be prevented by Hametum or arnica extracts, diluted with water 1:2 or 1:3. Rivanol solution, 1 in 1000, was used as antiseptic. Deep ulcers were treated with an ointment consisting of Eucerin anhydricum with 20% Hametum extract. Hamamelis preparations are quite weak antiseptics and astringents. Stronger ones had a bad effect on the wounds.—E. KEESER, H. A. OELKERS and E. VINKE. *Arch. exptl. Path. Pharmakol.*, 180 (1936), 557; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 620. (S. W. G.)

Narcosis—Colloid Chemistry of, New Observations on. When parallel visible or infrared rays strike a colloid medium, dark circles appear on the photographic plate. On transformation of a sol into a gel, the diameter of these circles remains unaltered in the case of gelatin, is increased in the case of agar or serum containing methylethylurethane and is decreased with serum containing lactic acid. When frog muscle is narcotized by ethyl sulfate ("Äther sulf."), acetone or chloroform in Ringer's solution or in vapor from the gelation is of the gelatin type.—P. J. JURISIC. *Kolloid-Z.*, 78 (1937), 95; through *Squibb Abstr. Bull.*, 10 (1937), A395. (E. V. S.)

Phenolphthalein Studies. A Thousand Doses of Phenolphthalein: Urinalyses. Report is made of an extended study. Standard tests for albumin and for sugar were used; also determination of free phenolphthalein, determination of conjugated phenolphthalein and determination of acid by the Folin method. Crystalline phenolphthalein, "yellow" phenolphthalein and colloidal phenolphthalein were used. Normal individuals were used and 650 observations were made. The few cases of albuminuria or proteosuria could not be ascribed to taking phenolphthalein. Of the hospital patients tested the 150 who had no albuminuria before the adminstration of phenolphthalein in doses of 0.10 Gm. to 0.50 Gm., there was not a single case of albuminuria. A series of 44 patients who had albuminuria before administration of phenolphthalein in only one instance showed evidence of increase in albuminuria or microscopic evidence of change in the urinary sediment. This patient was under treatment for kidney stone. Free phenolphthalein was found in 8.5% of urines from healthy patients and in 21.5% of urines from hospital patients. Conjugated phenolphthalein was found in every specimen. Evidences from the literature are briefly discussed. The authors reach the following conclusions: medicinal doses of phenolphthalein do not produce albuminuria. The free substance is usually absent in urine of those taking small medicinal doses, the combined substance is always present. The larger the dose, the greater the percentage of persons passing the free substance in the urine, and the greater the amount of combined substance eliminated.—BERNARD FANTUS and J. M. DYNIEWICZ. *J. Am. Pharm. Assoc.*, 26 (1937), 236. Also published in *J. Am. Med. Assoc.*, 108 (1937), 439–443. (Z. M. C.)

Protamine Zinc Insulin. A general review and discussion.—RAPHAEL M. NACCA. *Drug Circ.*, 81, No. 4 (1937), 24, 68, 93. (E. V. S.)

Pyrazolone Derivatives—Relationship between the Chemical Constitution and Pharmacological Action of the Various. The introduction of ethyl in the 2-position in 1-phenyl-3-methyl-5-pyrazolone derivatives increased the antipyretic action and the toxicity more than if methyl were introduced. In these compounds the 4-position filled by methyl, ethyl, propyl, isopropyl, butyl, isobutyl, secondary butyl, isoamyl and allyl carried the greatest antipyretic and analgesic action. The presence of butyl, secondary butyl and isopropyl made them much more toxic. The higher the body temperature the greater was the apparent antipyretic effect of the drugs.—KWANICHI YANO. *Folia Pharmacol. Japon.*, 23 (1937), 211–219 (Breviaria 26–27); through *Chem. Abstr.*, 31 (1937), 2354. (E. V. S.)

Sodium Bismuthate Soluble. A New Product for Intramuscular and Oral Administration in the Treatment of Syphilis. The solution is prepared as follows: To 10 cc. of propylene glycol add 8 Gm. tri-isopropanolamine and 3 Gm. sodium bismuthate. Heat in a paraffin bath to not more than 80°, stirring constantly. At 80° remove from the bath and control the temperature not to exceed 100°. When solution is complete, add 40 cc. propylene glycol, cool and add water to 100 cc. Filter. A mortality of 100% is produced by the following doses in mg. sodium bismuthate per Kg. of animal: intramuscular, 250 (200 white rats), more than 100 (15 rabbits); intravenous, 25 (rats), 12 (rabbits). Detailed pharmacological actions are described. The low toxicity, toleration, absorption, relative freedom from side reactions and effectiveness in early and late syphilis warrant extended clinical trials.—P. J. HANZLIK, A. J. LEHMAN and A. P. RICHARDSON. *Am. J. Syphilis, Gonorrhea, Venereal Diseases*, 21 (1937), 1–17; through *Chem. Abstr.*, 31 (1937), 2285. (E. V. S.)

NEW REMEDIES

SYNTHETICS

Anthiomaline is lithium antimony thiomalate, an organic compound containing 16% of antimony. It is a white hygroscopic powder, very soluble in water, decomposing at temperatures over 80° C. It is issued in ampuls containing 0.06 Gm. of active substance, equivalent to 0.01 Gm. of antimony, per cc. It is recommended for the treatment of bilharziasis, leishmanniases, kala-azar and Oriental sore. It has also been used for lymphogranuloma inguinale, inflammatory stricture of the rectum and the treatment of bubo. A course consists of twelve to twenty intramuscular injections, two or three per week increasing from 0.5 cc. by 0.5 cc. at each dose to a maximum of 2.0 cc., or in some cases 3.0 cc. Anthiomoline is supplied in 2-cc. ampuls in boxes of 10.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 632. (S. W. G.)

Basergin (Chem. Fabrik vorm. Sandoz, Basel) is an ergobasine tartrate marketed as drops and in ampuls. It is used for various gynecological indications.—*Pharm. Zentralh.*, 78 (1937), 182. (E. V. S.)

Biarsamide is the bismuth salt of tryparsamide, basic bismuth N-phenylglycineamide-*p*-arsonate, and contains 14.5% of arsenic and 40.5% of bismuth. It is suggested for the treatment of neurosyphilis, combining the action of tryparsamide with the spirocheticidal power of bismuth. Biarsamide is administered by intramuscular injection. A course of ten to twelve doses of 5 cc. of 2% solution is recommended. The injections should be given twice weekly, with an interval of three to four weeks between each course. Biarsamide is supplied in 5-cc. ampuls of 2% and 2-cc. ampuls of 5% solution (boxes of 6).—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 633. (S. W. G.)

Magsyn Tablets contain $7^1/_2$ grains of basic magnesium acetylsalicylate in each. Magnesium acetylsalicylate is more effective than the equivalent weight of aspirin administered alone and the dose of aspirin is therefore lower. It does not cause digestive disturbances and the tolerance of the stomach for the aspirin is increased. The dose is 1 to 3 tablets for adults and $^1/_2$ to 1 tablet for children. Magsyn is supplied in bottles containing 30, 60 and 120.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 637. (S. W. G.)

Nervigoa Tablets (E. Schuerich, Hirschberg i. Schles.) contain in each 0.3 Gm. bromisovalerianylcarbamide.—*Pharm. Zentralh.*, 78 (1937), 183. (E. V. S.)

Sigmodal (Riedel de Haen, Inc., New York) is a 10% stabilized solution of sodium amyl

bromallyl barbiturate. It is used as an obstetrical analgesic and preanæsthetic medicament as it produces deep sleep within one-half hour after administration into the sigmoid colon. Sigmodal is marketed in bottles of 100 cc.—*Drug. Circ.*, 81, No. 4 (1937), 86. (E. V. S.)

Sulfanilamide "Squibb" contains in each tablet 5 gr. *p*-aminobenzenesulfonamide. It is an effective and specific agent in controlling infections caused by hemolytic streptococci, and indicated in the treatment of puerperal fever; post-abortion septicemia; erysipelas; complications of scarlet fever; influenza; nasal, post-nasal and throat involvements of hemolytic streptococcal origin, including septic sore throat, otitis media, cellulitis and perhaps also in pneumonia and cerebrospinal meningitis.—*Drug. Circ.*, 81, No. 4 (1937), 41. (E. V. S.)

SPECIALTIES

Anadin Tablets contain phenacetin 3 gr., aspirin 3 gr., caffeine 1/4 gr. and quinine sulfate 1/4 gr. in each. They are recommended as a safe and effective analgesic and febrifuge, in which the effectiveness of each ingredient is enhanced by the combination. The tablets are supplied in bottles of 50.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 632. (S. W. G.)

Anahaemin is the active hematopoietic principle of liver separated by the process of Dakin and West. It is issued in ampuls of sterile solution containing 100 mg. per cc. It is recommended in preference to other liver extracts, because the injection of small doses (200 mg. in 2 cc.) at monthly intervals constitutes effective treatment in the majority of cases of pernicious anemia. Extreme cases can be treated effectively by three injections of 2 cc. at weekly intervals followed by a similar or smaller dose at monthly intervals. Anahaemin can be administered by intramuscular or intravenous injection and is supplied in boxes containing three or six 1- or 2-cc. ampuls.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 632. (S. W. G.)

Antephysan Tablets (Chem. Fabr. Gedeon Richter, A. G., Budapest) are sold in packages of 25, containing in each tablet the active constituents of 1 Gm. of fresh anterior lobe of pituitary.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Belzema ointment is said to contain lanolin 10 Gm., sodium stearate 10 Gm., benzoic acid 5 Gm., oleum gossypium 30 Gm., picis 5 Gm., chlorcosane 2 Gm., dichloramine-T 1 Gm., ung. stearo-glyceride to 100 Gm. It is non-staining and non-greasy and is recommended for the treatment of eczema, psoriasis, alopecia, dandruff, seborrhea, ringworm, sycossi and other conditions. The ointment is readily absorbed and no bandaging is required.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 633. (S. W. G.)

Bio-Herba-Darmstärkung Tablets (Bio-Laboratorium J. Laar, Berlin), a bowel regulator and constipation remedy, is prepared from senna leaves and pods, centaury, Equisetum, althæa root, tilia flowers, peppermint leaves and podophyllum.—*Pharm. Zentralh.*, 78 (1937), 182. (E. V. S.)

Brom-Nervacit contains potassium bromide 4, sodium phosphate 0.1, barbitone 0.33, phenazone 0.67, alcohol 7.5, saccharin 0.02, caramel 0.2, tincture orange 0.1, tincture cinchona 0.1 and water to 100. It is recommended as a harmless hypnotic and sedative which can be given without fear of producing bromism or other allergic conditions. It can be used in place of bromides for the treatment of insomnia, cardiac neurosis, hysteria, neurasthenia and epilepsy. The dose recommended is one tablespoonful after meals and two tablespoonfuls on retiring at night. Brom-Nervacit is supplied in 3 small sizes and in 40-oz. and 80-oz. winchesters.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 633. (S. W. G.)

Calcipot "D." The vitamin D content has been raised to 90 clinical units per 100 Gm. (cf. *Pharm. Abstr.*, 2 (1936), 426).—*Pharm. Zentralh.*, 78 (1937), 193. (E. V. S.)

Calsoma is a combination of the tribasic phosphates of calcium and magnesium, sodium biphosphate and magnesium citrate in effervescent form. It is recommended as a gastric antacid, which neutralizes the hyperchlorhydria, but does not alkalinize the stomach. Its components act as buffer salts, maintaining the gastric contents in a slightly acid condition. Calsoma can be used over long periods with safety. The adult dose is one teaspoonful in a glass of cool water taken one-quarter to two hours after meals. Children under ten years of age can be given half the above dose. Calsoma is supplied in 2-, 4- and 16-oz. bottles.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 634. (S. W. G.)

Carbonactyl is a 2% suspension of finely divided impalpable animal charcoal for intravenous injection. Animal experiments have shown that the particles of charcoal are withdrawn from the

blood by the liver, spleen and bone-marrow and are absorbed by the reticulo-endothelial system and the polymorphonuclear cells, which are increased in number. It has been used for the treatment of acute affections such as pneumonia, phlebitis, cholecystitis, furunculosis and acute puerperal infections. A dose of 3 to 5 cc. can be given every twenty-four hours, and up to eight doses have been given in severe cases. Carbonactyl is supplied in boxes of 6 ampuls, each containing 5 cc.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 634. (S. W. G.)

Clauden is a greyish brown amorphous powder obtained from pulmonary tissue. It contains hemostatic principles and is recommended for the control and stoppage of hemorrhage. It can be applied locally to the bleeding surface, or be given intravenously in sterile solution for internal hemorrhage. It can also be administered orally when protracted treatment is necessary in hemophilia. Clauden is also supplied in the form of sterile dressings. Clauden solution for parenteral injection is supplied in 10-cc. ampuls (boxes of 1, 5 and 50) and in 2.5-cc. ampuls for dental work (boxes of 5 and 50). The tablets for oral administration contain 0.25 Gm. (packets of 10 and 200). Clauden powder for local application is issued in boxes of 1, 3 and 5 tubes containing 0.5 Gm. each. The styptic dressings include gauze, gauze bandages, tubular gauze, pads, pellets and cotton wool.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 634. (S. W. G.)

Collosol Manganese (Crookes Lab., Inc., New York) is a colloidal suspension of manganese hydroxide. It increases the capacity of the living organism to neutralize various endotoxins, such as the pneumococcus, staphylococcus, streptococcus, etc.; exerts a stimulating effect on the endocrine system; does not react chemically with, or precipitate blood plasma; free from pain or reaction on injection. It is indicated in the treatment of acne, furunculosis and other coccogenic infections. Collosol Manganese is supplied in ampuls of $^1/_2$, 1 and 2 cc. in boxes of 6, 25 and 50, ampul vials of 30 cc. and in bottles of 4, 8 and 16 oz.—*Drug. Circ.*, 81, No. 4 (1937), 41. (E. V. S.)

Colopo Tablets contain bile salts with the peristaltic principles of pyloric and duodenal mucosæ, and 1 grain of cascara sagrada. This combination is recommended for the treatment of chronic constipation, as it tends to reëstablish a normal condition of the intestines, by increasing the flow of the digestive secretions. The dose for an adult is 1 to 3 tablets on retiring. Colopo is supplied in bottles of 25.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 634. (S. W. G.)

Cutival Powder (Apotheke "Zur Hoffnung," Vienna, 2nd dist.) is put up in packages of 40-Gm. containing 1.50% of colloidal sulfur in a suitable powder base.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Deriphyllin Compounds Ampuls (Adler-Apotheke, A. Kremel, Vienna, 14th dist.) are supplied in packages of 6 ampuls of 2 cc., containing in each cc. 0.20 Gm. Deriphyllin, 0.015 Gm. phenobarbital and amidopyrine. **Deriphyllin Compound Oral** is sold in packages of 10 and 30 cc., containing in each cc. 0.20 Gm. Deriphyllin and 0.0075 Gm. phenobarbital. **Deriphyllin Compound Suppositories** are put up in packages of 6, containing in each 0.60 Gm. Deriphyllin and 0.04 Gm. phenobarbital.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Diatone (Diatone, Inc., Chicago, Ill.) contains in each 5-gr. coated tablet colloidal uranium 1 gr., whole desiccated pancreatic substance and excipients. It is indicated in the treatment of diabetes, is non-toxic in therapeutic doses, can be taken in conjunction with injections if necessary, stimulates natural functions of the pancreas, but is contraindicated in juveniles or coma. It is an electro-positive colloid. The dose is one tablet 30 minutes before each meal and at bedtime. Diatone is supplied in bottles of 60 and 120.—*Drug. Circ.*, 81, No. 4 (1937), 86. (E. V. S.)

Dissolved Vaccines G. L. are prepared by a process by which the bacterial cells are dissolved in sodium lauryl sulfate which allows the antigenic components to be immediately available, independent of local tissue lysis of the bacterial cells. The solvent leaves the antigens intact; the toxins adsorb this surface tension depressant which detoxicates them, liberating the toxin at a rate within the capacity of the body to develop its antibody response. It is claimed that full therapeutic doses of dissolved vaccines can be given without untoward reaction. A safe initial dose is 0.5 to 1 cc. for adults and 0.25 cc. for children. The full dose for all dissolved vaccines is 1 cc. Dissolved vaccines of the following organisms are prepared: Acne and staphylococcus, T. A. B., cold (prophylactic and treatment), influenza, staphylococcus, streptococcus, whooping cough, *B. dysenteriæ* Shiga, gonococcus and autogenous. The vaccines are supplied in rubber-capped bottles containing 5, 10 and 25 cc.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 635. (S. W. G.)

Emocin "Tabloid" (Burroughs, Wellcome & Co., Inc.), a medicated lozenge, contains in each 2 gr. "Empirin" brand of acetylsalicylic acid combined with a flavored demulcent base. It affords a convenient and effective means of securing rapid relief from irritative and inflammatory conditions of the throat. The product combines a rapid analgesic effect at the site of contact with a more prolonged action resulting from central analgesia following absorption. It is also used for routine administration following tonsillectomy. Emocin is supplied in tubes of 20. —*Drug. Circ.*, 81, No. 4 (1937), 41. (E. V. S.)

Eugrippan (Toponwerke Dinklage & Co., Köln-Mülheim) are tablets containing 0.1 Gm. of a molecular combination of quinine and dipropylbarbituric acid, and dimethylaminophenazone.—*Pharm. Zentralh.*, 78 (1937), 183. (E. V. S.)

Eumictine is a combination of santalol, hexamine and salol for the treatment of urinary inflammatory diseases. It is recommended for administration in gonorrhea, cystitis, pyelitis and pyelonephritis. The dose is 10 to 12 capsules in twenty-four hours.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 635. (S. W. G.)

Floripuran Pills (E. Schuerich, chem.-pharm. Fabrik, Hirschberg i. Schles.) contain extracts of rhubarb, aloe, absinthium, frangula, gentian, centaury and cardamon and leptandrin. They are used for constipation, fat reducing and for blood purification.—*Pharm. Zentralh.*, 78 (1937), 183. (E. V. S.)

Gaba-Sirup (Gaba A.-G., Basel) is a combination of fluidextract licorice, mucilage acacia, sodium benzoate, codeine phosphate (0.025%), peppermint oil and anise oil in simple syrup. It is used for coughs, bronchial catarrh and as an expectorant.—*Pharm. Zentralh.*, 78 (1937), 183. (E. V. S.)

Gonan is an anterior pituitary-like gonadotropic hormone standardized for intramuscular injection. This hormone stimulates the ovary directly, and also effects the formation of the corpora lutea. It is suggested as a general gonad stimulant, for the treatment of menorrhagia, dysmenorrhoea and other diseases of women. Gonan has been used in the male for the treatment of infantilism and undescended testes. The dosage recommended is from 100 to 200 rat units two or three times a week. Gonan is issued as a dry powder in ampuls containing 100 rat units. They are supplied in boxes of 3 and 6 ampuls with the necessary ampuls of distilled water with 0.5% phenol for the preparation of fresh solutions.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 636. (S. W. G.)

Greenosan is prepared mainly from spinach and hips of roses, to which organic iron has been added. The contents per Gm. (3 tablets) are chlorophyll 1.0 cg., organic iron 3.0 cg., lecithin 1.0 cg., Ca, Mg, Mn, Cu and K in combination with natural organic acids, vitamin A approx. 100 units, vitamin C approx. 80 units, and also vitamins B_1, B_2, D and E. It is recommended for the treatment of secondary anemia in connection with digestive and nervous disorders and rheumatism. The dose for children is 1 tablet, for adults 2 tablets, three times a day before meals. Greenosan is supplied in bottles of 100, 500 and 1000.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 636. (S. W. G.)

Hewsol is a germicide prepared from pine oil. It is combined with a neutral soap and gives a perfect emulsion with tap water. It is stated to have a high bactericidal power (R. W. 5), and to be non-staining and non-irritating. It can be applied to the skin and to wounds undiluted, but for general purposes a 5% solution is recommended. As a douche two teaspoonfuls to a quart should be used. Hewsol has a pleasant pine odor and is non-poisonous. It is supplied in pint bottles, winchester quarts and gallon tins.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 636. (S. W. G.)

Hexyltan is a mixture of hexylresorcinol and tannic acid, in jelly or liquid form, for use as a dressing for burns. Hexylresorcinol is bactericidal and analgesic, and hence relieves the pain of the burn, while the tannic acid helps coagulation of the injured surface. For severe burns Hexyltan solution should be sprayed on the burned area, after cleansing with ether soap, at hourly intervals for seven to ten hours; for mild burns the application of Hexyltan jelly is advised. Hexyltan solution is supplied in bottles containing 16 oz. and the jelly in tubes containing 5 oz.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 636. (S. W. G.)

Iodatol (British Drug Houses Ltd., London, N. 1), an iodized oil for radiological diagnosis and in iodine therapy, is a true compound from the addition of iodine to an unsaturated glyceryl ester. Iodatol is marketed for diagnosis for injection as a 40% iodine in organic combination in

20 and 30 cc. glass-stoppered bottles; for injection as 10% iodine in boxes of 6 and 12 (1- or 2-cc. ampuls); for oral administration as 25% iodine in boxes of 25, 50 and 100 (3-, 5-, 10- and 20-min. capsules).—*Australas. J. Pharm.*, 52 (1937), 221. (E. V. S.)

Iodobismol Ampuls (Chem. Fabrik. Astra Södertälje, Sweden) are put up in packages of 10 ampuls of 2.20 cc. containing sodium iodobismuthate, sodium iodate and benzyl alcohol.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Kifhysin (Character Products, New York) is an iodide-hyoscyamus-arsenical solution in an agreeable vehicle. It is a brownish liquid of pleasant taste, eases breathing, promotes restfulness, raises the phlegm, allays cough, improves the general health and is indicated in the treatment of asthma, bronchitis, whooping cough and other spasmodic coughs. Kifhysin is marketed in bottles of 4 ounces.—*Drug. Circ.*, 81 No. 4 (1937), 86. (E. V. S.)

Koleo-Quin (National Drug Co.) is a 5% colloidal solution of sodium oleate with 2% of quinine alkaloid and 2% of benzyl alcohol. It is a clear yellow liquid of low viscosity, low toxicity, causing no sloughing or extravasation and possesses the advantage over sodium morrhuate and Moru-Quin of being of a definite chemical composition and does not give any precipitation upon standing. It is used for the obliteration of varicose veins, internal hemorrhoids, varicocele, hydrocele, bursa, nevus and hernia. Koleo-Quin is supplied in ampul-vials of 5 cc. (boxes of 6, 12, 25 and 100) and 25 cc.—*Drug. Circ.*, 81, No. 4 (1937), 86. (E. V. S.)

Lipatren Dragées (Bayer, I. G. Farben-A. G., Leverkusen) contains the lecithin obtained from beef brains and potassium iodoxyquinolinesulfonate. They are put up in packages of 10 and 50.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Luizym is a digestive enzyme preparation containing, in addition to the enzymes which digest proteins and starch, the enzymes cellulase and hemicellulases which digest cell membrane. It therefore promotes the digestion of vegetable cellular matter without the formation of gas. Luizym is indicated for the treatment of fermentative hyspepsia and for the relief of troubles due to gas accumulation in the digestive tract. It is also suggested for use in the preparation of patients for X-ray photographs of the gall bladder, where it is necessary for the intestines to be free of gas bubbles. The dose is 2 to 3 tablets lightly crushed to be taken three times a day after meals. Alkalis should only be taken at an interval of several hours before or after a dose of Luizym. In cases of achylia a simultaneous dose of 10 to 15 drops of dilute hydrochloric acid may be given. Luizym is supplied in packings of 20 and 50 tablets.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 637. (S. W. G.)

Lysantol is a disinfectant containing a coal-tar derivative dissolved in a mixture of essential oils. It is four times as powerful as carbolic acid and is non-poisonous and harmless to the skin. It is miscible with water and readily dries without leaving a greasy film. It does not attack instruments. For disinfecting skin or hands, pure Lysantol is rubbed in until dry; for other purposes it is best diluted 5 to 40 times with water. As a douche, 1 teaspoonful to a pint of water is a suitable strength. Lysantol is supplied in bottles containing 4 oz., 8 oz., 16 oz., $^1/_2$ and 1 gallon.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 637. (S. W. G.)

Mandelamin with Chloromin (Pitman-Moore Co.) (cf. *Pharm. Abstr.*, 3 (1937), 113) is an elixir of mandelamin with chloromin, ethylenediamine dihydrochloride, in each of which the amine is split off and releasing in one case mandelic acid (75 gr. to fl. oz.) and in the other hydrochloric acid (approximately 210 min. of the dilute acid per fl. oz.). Mandelic acid is bactericidal and bacteriostatic in the presence of acid in the urine; while it is of itself a urinary acidifier, chloromin is added to further increase the acidity, thus making a smaller dose of mandelamin effective. It is supplied in pints.—*Drug. Circ.*, 81, No. 4 (1937), 40. (E. V. S.)

Mandelix is an elixir containing 180 grains of ammonium mandelate per fl. oz., designed for use in the treatment of urinary infection. In most cases it is unnecessary to administer ammonium chloride at the same time, but if the urine is not rendered sufficiently acid, small collateral doses of this substance may be given. The dose is 2 teaspoonfuls diluted with 2 fl. oz. of water four times daily. Mandelix is supplied in an outfit containing $7^1/_2$ fl. oz. of elixir (slightly more than sufficient for 28 doses), 12 capsules of 1 Gm. of ammonium chloride, a graduated glass measure and a testing outfit for determination of the p_H of the urine. The various items are also supplied separately if desired.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 673. (S. W. G.)

Merfenil (Pharmaceutical Specialties (May & Baker Ltd., Dagenham, London), phenylmercuric nitrate, is used in dermatology (especially in tineas and yeast infection of the skin), in

gynecological work and various infections of the vagina and cervix. Merfenil is used for skin conditions as a 1 in 1,000 ointment; for antiseptic purposes in gynecology, 1:1,500 aqueous solution applied on tampons, or 1:25,000 for daily douching. Solution may be facilitated by dissolving in glycerin (1:100) before dilution with water. It is supplied as powder (5 Gm. per bottle) or as ointment (1:1,000) in 1-oz. tubes.—*Australas. J. Pharm.*, 52 (1937), 221. (E. V. S.)

Metaphedrin Jelly (Abbott Lab., North Chicago) is metaphen 1:5,000 and ephedrine hydrochlorine 1% in a water-soluble jelly base. It is an antiseptic and astringent for use in the nasal cavity. The jelly is supplied in a $^1/_2$-oz. tube with applicator tip.—*Drug. Circ.*, 81, No. 4 (1937), 41. (E. V. S.)

Metaphen in Petrolatum (Abbott Lab.) contains metaphen 1:500 in a base of lanolin 7%, lecithin 2.5% and petrolatum 90.5%. It is an antiseptic and emollient dressing where a prolonged antiseptic effect is desired. The ointment is supplied in 2-oz. tubes.—*Drug. Circ.*, 81, No. 4 (1937), 86. (E. V. S.)

Neoket is an effervescent granular preparation containing mandelic acid and sodium acid phosphate suitably sweetened with saccharin, which thus renders it safe for use by diabetic patients. The sodium acid phosphate replaces ammonium chloride, although the administration of the latter is occasionally necessary at the commencement of the treatment of resistant infections. The dose is 2 teaspoonfuls four times a day after meals, or for children, $^1/_2$ to 1 teaspoonful four times a day. Neoket is supplied in bottles containing 6 oz.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 638. (S. W. G.)

Opolaxyl (Anglo-French Drug. Co. Ltd., London, W. C. 1), a constipation and intestinal regulator, is a tablet containing secretions of the liver, pancreas, etc., and aloin; 0.2 Gm. active ingredients per tablet. The dose is 1–3 tablets at night. Opolaxyl is marketed in bottles of 50. —*Australas. J. Pharm.*, 52 (1937), 221. (E. V. S.)

Padutin Dragées (Bayer, I. G. Farbenind. A. G., Leverkusen) are supplied in packages of 20 dragées containing in each 3 biological units of the circulatory hormone.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Paraxin Tablets (C. F. Boehringer & Sons, Mannheim) are supplied in packages of 15 tablets, containing in each 0.01 mg. of follicular hormone and 0.50 Gm. theobromine-calcium. —*Pharm. Presse*, 42 (1937), 72. (M. F. W. D.)

Per Abrodil Ampuls, Strong (Bayer, I. G. Farbenind. A. G., Leverkusen) contain 8.1 Gm. of the diethanolamine salt and 1.90 Gm. of the diethylamine salt of 3,5-diiodo-4-pyridine-N-acetic acid in 20 cc. distilled water. There is one ampul to the package (cf. *Pharm. Abstr.*, 2 (1936), 486).—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Petein is a detoxified whooping cough vaccine containing about 60 distinct strains of Bordet-Genou bacilli, preserved with nipagin. It is of value as a prophylactic and in the treatment of whooping cough in the early convulsive stages, but is of little use when pertussis proper has subsided, and only an irritant nervous cough remains. The dose is progressive, $^1/_4$, $^1/_2$, $^3/_4$ and 1 cc. being injected intramuscularly in the gluteal region on alternate days, and the effect is usually manifest three to four days after the last injection, no secondary effects being observed. Petein is supplied in bottles of 2.5 cc., containing 50,000 million bacteria.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 638. (S. W. G.)

Phospho-mandelate (Collosol) consists of powders of ammonium phosphate and mandelic acid, packed separately. Ammonium phosphate is not unpleasant to take and is more effective than ammonium chloride in rendering the urine acid. On the first day of treatment four doses of ammonium phosphate (15 grains packed in a blue packet) are taken, and on subsequent days a dose of ammonium phosphate and one of mandelic acid (15 grains packed in white packet) are dissolved together in water and taken four times daily. It is supplied in boxes sufficient for six days' treatment.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 638. (S. W. G.)

Planavit A is a natural product of fish liver oils, containing 25,000 international units of vitamin A in each cc. It is recommended in anemia, loss of weight, bronchitis and pregnancy and in convalescence. The dosage is 1 to 5 drops for children under five years and increasing up to 10 to 25 drops a day for adults. Planavit A is supplied in amber-colored drop bottles containing 10 cc. **Planavit C** is a pure ascorbic acid suggested for treatment of cases of ill-health attributed to an insufficiency of vitamin C in the diet. Cases of anemia, the hemorrhagic diathesis

and Addison's disease benefit from its administration. During pregnancy and lactation the increased demand for vitamin C can be supplied, so contributing to the general well-being of the infant and the prevention of subsequent defective dental calcification. The oral dose is 50 to 100 mg. daily. In urgent cases of hemorrhage, etc., 1 to 3 cc. of a 5% solution can be given intravenously. Planavit C is supplied in bottles of 25 tablets of 0.025 Gm. and in boxes of 6 ampuls, each containing 1 cc. of a 5% solution.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 639. (S. W. G.)

Praepiten ex Glandula Ampuls (Sanabo-Chinoin-G. m. b. H., Vienna, 12th dist.) are supplied in packages of 5 ampuls along with 5 ampuls of solvent. The ampuls contain the total extract of the anterior lobes of the pituitary, such that one part is equivalent to 50 units of gonadotropic hormone and 100 guinea pig units of thyrotropic hormone.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Proctocaine is a sterile oily solution containing procaine 1.5% with benzyl alcohol and butyl-*p*-aminobenzoate. It is indicated for the treatment of pruritus ani and anal fissure. Procaine, while soluble in oil, is also soluble in water and diffuses into the tissues on injection, giving prompt anæsthesia, which is maintained for periods from seven to twenty-eight days by the slow absorption of the oil-soluble ingredients. The injections should be given deeply into the subcutaneous tissue, and up to 30 cc. may be injected, without producing any general toxic effects. The injection is painless if given slowly. Proctocaine can be used as a local anæsthetic for minor rectal operations. It is supplied in 2-, 5- and 10-cc. ampuls. The 2-cc. ampuls are issued in boxes of 6 and 12, the 5-cc. in boxes of 6 and the 10-cc. in boxes of 3.—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 639. (S. W. G.)

Prohibin Tablets (E. Schuerich), an antiseptic, contain boric acid, sodium perborate, egg albumin and aluminum acetotartrate.—*Pharm. Zentralh.*, 78 (1937), 183. (E. V. S.)

Protamine Zinc Insulin "Squibb" contains in each cc., after it has been brought into uniform suspension, 40 units of insulin together with protamine and 0.08 mg. of zinc. It is milky in appearance, slowly absorbed and the duration of action of a single dose is about three to six times that of unmodified insulin; it is stable in the cold for not less than six months; administered only subcutaneously; for most patients, one injection a day is adequate. It is indicated chiefly in those diabetics particularly difficult to control with unmodified insulin because of the frequency of insulin. However, because it is slowly absorbed Protamine Zinc Insulin is not recommended in cases of diabetic coma, in diabetes complicated by infection or in the event of surgical operation. It is supplied in rubber-diaphragm vials of 10 cc.—*Drug. Circ.*, 81, No. 4 (1937), 40. (E. V. S.)

Risin (Coates & Cooper Ltd., London, E. C.1), a combination of *p*-aminoethyl benzoate, adrenaline, menthol, eucalyptol, boric acid, vaseline and anhydrous lanolin, is a nasal ointment which liquefies tenacious secretion and to a great extent arrests its further formation, restoring free, nasal respirations; also prophylactic. It is supplied in two sizes.—*Australas. J. Pharm.*, 52 (1937), 221. (E. V. S.)

Sanastol (Chem. Fabrik Promonta, G.m.b.H., Hamburg) is put up in 200-Gm. bottles containing vitamin-oil concentrate, orange concentrate malt extract and sugar.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Scuroform Anesthetic Lozenges (May & Baker Ltd.) contain in each 2 mg. of butoform, a powerful local anæsthetic, in a carbohydrate base flavored with vanillin. They are used in all painful conditions of the mouth, throat and gums, such as erosions of the buccal mucous membranes, tonsilitis, inflammation of the tongue and sore gums following dental extractions. As the local anæsthetic is relatively non-toxic, no harmful effects result from excessive use. Throat irritations causing reflex cough are often treated by their use at bedtime. The lozenges should be allowed to dissolve slowly in the mouth. (cf. *Pharm. Abstr.*, 2 (1936), 429).—*Australas. J. Pharm.*, 52 (1937), 221. (E. V. S.)

Targophagin Tablets (Goedeke & Co., Chem. fabr. A. G., Berlin) contain in each 0.05 Gm. Targesin and 0.01 Gm. ethylaminobenzoate, and are put up in packages of 20.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Thevetin is a solution of a cardiac glycoside obtained from *Thevatia neriifolia* intended for intravenous injection. The glycoside is water-soluble, stable to heat and on standing has a rapid action on the heart, and is less cumulative than digitalis, for which it is suggested as a substitute.

It is also of value where digitalis in not tolerated. The dose is 1 ampul containing 3 cat units (0.00275 Gm.) injected intravenously on alternate days for a maintenance dose, or 3 cat units three times a day in cases of cardiac failure, until "digitalization" is evident, when the maintenance dose is resumed. Thevetin is supplied in 2 cc. ampuls (boxes of 12).—*Quart. J. Pharm. Pharmacol.*, 9 (1936), 640. (S. W. G.)

Thioalbin Fe-Cu Dragées (Gimborn and Zifferer, A. G., Vienna; 10th dist.) contain thioalbin (which is a neutral heterocyclic carbon, hydrogen, sulfur complex compound) with casein, iron pyrophosphate and copper sulfate, put up in packages of 60.—*Pharm. Presse*, 42 (1937), 71. (M. F. W. D.)

Vitafer (National Drug Co., Phila.) contains in each fluidounce, tincture of ferric citrochloride 15 min., calcium gluconate 4 gr., manganese gluconate 3 gr., tincture hyoscyamus 5 min. and vitamin B_1 25 international units in a special wine base; alcohol content about 17%. It is a palatable, reconstructive and antineuritic tonic containing antianemic factors and indicated in the treatment of neurasthenia, secondary anemias; exhaustion due to overwork and malnutrition; may prove serviceable in strengthening the expectant mother. Vitafer is supplied in 1- and 5-pint and gallon bottles.—*Drug. Circ.*, 81, No. 4 (1937), 40. (E. V. S.)

V. M. Tablets (VegeMucene) (Bio Vegetin Products, Inc., Chicago) is derived from *Abelmoschus Esculentus* Okra by a special dehydrating process. A 1% aqueous solution has 3.1 times the viscosity of water and 1 Gm. will absorb 5.45 cc. of 0.1 *N* hydrochloric acid. It is indicated in the treatment of gastric and duodenal ulcers, colitis, acid stomach and similar gastrointestinal conditions. V. M. tablets are supplied in bottles of 25, 100 and 200.—*Drug. Circ.*, 81, No. 4 (1937), 86. (E. V. S.)

BACTERIOLOGY

Acrolein—Bactericidal Properties of. The well-known sulfides responsible for the odor of garlic are not to be credited with its bactericidal activity. Acrolein was found to be a highly active bactericide with possibility of being used as a respiratory disinfectant. Its general properties suggest that it or a related compound may be the bactericide of garlic.—RICHARD E. VOLLRATH, LUCILE WALTON and CARL C. LINDEGREN. *Proc. Soc. Exptl. Biol. Med.*, 36 (1937), 55. (A. E. M.)

Anti-Bacterial Preparations—Process for the Manufacture of. *Bacterium pullorum* is cultivated in the pure state; the bacteria obtained are suspended in a physiological salt solution, killed, separated from the solution and dried.—K. NAGAO. Belg. pat. 417,509, Oct. 31, 1936. (A. P.-C.)

Antitoxins—Characteristics of, Purified by Flocculation, Stabilized by Formaldehyde and Sodium Aminonaphthalenetrisulfonate. Treatment of the flocculate successively with formaldehyde, sodium aminonaphthalenetrisulfonate and citric acid, followed by removal of the excess of the reagents by washing, yields a purified, stabilized diphtheria antitoxin, which can be kept for a long time. During the first 2 or 3 months such antitoxins undergo a progressive acidification which stops at p_H 6.5 to 7 and which is related to the displacement of the isoelectric point and to the markedly increased thermo-resistance of the antitoxins. These phenomena may be due to the modification of the micelles and the liberation of acid substances possibly by decomposition of the amino acids blocked by the formaldehyde. The modifications undergone during treatment do not change the antigen structure which manifests itself by the specific anaphylactogenic properties of the globulins attached to the antitoxin; but heating at 80° to 85° C. degrades these globulins to some extent and diminishes their anaphylactogenic characteristic without destroying the stabilized antitoxins.—H. GOLDIE. *Compt. rend. soc. biol.*, 121 (1936), 649–652; through *Chimie & Industrie*, 36 (1936), 777. (A. P.-C.)

Disinfectants—Germicidal Activity of, Use of Cutaneous Staphylococcus Lesions in Mice for the Evaluation of. The largest lesion ordinarily produced was 10 x 10 mm. and the smallest lesion developing from the same volume of inoculum was 3 x 3 mm. There was necrosis and suppuration in every case. Merthiolate (sodium ethyl mercurisalicylate), is an excellent preservative of organic material—almost as active in whole serum as in protein-free solution. In estimating the therapeutic value of germicides, skin lesions were produced in mice using an "invasive" strain of *Staphylococcus aureus*. The germicide was administered at the site of injection, at once or subsequent to infection by the staphylococcus, and prevention of the formation of the lesion

determined by comparison with control mice receiving an infection without germicide. Of the disinfectants tested, none prevented the formation of the skin lesion when administered later than two hours after infection. None of the disinfectants was able to shorten the time of healing once the infection was established at the site of injection. The disinfectants of the alkyl-phenol and alkyl-resorcinol type and their halogen-substitution products were able to prevent the formation of skin lesions in most instances when administered at the site of injection not more than one hour following injection of the organisms.—G. A. HUNT. *J. Infect. Diseases*, 60 (1937), 232. (A. H. B.)

Friedlander's Bacillus, Type B—Immunological Specificity of, with Bacterium Aerogenes and Pneumococcus, Type II. Certain strains of Friedlander's bacillus, pneumococcus and *Bacterium aerogenes* apparently depend upon similarities in the chemical constitution of their capsular carbohydrates. Agglutinin adsorption, however, detects definite antigenic variations in the inter-reactive cultures, indicating differences as well as similarities in the capsular antigens and decapsulation of these strains deprives them of the immunological relationships and type-specificity.—L. A. JULIANELLE. *J. Immunol.*, 32 (1937), 21–33. (A. H. B.)

Growth Factor—Some Chemical Properties of an Essential, for Pathogenic Bacteria. A factor obtained from various animal and plant sources by adsorption on charcoal from their infusions, and then removed with hot ethanol or acetone, was found to promote growth of certain of the more exacting pathogenic bacteria, when added to a synthetic media of amino acids, dextrose and inorganic salts. Experiments show this substance to be an accessory growth factor and not a foodstuff. The factor is soluble in water, methanol, ethanol and phenol, but insoluble in the higher alcohols, ether, benzene and chloroform. Other chemical properties of the substance are given. The substance has not yet been obtained pure.—FELIX SAUNDERS, I. I. FINKLE, LEON STERNFELD and STEWART A. KOSER. *J. Am. Chem. Soc.*, 59 (1937), 170. (E. B. S.)

Sex in Bacteria—Attempts to Reveal, with Some Light on Fermentative Variability in the Coli-Aerogenes Group. Efforts to reveal sex in bacteria by the methods employed proved futile. From pure cultures of *Bacterium coli* and *Bacterium ærogenes* substrains were obtained which varied from the parent strain in the fermentation of test substances.—E. B. TILDEN. *J. Bact.*, 33 (1937), 307. (A. H. B.)

Streptococcal and Staphylococcal Hemolysin—Effect of Lecithin on. Cholesterol did not prevent hemolysis by streptococci and staphylococci, and nullified the inhibitory action of lecithin when both substances were added to a medium.—L. WEINSTEIN. *L. Infect. Diseases*, 60 (1937), 209. (A. H. B.)

Streptococcus Salivarius. Of 320 non-hemolytic streptococci isolated from human throats, 290 of the cultures studied are believed to be typical of the species.—C. E. SAFFORD, J. M. SHERMAN and H. M. HODGE. *J. Bact.*, 33 (1937), 263. (A. H. B.)

Treponema Pallidum and Treponema Novyi—Filtration of, through Collodion Membranes. The collodion membrane appears to offer the best method of separating spirochetes from accompanying bacteria. *Treponema pallidum*, in suspensions of testicular tissue partly cleared by centrifugation, is able to pass through a collodion membrane of calculated pore diameter 0.4μ, as demonstrated microscopically and also by the infectivity of the filtrates.—E. B. TILDEN. *J. Bact.*, 33 (1937), 307. (A. H. B.)

BOTANY

Alkaloids—Origin of, in Plant Organisms. A discussion in which an analogy is drawn indicating that these substances might be due to chemical changes in diseases in plants just as in animal organisms.—I. GUTSCHMIDT and E. GLET. *Apoth. Ztg.*, 52 (1937), 33–34. (H. M. B.)

Aloes—Curaçao. The genus *Aloe* occurs chiefly in South and East Africa whence it spread to the entire Mediterranean basin and, possibly by way of the Canary Islands, it reached the West Indies, probably about the sixteenth century. In the Curaçao district, especially in the islands of Aruba and Bonaire, the species *Aloe vera* Linn. (*A. vulgaris* Lam.) is cultivated. Planting is carried out quickly after the first rains break, young offsets being used and set out in rows spaced about 0.5 meter apart. The first cutting of leaves is made in the second year and a plantation will continue to yield good aloes for about twelve years, after which the ground is dug and manured with goat manure and replanted. In preparing aloes, workmen, whose hands and feet are protected from the prickles by coverings, cut the leaves from the plants and put them

into kerosene tins, in which they are carried to the draining troughs. The collected juice is boiled down in large open copper pans, heated by a furnace built of stone and fuelled with dried cacti. The concentrated juice is put into cases lined with paper and holding 50 to 60 Kg. of aloes. Curaçao aloes contain about 8 to 12% of aloin and have twice the strength and value of Cape aloes.—P. A. ROWAAN. *Indische Mercuur*, 59 (1936), 41; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 602. (S. W. G).

Lavender—Selection of, in Crimea. A brief outline of the work carried out at the Nikita Molotoff gardens, Yalta, Crimea, on the development of a variety of lavender giving a maximum yield of oil of optimum quality.—R. A. NESTERENKO. *Parfumerie Moderne*, 30 (1936), 387–395. (A. P.-C.)

Shellac—Biological Aspect of. Experiments were started with a view to improving the methods of exploiting the Kusum tree (*Schleichera trijuga*) as a host for lac. The results already obtained will, however, be sufficiently revolutionary and striking to anyone familiar with the ordinary village methods used by the small farmer.—DOROTHY NORRIS. *Indian Lac Research Inst.* (Namkam, Burma), Bull. No. 24; through *Chem. and Drug.*, 126 (1937), 312. (E. V. S.)

CHEMISTRY

GENERAL AND PHYSICAL

Boric Acid—Volatility of. I. Aqueous Solutions. Under atmospheric pressure the vapor from a boiling aqueous solution of boric acid contains approximately 0.0036 ± 0.0003 times the concentration of boric acid in the solution. The results are discussed in relation to the molecular form of the solute.—PAUL JAULMES and ANDRÉE GONTARD. *Bull. soc. chim., mem.* [5], 4 (1937), 139. **II. Dry Boric Acid and Superheated Water Vapor.** Curves are given for the composition of the vapor obtained by passing superheated steam over an excess of boric acid between 104 and 204°. The transformation of boric acid to metaboric acid was observed at 144°. Metaboric acid proved stable in the presence of water vapor at 760 mm. Hg up to the highest temperature studied, 210°.—PAUL JAULMES and EMILE GALHAC. *Ibid.*, 4 (1937), 149; through *Squibb Abstr. Bull.*, 10 (1937), A556. (E. V. S.)

Committee on Atomic Weights of the International Union of Chemistry—Seventh Report of. The following changes in atomic weights has been made: Carbon, from 12.00 to 12.01; rubidium, from 85.44 to 85.48; gadolinium, from 157.3 to 156.9; lead, from 207.22 to 207.21; uranium, from 238.14 to 238.07. A suggestion to make some simple isotope such as protium the standard instead of oxygen was not accepted by the committee.—G. P. BAXTER, O. HONIGSCHMIDT and P. LEBEAU. *J. Am. Chem. Soc.*, 59 (1937), 219. (E. B. S.)

ORGANIC

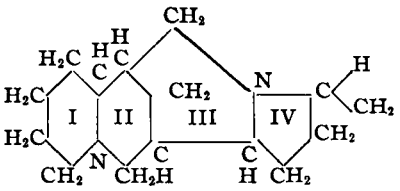
Alkaloids

Chelidonium Majus—Alkaloids of, Chemistry of. The author briefly reviews the literature on the alkaloids of *Chelidonium majus, i. e.*, chelidonine (I), chelerythrine (II), sanguinarine (III), homochelidonine (IV), allokryptopine, protopine (V), chelidoxanthine, sparteine and a lupine alkaloid. According to previous investigators, II is chiefly responsible for the toxic properties of the plant, has a strongly irritating local action and leads to paralysis and muscle spasm; I and IV have a morphine-like action; III stimulates intestinal peristalsis and salivary secretion; and V, in warm-blooded animals, causes an increase in the blood pressure followed by a decrease with injury of the vasomotor center and the heart.—W. BRANDRUP. *Pharm. Zentralh.*, 78 (1937), 3; through *Squibb Abstr. Bull.*, 10 (1937), A285. (E. V. S.)

Curare and Its Alkaloids. A general review including recent investigations.—C. R. ADDINALL. *Merck Rep.*, 46, No. 1 (1937), 15. (E. V. S.)

Curare—South American. A review and description of the sources, preparation and pharmacology of the commercial product.—F. W. FREISE. *Pharm. Ztg.*, 81 (1936), 241–243; through *Chimie & Industrie*, 36 (1936), 967. (A. P.-C.)

Dehydrosparteine Methoacetate—New Oxidation Products of. Relative to the arrangement of α-methylpyrrolidine ring (IV) in the structural formula of sparteine:



No agreement has been reached as to the correct arrangement of the structural formula. The statement made by others that sparteine might contain a pyrrolidine ring was not correctly proven. Although the statements about the dehydration and oxidation process of dehydrosparteine methoacetate (I) were correct, those made about the products obtained were not. The oxidation reaction of I does not follow the usual course; the platinum salt-isolated-oxidation product had the composition $C_{16}H_{26}O_4N_2$ and not $C_6H_{13}O_2N$. The second oxidation product, a deliquescent copper-salt, was not uniform and consisted of a monocarbonic acid, $C_{14}H_{24}O_4N_2$, and another similar product; however it contains no methylpyrrolidine carbonic acid, since its copper-salt is very readily isolated. An oxidation cleavage of this compound into two N-products does not take place. Moreover, two C-atom compounds were obtained from N-methylsparteine salt, $C_{14}H_{24}O_4N_2$ and $C_{16}H_{26}O_4N_2$. The oxygen atom in the carboxyl groups of the two compounds does not have a double bond. The two oxidation products formed are stable against chromic acid and do not react with each other. This proves that the double bond is located at two different positions in I.—K. WINTERFELD and H. E. RONSBERG. *Chem. Zentralb.*, 107 (1936), 1626. (G. B.)

Hanfangchi Alkaloids. II. Hanfangchin B. The filtrate from hanfangchin A is evaporated and treated with benzene and the insoluble matter extracted with acetone. The resulting hexagonal crystals, when recrystallized from 95% alcohol, yield colorless prismatic crystals of hanfangchin B, $C_{36}H_{44}N_2O_6$, m. p. 241 to 242° C., specific optical rotation at 23.5° C., 272.4°. It is a tertiary base with no phenolic hydroxyl, nitrosoamine, methylenedioxy or carbonyl group; it appears to contain two double bonds, two NCH_3 groups and four methoxyl groups.—C. F. HSÜ. *J. Chinese Chem. Soc.*, 3 (1935), 365–371; through *Chimie & Industrie*, 36 (1936), 965-966. (A. P.-C.)

Papaverine—Detection of, by Color Reaction. On dissolving 0.005 Gm. of papaverine in 3 cc. of acetic anhydride and heating to about 80° C., followed by the addition of 5 drops of concentrated sulfuric acid from a pipette, the solution will develop a bright green fluorescence, which persists even after dilution with alcohol and becomes more pronounced under a quartz lamp. The limit of detection lies below 0.05 mg. of papaverine.—W. AWE. *Pharm. Zentralh.*, 77 (1936), 157–160; through *Chimie & Industrie*, 36 (1936), 968. (A. P.-C.)

Papaverine—Synthesis of. Because the difficulties met in converting 3,4-dihydropapaverine to papaverine are usually hard to overcome, the authors took the trouble to devise a better method in isolating papaverine. The first attempt made to produce dihydropapaverine from homoveratrylhomoveratrylamine, was met with little success. The results of the esterification were as follows: *sym. Diphenyldiacetamide* was obtained by heating at 200° for 11 hours 5 Gm. phenylacetic acid, 4.2 Gm. benzylcyanide with a few drops of acetic anhydride, yield 22%. *sym. Di(3,4-dimethoxyphenyl)-diacetamide* was obtained from homoveratrinic acid and its nitrile. The acetic acid ester was extracted and washed with alkali and water. From the acetic acid ester-petroleum ether mixture, needle-like crystals separated out, m. p. 123–124°; yield 40%. *sym. Di-(3,4-methylenedioxyphenyl)-diacetamide*, $C_{16}H_{15}O_6N$, was obtained from homopiperonylic acid and its nitrile; needle-like crystals, m. p. 155–157°. Dihydropapaverine hydrochloride boiled for five hours with maleic acid did not yield a definite product even after the addition of sodium malate. Dihydropapaverine heated with palladium in xylol for five hours at a temperature of 150° yielded dihydropapaverinaldine, $C_{22}H_{21}O_6N$, m. p. 191°. The yellow hydrochloride was obtained from a dilute acid solution.—S. SUGASAWA and T. TSUDA. *Chem. Zentralb.*, 107 (1936), 2559. (G. B.)

Essential Oils and Related Products

Drugs—Essential Oil Content of. The usual methods of determination do not give the true essential oil content of drugs, but only the yield which can be obtained from them. In steam

distillation there is always a loss that varies with the nature of the oil and (for a given oil) with the quantity distilled. If the distillation of a and a' Gm. of oil yields b and b' Gm. of distillate, respectively, it was observed that $(a - a')/(b - b') = K$ is a constant, that is characteristic for each oil. To determine the true essential oil content of the drug, determine the practical yield by the German Pharmacopœia method, taking care to distil 200 cc. in 35 to 40 min.; the distillate is salted, extracted with rectified pentane, the solvent is evaporated on the water bath and then under vacuum, and the residue is dried to constant weight; a similar flask containing approximately the same amount of pure oil is weighed and subjected to the same temperature to correct for loss during drying. The loss on distillation of the pure oil is determined by distilling in presence of water the oil obtained from 150, 100 and 75 Gm., respectively, of the drug, which gives an accurate value for K. The true oil content of the drug is then given by $x = a + (m - b)K$, where m is the practical yield of oil, a the quantity of pure oil distilled and b the amount of distillate obtained from a.—W. J. STRAZEWICZ. *Pharm. Zentralh.*, 77 (1936), 81, 97; through *Chimie & Industrie*, 36 (1936), 987. (A. P.-C.)

Oil of Primula Auricula L.—Composition of. Steam distillation of the macerated roots of *Primula auricula* yielded 0.8% of oil; the solid portions of the oil is peonol (2-hydroxy-4-methoxyacetophenone), m. p. 50° C., and the liquid portion is the methyl ester of methoxyhydroquinone carboxylic acid.—A. GORIS and H. CANAL. *Compt. rend. acad. sci.*, 202 (1936), 1351–1352; through *Chimie & Industrie*, 36 (1936), 975. (A. P.-C.)

Pulegone—Catalytic Reduction of. Pulegone is reduced in 91% yields to menthol by hydrogenation over a catalyst consisting of 27–73 nickel-aluminum alloy, activated by washing 20 to 25 min. in sodium hydroxide solution and drying in a current of hydrogen for 45 min. The liquid is passed at a rate of 2 to 4 cc. per hr. at 180° C. Passing the oil of *Ziziphora clinopodioides* L. over the same catalyst at a rate of 25 cc. per hr. and at 140 to 160° C. reduces 91% of the pulegone contained in it.—B. N. ROUTOVSKI, T. A. KOLOBELOTOVSKAIA and Z. A. IRAOSLAVTSEVA. *J. Prikl. Khim.*, 9 (1936), 684–689; through *Chemie & Industrie*, 36 (1936), 975. (A. P.-C.)

Thymol and Carvacrol—Detection and Determination of, in Essential Oils. A review of methods for the identification, separation and determination of thymol and carvacrol, with bibliography of 18 references.—Y. MAYOR. *Parfumerie Moderne*, 31 (1937), 5–11. (A. P.-C.)

Thymol and Carvacrol—Natural. A brief review of their occurrence, production and properties, with bibliography of 18 references.—Y. MAYOR. *Parfumerie Moderne*, 30 (1936), 459–465. (A. P.-C.)

Wormseed Oil—American. A phytochemical study of *Chenopodium ambrosiodes* L., var. *anthelminticum* A. Gray, more particularly of its non-volatile constituents. From the results of the investigation it follows that the aqueous distillate from oil of chenopodium contains the following: acetaldehyde, acetone, methyl alcohol, ethyl alcohol (doubtful), ammonia and methylamine.—RUDOLPH F. PAULY. *Pharm. Archives*, 7 (1936), 1. (A. C. DeD.)

Glycosides, Ferments and Carbohydrates

Apodehydrogenase—Preparation of a Highly Active Alcohol, from Yeast. A preparation of apodehydrogenase representing a 135-fold purification was obtained from the toluenated water extract of dried yeast by half-saturation with ammonium sulfate, solution of the wet precipitate in water, adsorption on zirconium hydroxide at p_H 5 and elution by Sorenson's $M/15$ phosphate buffer, p_H 6.8, the adsorption and elution being repeated. The activity, expressed in seconds, per mg. of protein N, required to decolorize 0.2 cc. of a standard solution of methylene blue (1:5,000) in presence of an excess of substrate, cozymase and flavoprotein, was 808 sec. for the crude extract and 6 sec. for the final purification product.—M. SREENIVASAYA. *Nature*, 139 (1937), 112; through *Squibb Abstr. Bull.*, 10 (1937), A660. (E. V. S.)

Digitalis Purpurea—Glucosides from. The leaves of *Digitalis purpurea* are extracted at a temperature below 30° C. (suitably about 20° C.) with an aqueous solution of lead acetate, and the extract may then be treated with sodium sulfate and chloroform.—FRIEDRICH JÄGER, assignor to RARE CHEMICALS INC. U. S. pat. 2,068,027, Jan. 19, 1937. (A. P.-C.)

Enzyme Action—Studies on. L. The Estimation of Pepsin and Trypsin in Yeast. A new pepsin (I) with a p_H optimum at 1.8 was demonstrated in yeast by a modification of the method of Anson and Mirsky (*Squibb Abstr. Bull.*, 7 (1934), 499) depending upon the production

of tyrosine from hemoglobin. I proved to be an intracellular enzyme, absent in aqueous yeast suspensions and present only after autolysis by ether, or less satisfactorily, by ethyl acetate, toluene (II), II and water, or chloroform. A trypsin (III) acting at p_H 7.8 (no other p_H's were tested) was demonstrated in the same autolyzed yeast liquor by the method of A. and M. unmodified. The liquor contained all the III which could be demonstrated in the yeast. The concentration of III in the crude liquor was less than that of I, which in turn was approximately equal to 0.01 mg./cc. of a solution of Northrop's crystallized enzyme.—MORRIS HECHT and HELEN CIVIN. *J. Biol. Chem.*, 116 (1936), 477; through *Squibb Abstr. Bull.*, 10 (1937), A420. (E. V. S.)

Lysozyme—Action of. The lytic action of lysozyme on susceptible bacteria has been studied and it is found that lysis cannot be explained on a physical basis; for example, a potent purified lysozyme preparation produced no lowering of surface tension in water or saline, while a dilute solution of caprylic alcohol, with a considerable effect on surface tension, had no lytic effect. Lysozyme was found to have no protease, kinase, amylase, lipase or phosphatase activity. It liberates reducing sugars from mucoids or polysaccharides of the susceptible sarcina, and from a mucoid fraction of egg white, but the type of linkage attacked is not known.—K. MEYER, J. W. PALMER, R. THOMPSON and D. KHORAZO. *J. Biol, Chem.*, 113 (1936), 479; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 592. (S. W. G.)

Lysozyme—Purification of. Fleming discovered a bacteriolytic enzyme, lysozyme, in egg white and animal fluids. A method for its purification has been worked out. Egg white was precipitated with 9 volumes of ice-cold acetone. The dried precipitate was extracted with a 0.9% aqueous solution of sodium chloride, and impurities were precipitated with collodial iron. Owing to losses, this method was abandoned in favor of extraction with alcohol (50%) containing 10% acetic acid, at 60 to 70° C. The filtrate was concentrated, precipitated with alcohol, the precipitate taken up in alkaline water and precipitated with sulfuric acid. Lysozyme remained in the supernatant liquor and was purified from a mucoid by precipitation with flavianic acid. After purification the salt was decomposed by washing with alcohol (90%) containing 0.5% ammonia. At this stage 100 to 150 mg., with an activity of 2000 to 6000 units per mg., was obtained from 10 Gm. of egg-white powder. Further purification gave crystalline products of activity 32,000 units per mg. The product was basic in nature, contained about 15% of nitrogen and a little sulfur and phosphorus. Biuret, glyoxylic acid, Greenberg phenol and nitroprusside reactions were positive, the Molisch reaction was negative. Solutions were stable to heat and acid but not to alkali or peroxides. Iodine and also cuprous oxide inactivated the enzyme, but activity could be partly restored by treatment with hydrogen sulfide or sulfite. These facts suggest the necessity for an intact sulfhydryl group in the molecule.—K. MEYER, R. THOMPSON, J. W. PALMER and D. KHORAZO. *J. Biol. Chem.*, 113 (1936), 303; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 592. (S. W. G.)

Milk—Enzymes of. The authors summarize their paper as follows: "The phosphatase test of Kay and Graham (*J. Dairy Res.*, 6 (1935), 191) for assessing the efficiency of pasteurization of milk has been subjected to a detailed examination. The extent to which variations in the technic influence the result has been determined. As a result we find that, if satisfactory results are to be obtained with regularity, the published technic must be followed closely." The addition of as little as 0.25% of raw milk to properly pasteurized milk can be detected. Pasteurization at 145° F. for less than thirty minutes or at less than 145° F. for thirty minutes can also be detected by the test.—E. B. ANDERSON, Z. HERSCHDÖRFER and F. K. NEAVE. *Analyst*, 62 (1937), 86. (G. L. W.)

Proteins—Affinity of, as Polysaccharides. The authors attempt to explain the relationship between free tyrosine and polysaccharides. Tyrosine has the affinity to be converted to a colloidal polysaccharide like amylose and dextrin, also to a β-hexaamylose. From the analysis of the simplex tyrosine-hexaamylose combination it was found that the simplex does not contain many tyrosine molecules in relation to the number of hexaamylose molecules. Water does not decompose either amylose- or dextrin-tyrosine. Both compounds crystallize in rosettes and are colored blue by iodine. Whether there is any relationship between tyrosine and polysaccharide has not been proven. The polysaccharide-tyrosine combination has a p_H = 7.5–3.0. The reason why egg albumin, which contains from 4.0–4.6% of tyrosine, does not yield any amylose or dextrin cannot be explained.—ST. J. PRZYLECKI and H. RAFALOWSKA. *Biochem. Z.*, 280 (1935), 413; through *Chem. Zentralb.*, 107, (1936), 1434. (G. B.)

Other Plant Principles

Catnip Oil—Crystalline Acid from. The lactone is a white crystalline compound. When first prepared it is practically odorless but upon standing it develops a somewhat penetrating acid-like odor, and a very bitter taste. The chemical study of the acid is given in detail.—MINNIE MEYER. *Pharm. Archives*, 7 (1936), 17. (A. C. DeD.)

Gleditshia Horrida Makino—Saponin Derivatives from. The drug was extracted with methanol to obtain the crude saponins; it was then purified in the usual way and hydrolyzed with 5% alcoholic hydrochloric acid; the sapogenin was taken up with ether and shaken with 10% potassium hydroxide. The insoluble potassium salt was isolated, and to the remaining liquid portion, hydrochloric acid and ether were added to precipitate the genin. Finally the sapogenin was crystallized from acetone in needles, m. p. 299–300°. The crystals are soluble in ethanol an methanol, $[\alpha]_D^{20} = +32.51°$ in chloroform. They give the purplish-red color of the phytosterin reaction type. Analysis showed 74.4% C, 10.5% H and molecular weight 473 (through titration). The compound contains no double bond and is not affected by hot alcoholic potassium hydroxide. The methyl ester was obtained using CH_2N_2, m. p. 230.5°; and analysis showed that it had either the formula $C_{30}H_{47}O_4(CH_3)$ or $C_{31}H_{49}O_4(CH_3)$; the acetyl derivative, m. p. 219°, molecular weight 540 and the formula either $C_{30}H_{46}O_4(CO.CH_3)_2$ or $C_{31}H_{48}O_4(CO.CH_3)_2$. In brief the sapogenin obtained, is according to its behavior, an isomer of hederagenins.—S. KUWADA. *Chem. Zentralb.*, 107 (1936), 2559. (G. B.)

Leprotin—New Bacterial Carotenoid. A new carotinoid, leprotin, m. p. 198–200°, has been isolated from an acid-fast strain of bacteria obtained from infectious material from a leper. The compound resembles β-carotene in absorption spectrum but is more firmly adsorbed on alumina. It gives a blue color with antimony trichloride in chloroform.—CHRISTOPH GRUNDMANN and YOSHIHARU TAKEDA. *Naturwiss.*, 25 (1937), 27; through *Squibb Abstr. Bull.*, 10 (1937), A345. (E. V. S.)

Lichens—Composition of. The authors isolated from the lichen *Bæomyces placophyllus* Ach. a new acid, stictinic acid, $C_{19}H_{14}O_9$. Induced by the work of other investigators, the authors examined the lichen *Bæomyces roseus* Pers. from Japan and isolated bæomycinic acid. The methyl ester of this acid could also be obtained through the methylating of atronorins and this reduced to barbatinic acid methyl ester; this reaction is analogous to the reduction of atranorins to norbabatinic acid methyl ester.—Y. ASAHINA, Y. TANASE and L. YOSIOKA. *Ber.*, 69 (1936), 125; through *Chem. Zentralb.*, 107, (1936), 2114. (G. B.)

Plant Pigments Containing Sulfur. The actively growing shoots of *Mercurialis perennis*, collected during the early spring, give, after drying, a blue compound which may be extracted with water. This compound changes spontaneously on keeping, or on heating its aqueous solution, to a red product from which a number of pigments have been separated. These pigments are glycosides containing both nitrogen and sulfur, the latter element being previously unknown in plant pigments.—P. HAAS, T. G. HILL and B. RUSSELL-WELLS. *Nature*, 137 (1936), 783; through *Quart. J. Pharm. Pharmacol.*, 9 (1936), 587. (S. W. G.)

Fixed Oils, Fats and Waxes

Fats—Bromine Number as a Method of Recognizing. The bromine-binding number of a compound treated with bromine in methanol is the ratio of the amount of bromine added to the amount of bromine converted to hydrogen bromide. The number, differing from the iodine number, does not show the degree of unsaturation but furnishes a clue to the type of unsaturated linkages. Compounds containing conjugated double bonds give higher numbers than those containing single double bonds only. Values for various animal and vegetable fats and oils are tabulated and interpreted.—KARL MEINEL. *Fette Seifen*, 43 (1936), 250; through *Squibb Abstr. Bull.*, 10 (1937), A380. (E. V. S.)