PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

CONTENTS

BOTANY

Alkaloidal Plants—Nitrogen Exchange in. Investigations of *Datura Stramonium* and *D. meteloides D. C.* lead to the conclusion that alkaloids, being dynamic within the cell, play the rôle of internal buffers during nitrogen intake and external buffers in case of changes in reaction of the medium. Storage of alkaloids increases with increased absorption of reduced nitrogen and decreased synthesis of carbohydrates. In starvation, while albuminous material is being destroyed, there is an increased synthesis of alkaloids. Insufficient nitrogen supply to the cell in presence of carbohydrates causes destruction of alkaloids and synthesis of albumins. To an acid external medium, the tissues of alkaloidal plants react by giving off ammonia at the expense of destroyed alkaloids. The practical conclusions based on above facts are: Soils neutral or alkaline in reaction and rich in ammonia nitrogen but poor in nitrifying power will favor synthesis of alkaloids. Collection of material should take place during the period of greatest nitrogen intake and decreased storage of carbohydrates.—K. T. SUHOROUKOV and N. A. BORODULINA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 53–63. (E. K.)

Anise. Fertilizer experiments with anise, in sand cultures, showed that the seed and oil yields depend greatly upon fertilizing, especially upon nitrogen nutrition. With fertilizers in which the K_2O, P_2O_5 and N were in equal proportions the yield of oil was 3.93%. This fell to 1.89% when the nitrogen was doubled and rose to 6.62% when the nitrogen was reduced to one-fourth. Application of nitrogen in three portions gives the highest yield. Lack of potassium decreases the yield.—M. I. POPOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 94–111. (E. K.)

Belladonna. Experiments with *Atropa belladonna*, though incomplete, gave the following results: (1) Nitrogen is the most important factor. (2) Phosphorus, introduced together with nitrogen, is also of great importance. (3) Potassium seems to have no noticeable influence.—F. E. PEHOTO. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 64–66. (E. K.)

Coriander. Fertilizer experiments with *Coriander sativum* showed that: (1) N and P_2O_5 fertilizers have a great influence upon the seed yield, the lack of P_2O_5 reducing the quantity considerably. (2) The lack of K_2O has little effect. (3) The highest seed yield is obtained by introducing the nitrogen in two portions. (4) In general, the yield of the oil is determined by the seed yield.—F. O. PEHOTO. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 88–93. (E. K.)

Digitalis. Fertilizer experiments with digitalis gave the following results: (1) Addition of N, P_2O_5 and K_2O fertilizers increased the yield of leaves and also their physiological activity. (2) The nitrogen fertilizers are the most important in increasing the leaf yield and in ameliorating their quality. (3) Fertilizers containing only N and P_2O_5 gave nearly as good results as those containing N, P_2O_5 and K_2O. (4) Neutral or alkaline fertilizers gave the best results. (5) Large quantities of N affected unfavorably the quality of the leaves. The optimum quantities appear to be 60–90 kg. P_2O_5, 45–90 kg. N and 45–60 kg. K_2O per hectare.—M. M. RJABINOVSKY. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 36–50. (E. K.)

Lavender—Diseases of, and Means of Their Control. A general review of the diseases of *Lavendula vera*. A number of diseases that have been observed on the southern coast of Crimea are described. *Cascuta planifora* Ten. has been observed. Diseased roots have also been observed but the agent has not yet been determined. Leaf-spot is caused by the fungus *Septoria lavandulæ* Desm. Another fungus, *Phoma lavandula*, destroys separate shoots causing the death of the whole plant later. The methods of control are yet to be elaborated.—N. A. MASSALAB. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 123–132. (E. K.)

Lobelia. Fertilizer experiments with lobelia showed that: (1) Liming of soil is of great importance. (2) The influence of ammoniac-nitrogen compounds is unfavorable, that of cyanamide favorable. (3) High nitrogen content is injurious. (4) Further attention must be given the phosphorus, nitrogen and potassium ratio with special attention to the optimum quantity and date of application of nitrogen.—M. M. RJABINOVSKY. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 58–63. (E. K.)

Medicinal and Aromatic Plants—Diseases of. I. Brief Information about Diseases of the Principal Medicinal and Aromatic Plants. The author describes fungous, bacterial, cancerous and other diseases of belladonna, valerian, geranium, jasmin, iris, lavender, peppermint, rose, pyrethrum, salvia and some allied plants. **II. Organization of Observations and Methods of**

Recording. Systematic methods of observing the causes and the development of the diseases and their effect upon the host. At different stages, the amount of infection is recorded by means of an arbitrary scale.—N. A. MASSALAB. *A Guide for Conducting Observations on Diseases of Medicinal and Aromatic Plants*, published by the Institute of Medicinal and Aromatic Plants, U. S. S. R. (Sept. 15, 1933). (E. K.)

Mentha Piperita—Effect of the Removal of the Flowering Tops of, on the Accumulation of Essential Oil. Experiments on *Mentha piperita* showed that a single or a double removal of the flowering tops of the plant caused a proportional increase in the volatile oil content of the leaves. A decrease in the oil content of the leaves of the control, during flowering, indicates the migration of the oil to the flowers during that period.—M. V. SARDANOVSKY. *Bull. Medicinal and Technical Plants* (U. S. S. R.), 3 (1935), 55–63. (E. K.)

Mint Rhizome—a Planter for Planting. A mechanical device for planting mint rhizomes has been constructed at the Ukrainian Zonal Station of the Institute of Medicinal Plants. Further improvement of the device may solve the problem of planting the rhizomes on a commercial scale. It plants two rows of 8-cm. roots to the depth of 6–8 cm.—S. S. SKRIPNIK. *Bull. Medicinal and Technical Plants* (U. S. S. R.), 3 (1935), 79–88. (E. K.)

Mycological Flora of Nijnie Povoljie—Contribution to. A classified list of fungi growing in the regions of Nijnie Povoljie.—L. I. KAZAKEVICH and A. A. PRISIAJNUK. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 131–156. (E. K.)

Naphthalene—Use of, as Soil Insecticide. Powdered naphthalene, mixed in the proportion of 1 part of naphthalene to 2 parts of ashes or lime, is used as a soil insecticide. At the rate of about 1 pound per 10 square yards, this mixture is dug fairly deeply into the ground around the plants.—ANON. *Pharm. J.*, 136 (1936), 461. (W. B. B.)

Opium—Danish. Cultivation of opium poppy in Denmark was undertaken, with the object of investigating maw seed production and estimating the morphine content of Danish opium and the Danish-grown whole plant. Seventy grams of opium were collected and analyzed. The morphine content was found to be higher than the average, yet no higher than the reported morphine content of opium produced in North and Central Europe. It is thought that the richly manured soil and careful collection and harvesting were responsible for the morphine content being above the average.—ANON. *Pharm. J.*, 136 (1936), 285. (W. B. B.)

Opium Poppy. Fertilizer experiments with *Papaver somniferum* gave sufficient quantities of opium and morphine in spite of the unfavorable meteorological conditions. Fertilization and liming increases opium yield up to 30–40%.—M. I. LEPNOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 51–57. (E. K.)

Peppermint. Fertilizer experiments on peppermint corroborated the available data on the favorable influence of N, P_2O_5 and K_2O fertilizers on the yield of mint. There are also indications that the chemical composition of the oil can be varied by the use of different fertilizers. Investigation of the accumulation of the volatile oil and changes in its composition at different stages of growth showed that the accumulation maximum coincides with the maximum yield. With fertilization this maximum is reached during or near the period of full blossoming; without fertilization it is at the beginning of blossoming.—A. F. KIRILTZEVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 67–87. (E. K.)

Peppermint—Rust of, and Means of Its Control. In Russia, 20–30% of peppermint leaves perish annually from *Puccinia Menthæ* Pers. Greatest injury is caused by the uredosporic stage of the fungus. The infection of every leaf is caused only by a spore lodged in it from the air. Sun rays and temperature below 10° C. and above 25° C. prevent germination. Among the new forms of plants grown from seeds of *Mentha piperita* there are some that are immune to rust. Fertilizers in normal amounts have no influence on the parasite. Richly fertilized areas develop it more strongly. Fall ploughing is the best method of controlling rust. Spraying is directed against the uredosporic stage. Bordeaux mixture causes no reduction of the amount of oil in the leaves, dusting with flowers of sulfur does.—V. I. VERGOVSKY. *Bull. Medicinal and Technical Plants* (U. S. S. R.), 3 (1935), 5–50. (E. K.)

Plant Parasites—Chemicals Used against. The author considers some of the more commonly used means of combating the insects which infest plants as to method of application, value, toxicity toward plants and man. The substances commented upon are: water (inundation of

fields; immersion of plants and seeds in hot water), hydrogen sulfide, sulfur, carbon disulfide, sulfur dioxide, sulfuric acid, chlorine, hydrochloric acid, nitric acid, phosphorus, phosphine, arsine and arsenic trioxide.—A. and R. SARTORY. *Schweiz. Apoth.-Ztg.*, 74 (1936), 149, 161, 177. (M. F. W. D.)

Roses—Mildew of, and Means of Its Control. On the southern coast of Crimea roses suffer from mildew during eight months out of the year. The following treatment is recommended: Destruction of affected shoots; Destruction of last year's leaves; Digging up of the plantation; Spraying in the winter, spring and twice in the summer with solutions of varying concentration of sulfuric acid and sodium silicofluoride (1:500 and 1:1,000 of the former, and 5 gr./liter or 4 gr./liter of the latter).—N. A. MASSALAB. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 133–142. (E. K.)

Seed Disinfectant. The patent provides a dry non-dusting seed disinfectant having its particles coated with a major portion of wool fat and a minor portion of olive oil and/or petrolatum.—FREDERICK L. SHARP, assignor to IMPERIAL CHEMICAL INDUSTRIES. U. S. pat. 2,034,449, March 17, 1936. (A. P.-C.)

Spray Material. The following are claimed as new: (1) a parasiticidal preparation comprising the complex products of the reaction between zinc-lime and lime-sulphur; (2) a process for rendering injurious arsenical plant sprays non-injurious, comprising the addition of zinc-lime thereto; (3) a plant spray comprising zinc nitrate and lime.—JOHN W. ROBERTS, dedicated to the free use of the Government and the People of the United States. U. S. pats. (1) 2,037,656, (2) 2,037,657, (3) 2,037,658, April 14, 1936. (A. P.-C.)

Valerian, Medicinal. Experiments with field and pot cultures of *Valeriana officinalis* suggested the following conclusions: (1) Fertilizers containing nitrogen, P_2O_5 and K_2O increase the root yield to 30–60%; (2) Fertilizers containing N and P_2O_5 produce satisfactory results on freshly broken soil. Large amounts of potassium give unfavorable results. (3) The basic phosphates—dicalcium phosphate, basic slag and neutral phosphate give the best results. (4) The optimum results were obtained by using 60–90 Kg. each of N and P_2O_5 and 45–60 Kg. K_2O per hectare. (5) In case of acid soil liming is necessary.—M. I. LEPNOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 2 (1934), 24–35. (E. K.)

CHEMISTRY

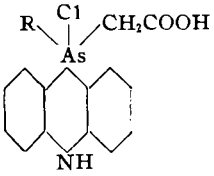
INORGANIC

Selenium Dioxide—Reduction of. Selenium dioxide (SeO_2) is not reduced when pure CO is reacted with it, in direct sunshine. Even when using quartz containers and a mercury-quartz lamp, no reduction of the compound was observed. Heating the compound in glass tubes in an electric oven with mica windows at a temperature of 250°, a slight reduction of the substance was observed. Because of this stability of the compound ($SeCO_2$), it can be sublimed in a stream of CO in quartz containers, without the compound undergoing any chemical change.—E. BARNES. *J. Indian Chem. Soc.* (Jan. 1935), 12–22, Madras, Christian College; through *Chem. Zentralb.*, 106 (1935), 2503. (G. B.)

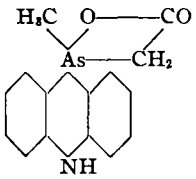
ORGANIC

Alkaloids

Betaine—Synthesis of Some Derivatives of. The compound 10-alkyl-9,10-dihydrophenarsazin was reacted with chloroacetic acid ester and the following derivative was obtained:



If an alkali is added to this compound, it is converted over to a betaine derivative having the following structure:



This compound is easily nitrated. The nitro groups were split up very easily with the weakest reducing agents. The following compounds were thus obtained: 1. 10-Chlormethyl-9,10-dihydrophenarsazin-10-acetic acid, $C_{15}H_{15}O_2NClAs$, soluble in methanol, glacial acetic acid and hot water; slowly soluble in cold water; insoluble in ether, benzene; m. p. 237–238°. 2. 10-Chlormethylbetain-9,10-dihydrophenarsazin, $C_{15}H_{14}O_2NClAs$, insoluble in water, slowly soluble in alcohol; sol. in glacial acetic acid. M. p. 199–203°. 3. Chlormethylbetain-9,10-dihydrodinitrophenarsazin, $C_{15}H_{12}O_6N_3As$, m. p. 163–165°. 4. 10-Chlormethyl-9,10-dihydrophenarsazin-10-acetic acid ethyl ester, $C_{17}H_{19}O_2NClAs$, m. p. 198°. It reacts with $AgNO_3$ to give a nitro salt $C_{17}H_{19}O_6N_2As$, m. p. 179°. 5. 10-Chlorethyl-9-10, dihydrophenarsazin-10-acetic acid ethyl ester, $C_{19}H_{21}O_2NClAs$, m. p. 201–204°. This compound produced a nitro salt with $AgNO_3$:-$C_{18}H_{21}O_6N_2As$, m. p. 170°.—G. A. RASUWAJEW, W. S. MALINOWSKI and S. JE ARKINA. *Chem. J. Ser. A. J. Allg. Chem.* (*Russ. Chimitscheski Shurnal. Sser. A. Shurnal Obschtschei Chimii*), 5 (67) 1935, 575, *Leningrad Staatl. Hochdruckinst.*, through *Chem. Zentralb.*, 106 (1935), 2520. (G. B.)

Cinchona—Cultivation of, in Amani, Tanganyika Territory. A short historical survey of the cultivation of cinchona in Amani is given. The alkaloidal content of the various barks in different years is recorded, the highest obtained at any time being 10.55% of quinine, expressed as sulfate in Ledger bark and 11.21% in hybrid bark. *Cinchona Ledgeriana* is found to yield considerably less weight of bark per tree than the other species of cinchona. The market value per tree is highest for hybrid bark and lowest for Ledger bark. The preparation of cinchona febrifuges and their composition is described. The species cultivated were *Cinchona Ledgeriana*, *C. succirubra*, hydrid and *C. robusta*. The *C. robusta* bark gave a low quinine yield, and a high percentage of cinchonidine. In 1930, the total alkaloids from this species was only 5.76%.—R. R. LE G. WORSLEY. *Bull. Imp. Inst., Lond.*, 33 (1935), 14; through *Quart. J. Pharm. Pharmacol.*, 8 (1935), 731. (S. W. G.)

Colchicine—a New Plant Containing. A lily, *Androcymbium granineum* McBridge, indigenous to Central and South Sahara is especially poisonous to camels and goats. It was analyzed and all parts of the plant were found to contain an alkaloid identified as colchicine. The seeds contained 0.37% colchicine and the bulbs 0.29%.—EMILE PERROT. *Compt. rend.*, 202 (1936), 1088. (G. W. H.)

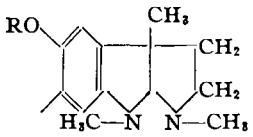
Ergometrine—Dimorphism of. During the process of preparing ergometrine a modification has been isolated which crystallizes from acetone in long needles, m. p. 212° (decomp.). It has also been found that the low m. p. form 162–163° tends to pass into the high melting point form on keeping, and that the transformation of the former into the latter can be effected rapidly by crystallization in the presence of a crystal of the form melting at 212°. The more stable form is also the less soluble. Both modifications have the same specific rotation, $[\alpha]_{5461}$ + 62.6, $[\alpha]_D^{20°}$ + 42.2 (C = 1.7 in dehydrated alcohol) for the solvent-free substance.—R. L. GRANT and S. SMITH. *Nature*, 137 (1935), 152; through *Pharm. J.*, 136 (1936), 146. (W. B. B.)

Ergometrine—Optical Properties of. Ergometrine has an ultraviolet absorption band with maximum at 3,160 Angstrom. A number of commercial preparations were examined. For those of the highest purity $E_1^{1\%}{}_{cm.}$ was 186, while the least pure had for this the value 173 (calcd. for water-free ergometrine base). The strong blue fluorescence shown by the solutions on irradiation is evidence that the absorption of light is affecting the molecular structure and it was found that a comparatively short irradiation (in the 15 min. of taking spectrograms by light of a mercury quartz lamp at about 60 cm. distance) results in a decrease of the absorption at 3,160. With continued irradiation a new absorption band is evident with maximum at 2,890 Angstrom and a slightly lower E value than for the unaltered molecule. With 7 minutes' irradiation of an 0.001% solution of ergometrine in 1% alcohol in a layer of 4 cm. thickness at 40 cm. from the mercury arc the decrease of E is 10%. With continued irradiation the new "secondary" absorption band also disappears. A relatively simple differentiation between ergometrine and the other ergot

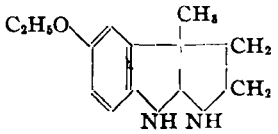
alkaloids becomes possible, for ergotamine and ergotoxine do not have the property of forming this secondary band and their primary absorption bands are more stable.—I. BENNEKOU and S. A. SCHOU. *Dansk Tids. Farm.*, 10 (1936), 105. (C. S. L.)

Ergonovine—New Ergot Alkaloid. During the past year, communications from four laboratories have been published reporting the isolation of a new oxytocic alkaloid from ergot. Until recently there has been doubt as to whether or not the principles reported by these laboratories were identical (termed "Ergotocin" by Kharasch, "Ergometrine" by Dudley and Moir, "Ergobasine" by Stoll and "Ergostetrine" by Thompson). In a jointly signed statement (*Science*, Feb. 28th) Kharasch, King (acting for Dudley), Stoll and Thompson say there is "no doubt that the alkaloid obtained in the four different laboratories was the same substance..." It is necessary, therefore, that a suitable non-proprietary name which is not therapeutically suggestive be adopted for the new alkaloid. Not one of the several names that have been proposed by the discoverers complies with these requirements. The Council on Pharmacy and Chemistry of the American Medical Association in session March 14th, therefore, determined to adopt the new, non-proprietary name "Ergonovine" (ergo-nov-ine). The Council concedes to the discoverer of a product the right to the use of a proprietary name. It cannot, however, accept more than one proprietary name because of the confusion to which such practice gives rise. In the present case several different names have been proposed. It seems impossible to establish undisputed priority. The Council has decided therefore that it would recognize no proprietary name.—AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY. *J. Am. Med. Assoc.*, 106, (1936), 1008; through *Squibb Abstract Bull.*, 9 (1936), A-448.

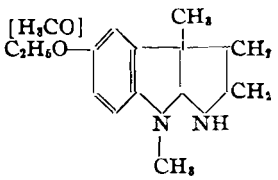
Eserine—Synthesis of. Attempts were made to produce *d,l*-eserethol (I)



in using CH_3I, + *d,l*-dinoreserethol (II)

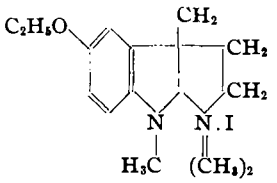


but with negative results; the starting material was recovered as iodohydrate, and *d,l*-methyleserethol picrate (m. p. 150–151°) was obtained from the mother liquor. From the benzoate of dinoreserethol + CH_3I, and in the presence of sodium benzoate, the methopicrate was obtained. The product melts at 174–175° and contains 2 molecules of picric acid. If sodium carbonate is used in place of sodium benzoate, *d,l*-eseretholmethopicrate was isolated from the picrate solution; *d,l*-noreserethol and *d,l*-noresermethol (III),



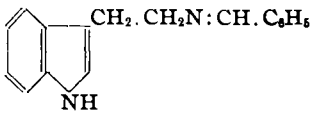
respectively, were obtained from the dinor-base in heating the iodo- and chlorhydrate with CH_3I. It was possible to obtain the optical cleavage of dinoreserethol in the same manner as that of dinoresermethol with the difference that *d*-tartaric acid was used in the former reaction. *d*- and *l*-Noreserethol were obtained from *d*- and *l*-dinoreserethol, respectively, using CH_3I and heating on a water-bath. Both of these bases were purified from solution as *d*-bitartrates. *d* and *l*-Eserethol-

iodomethylate was obtained from *d*- and *l*-noreserethol + CH_3I, respectively. Natural eserine and the synthetic eserethol iodomethylate (IV)

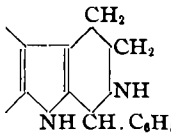


melt at 168–169°. Synthetic *d*- and *l*-eseretholmethopicrate and that obtained from eserine directly melt at 189–190°. *d,l*-Eseretholmethopicrate obtained from *d*- and *l*-eseretholmethopicrate melts at 190–191°. Finally *l*- and *d*-esermetholmethopicrate and *d*-methylesermetholpicrate were obtained from *d*- and *l*-dinoreseremethol benzoate + CH_3I in the presence of sodium benzoate, respectively. Because these products were obtained through the optical cleavage of the racemic compounds, which were identical with those obtained from natural eserine, the formula of eserine which was obtained synthetically was proved to be correct in all respects.—T. HOSHINO and T. KOBAYASHI. *Liebigs Ann. Chem.*, 516 (1935), 81–94; Tokyo-Ookagama, Techn. Univ. Tokyo; through *Chem. Zentralb.*, 106 (1935), 2523. (G. B.)

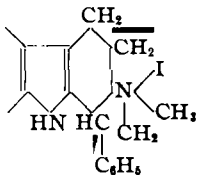
Eserine—Synthesis of. The authors state that if 5-methoxytryptamine is used in place of tryptamine-5-ethoxy in the preparation of synthetic eserine, the starting material would be dinoresermethol and not dinoreserethol. The optical cleavage of dinoresermethol was attained in using *d*-bromcamphorsulfonic acid and *d*-tartaric acid, and because of the properties of the optically active dinoresermethols, use was made of the benzoate which is soluble in ether. In reacting CH_3I on tryptamine we obtain only the quaternary iodide. Heating benzaltryptamine (I)



with CH_3I in a tube on the water-bath, the products (II)



and (III)



were obtained in place of the expected secondary base. The chlorhydrate of the first base is obtained by introducing HCl into the alcohol or benzene solution of the base or simply adding concentrated HCl to a hot alcohol solution of the base.—T. HOSHINO and Y. KOTAKE. (*Liebigs Ann. Chem.*, 516 (1935), 76–80; through *Chem. Zentralb.*, 106 (1935), 2523. (G. B.)

Novocaine—Halogen Derivatives of. The synthesis of the halogen derivatives of novocaine such as 4-brom-2-amino benzoic acid could be produced in three different ways. The authors claim that the most convenient manner in which to obtain it is the following: 2-Nitrotoluol → 4-

brom-2-nitrotoluol → 4-brom-2-aminotoluol → 4-brom-2-acetaminotoluol → 4-brom-2-acetaminobenzoic acid → 4-brom-2-amino-benzoic acid. *4-Brom-2-Nitroacetanilid* was obtained as follows: 4-Brom acetanilid (obtained from acetanilid and Br in glacial acetic acid) was mixed with a concentrated solution of H_2SO_4 in which one mole of Na_2CO_3 was dissolved; after twenty minutes, the mixture was poured over ice. Yellow needle-like crystals separated out from an alcoholic solution. M. p. 103°. *4-Brom-2-Nitroanilin.*—If the crystals which were previously obtained were moistened with 50% H_2SO_4 and heated on a water-bath for half an hour, yellowish crystals separated out from a dilute alcoholic solution. *4-Brom-2-Nitrobenzonitrile.*—When the crystals obtained in the previous experiments were diluted with HCl and Na_2CO_3 and stirred for at least ten hours, separated from the unchanged amines, $K_3CN(CN)_4$ added to it and the mixture steam distilled, scaly crystals separated out. M. p. 98°. *4-Brom-2-Nitrobenzoic Acid* can be prepared either by boiling the former derivative with 50% H_2SO_4 until dissolved or by using 4-brom-2-nitrotoluol with 30% HNO_3. *4-Brom-2-Nitrotoluol.*—A mixture of 13 Gm. of 2-nitrotoluol and 20 Gm. of iron filings was slowly mixed with 200 Gm. of bromine, heated, the oily substance washed with 10% NaOH and then steam distilled for several days. Crystals separated out from absolute alcohol. *4-Brom-2-Aminotoluol* was obtained by heating the above crystals in 10% HCl, iron filings added to it until the oily substance dissolved completely, then steam distilled. *4-Brom-2-Acetaminotoluol* was obtained by boiling the former product for eight hours with acetic anhydride, then diluting with water. White crystals separated out from the solution of glacial acetic acid to which diluted alcohol had been previously added. M. p. 165°. *4-Brom-2-Acetaminebenzoic Acid.*—Magnesium sulfate was added to the former compound, and then the mixture was heated with $KMnO_4$, the color removed with alcohol and HCl added to it. White needle-like crystals separated out from either water or diluted alcohol. *4-Brom-2-Aminobenzoic Acid* can be produced in two ways: (1) 4-Brom-2-nitrobenzoic acid may be heated with concentrated HCl, iron filings added until the odor completely disappears and then filtered. Needle-like crystals separate out from an alkaline solution. (2) The preceding derivative was moistened with alcohol and heated with 50% H_2SO_4, diluted with water, neutralized and precipitated with HCl. White needle-like crystals separated out. M. p. 222°. *β-Chlorethylester.*—The last derivative was warmed up with concentrated H_2SO_4 and ethylenechlorhydrin and precipitated out on the addition of water. Yellow flake crystals separated out. *4-Brom-2-Aminobenzoyldiethyl Aminoethanol.* The preceding derivative was heated for ten hours with $NH(C_2H_4)_2$; it was then extracted with absolute ether, HCl added to it and the base separated with K_2CO_3 and ether. On the addition of alcoholic HCl, the hydrochloride ($C_{13}H_{20}O_2N_2CLBr$) was obtained from an alcoholic solution separating out in white needle-like crystals, m. p. 166°. The crystals had a bitter taste and also an anesthetizing effect when placed on the tongue.—J. FREJKA and F. VYMETAL. *Coll. Trav. Chem., Tschek.*, 7 (1935), 436 BRNO. (Tscheeh.) Masaryk Univ.; through *Chem. Zentralb.*, 107 (1936), 52. (G. B.)

Organic Bases—Salts of, Having Special Properties. Process of Preparation. Anesthetic bases are combined with organic acids that swell gelatin in order to obtain alkaloidal salts of enhanced activity. A double decomposition can be effected between salts of the anesthetic base and magnesium, potassium, etc., salts of the organic acids, the p_H being kept between 4 and 6.—J. L. REGNIER. Belg. pat. 410,682, Oct. 31, 1935. (A. P.-C.)

Phenylpseudopelletierine. Alpha-phenyl-glutardialdehyde, prepared by treating a methyl alcohol solution of phenylacetaldehyde and acraldehyde with sodium methoxide solution, condensed with acetone-dicarboxylic acid by chalk, methyl alcohol and methylamine yielded 6-phenylgranatan-3-one (phenyl-ψ-pelletierine (2,4-dipiperonylidine derivative, m. p. 210°). Similar reaction with acetaldehyde yielded a basic oil, but no ψ-pelletierine.—B. K. BLOUNT. *J. Chem. Soc.* (1936), 287–288. (G. W. F.)

Quinine Compound. Diethylacetyl ester of quinine is claimed as new.—HANS KAUFMANN. U. S. pat. 2,039,802, May 5, 1936. (A. P.-C.)

Sterilization of Medicinal Preparations. *I. Dextrose.*—Solutions of dextrose were shown to decompose appreciably with an increase in temperature. *II. Quinine Hydrochloride.*—2% solutions are thermostable at temperatures as high as 142° C. for 60 minutes. *III. Colchicine.*—May be sterilized in an autoclave. *IV. Dihydroiodeinon hydrochloride (Dicodid).*—1% solutions undergo a greater change upon storing than upon heating; short heating under pressure is no more harmful than a longer heating at 100° C.; the compound is considered quite stable to

heat. *V. Ethylmorphine Hydrochloride* (*Dionin*).—Contrary to the usual belief this compound is shown to be very stable; a 1.5% solution may be sterilized in an autoclave. *VI. Dihydromorphinon Hydrochloride* (*Dilaudid*).—1% solutions are thermostable. *VII. Emetine Hydrochloride* is stable to heat. *VIII. Ephedrine* as a 2% solution is stable to heat and storage. *IX. Ephetonin* (*synthetic racemic ephedrine*).—2% solutions show a greater change on storage than on heating and may be considered thermostable. *X. Dihydroxycodeine* (*Eucodal*).—1% solution is thermostable. *XI. Homatropine hydrobromide* (0.2% solution) is found to be sensitive to heat. *XII. Hydrostinine Hydrochloride* (1%) is affected by heat and storage. *XIII. Hyoscyamine Hydrochloride* (1% solution) is more affected by storage than by heat toward which it is reasonably stable. *XIV. Laudonon* (1% solution) is thermostable. *XV. Narcophin* (Morphine-narcotine meconate) (1% solution) is more affected by storage than by heat and may be considered thermostable. *XVI. Sodium benzoate* is heat stable. *XVII. Papaverine Hydrochloride* (1% solution) is thermostable and responds to storage. *XVIII. Paracodin Hydrochloride* (2%) is stable to heat and storage. *XIX. Pilocarpine Hydrochloride* is thermostable. *XX. Resorcin* (2% solution) is stable to heat. *XXI. Rivanol* (2% solution) is stable to heat up to temperatures of 142° C. for 40 minutes. *XXII. Sparteine Sulfate* (2% solution) is thermostable. *XXIII. Strychnine* salts are shown to be stable to heat and storage. *XXIV. Trypaflavin* (1% solution) is heat stable. *XXV. Yohimbine Hydrochloride* is stable to storage and heat.—F. SCHLIMMER and O. SCHMIZ. *Apoth. Ztg.*, 51 (1936), 426–428; 447–449.

(H. M. B.)

Yohimbine—Dehydrogenation of. Heating yohimbic acid with maleic acid in aqueous solution and then for 5 hours longer in presence of platinum black yields tetradehydroyohimbic acid, which melts with decomposition at 335° and gives an aqueous solution with a blue fluorescence. Methylation of this acid with diazomethane or with methanol saturated with hydrogen chloride gives yellowish tetradehydroyohimbine, which melts at 256° to 265.5° and has a specific optical rotation at 25° of 289.9°. On heating with caustic potash in amyl alcohol solution, it gives harmane and toluylic acid. The ethyl ester of tetradehydroyohimbic acid, obtained by saturating an alcoholic solution of acid with hydrogen chloride gas, melts with decomposition at 281° to 282° and has a specific optical rotation at 25° of 245.2°. Deoxy-yohimbic acid, treated with maleic acid and platinum black as above, gives tetradehydrodeoxy-yohimbic acid, which on methylation gives tetradehydrodeoxy-yohimbine, which occurs as plates that decompose at 251°. By Curtius' reaction, yohimbine gives yohimbylamine, dehydrogenation of which gives tetradehydro-yohimbylamine.—R. MAJIMA and S. MURAHASHI. *Coll. Papers Fac. Sci. Osaka*, 2 (1935), 341–344; through *Chimie & Industrie*, 35 (1936), 372. (A. P.-C.)

Essential Oils and Related Products

Aromatics—New Procedures in the Chemistry of. A continuation of a review dealing with esters used in perfumes.—A. LEWINSON. *Riechstoff-Ind. Kosmetik*, 11 (1936), 77–80.

(H. M. B.)

Artemisia Caspia Citriodora Kazakevicz—Investigation of Essential Oil of. Steam distillation of the dry herb, collected at budding, yielded 30% volatile oil of the following composition: *a*- and *b*-citral 34%, *l*-camphor 8.8%, α-pinene 1.0%, camphene 2.4%, borneol about 19%, liquid alcohol (geraniol?) 16%, cresol 2.0%, valeric acid 3.0%, cadinene 4.0% and resin 10.8%. The oil can be of wide application in industries.—S. J. SPIRIDONOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 19–30. (E. K.)

Artemisia Maritima Astrachanica Kazakevicz—Investigation of the Essential Oil Obtained from. Steam distillation of the dry herb, collected at budding, yielded 0.61% of volatile oil of the following composition: *l*-camphor 63.5%, *l*-α-pinene 14.5%, *l*-camphene 5%, *l*-borneol 9%, acetic acid 1.5% and resin 2.5%.—S. J. SPIRIDONOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 45–52. (E. K.)

Camphor—Sources of. The native *l*-camphor-containing plants in U. S. S. R. are *Artemisia maritima*, *Ocinum*, *Salvia* and others, *Artemisia maritima* being of the greatest commercial importance. Optically inactive camphor is produced synthetically from oil of turpentine.—S. I. SPIRIDONOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 43–45.

(E. K.)

Citral—Sources of. A number of plants yielding citral-containing essential oils have been investigated and their cultivation begun on a commercial scale. The most important of these is a cultivated variety of lemon sorgo similar to those used as a source of lemongrass oil in other countries. It yields 0.3–0.5% volatile oil containing 50–70% citral. The oil differs from imported lemongrass oils by the presence in it of myrcene methyl-heptyl-ketone and the absence of methyl heptenone, dipentene, limonene and citronellal. A native source of citral is *Dracocephalum moldavica* which yields 0.07–0.12% oil containing 15–40% citral. Sources of citral-containing oils, the isolation of citral from which is considered inexpedient, are *Lippia citroiodora* yielding 0.15–0.30% oil containing 20–32% citral, and *Nepeta cataria* yielding 0.05–0.14% oil containing 4.5–15% citral.—I. V. VINOGRADOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 15–19. (E. K.)

Citral and Its Sulfonates. Citral *o*-sulfonate is prepared by treatment of citral with molar lithium bisulfite solution in the presence of HCl. Treatment of this solution with NaOH results in the formation of citral *o*-α-disulfonate. Treatment with additional NaOH forms citral α-sulfonate. Additional NaOH and gentle heat results in citral ω-sulfonate. Using dimolar lithium bisulfite, a labile *o*-α-disulfonate is first formed which, with gentle heat, yields stable α-ω-disulfonate. Isolation of the α- and *o*-ω-forms presents much difficulty. In the case of citronellol, where no α-compound is formed, the migration of the sulfonic group from *o* to ω is very slow, if at all.—F. D. DODGE. *Am. Perfumer*, 32 (1936), No. 3, 67. (G. W. F.)

Citronella Oil, Java. A commercial review on the production and export of the Java citronella oil is given.—A. F. HACCOU. *Perfumery Essent. Oil Record*, 27 (1936), 112. (A. C. DeD.)

Cymbopogan Georingii—Volatile Constituents of. *Cymbopogan Georingii* Hondo (Grass family) is widely distributed in Japan. Its inflorescence has an aromatic odor and when distilled with steam yielded about 1% of pale yellow oil with constants: d_{20}^{20} 0.9585; $[\alpha]_D^{13}$ −34.96°; n_D^{17} 1.52128; acid No. 0; sap. No. 12; sap. No. after acetyl, 30.6; methoxyl 25.4%; aldehydes and phenols (volumetric assay) practically none. By fractional distillation of the oil under reduced pressure and appropriate subsequent treatment the following constituents of the oil were identified: camphene (isoborneol: m. p. 212°; phenylurethane, m. p. 139°); *l*-cadinene ($[\alpha]_D^{25}$ −106°; dihydrochloride, m. p. 117° and same mixed m. p.; dihydrobromide, m. p. 123°); borneol, elemicin ($KMnO_4$ oxidation to gallic acid-trimethylether; iso-elemicin dibromide, m. p. 89–90°; dihydroelemicin by PtO-catalyzed reduction, b. p. 120–25° at 3 mm.).—T. KARIYONE and A. MAJIMA. *J. Pharm. Soc. Japan*, 55 (1935), 14–16. (R. E. K.)

Larch Turpentine. A discussion of the gathering and employment of the balsam from *Pinus laricio*.—ERNEST GUENTHER. *Am. Perfumer*, 32 (1936), No. 5, 59–60. (G. W. F.)

Lovage. A brief review of the characteristics of oils of lovage fruit, fresh herbs and inflorescences, and roots, respectively.—G. IGOLEN. *Parfums de France*, 14 (1936), 70–73 (in French and English). (A. P.-C.)

Menthol, Synthetic—Pharmacopœial Requirements Which Should Be Established. Methods for preparing this compound are offered. The following is offered in a monograph: *Mentholum Syntheticum*, $C_{10}H_{19}OH$, Synthetic Menthol, molecular weight 156.2, pointed, brittle, colorless crystals with a peppermint-like odor and taste, only slightly soluble in water, soluble in ether, chloroform and alcohol, m. p. 34–36° C., congealing point 28° C. The compound has two congealing points—one at 28° C. and then at 31–32° C., inactive to polarized light. Tests for identity, cresol, thymol and unsaturated compounds as impurities are included. The compound must feel dry and when pressed between smooth white paper leave no spots on the paper; when heated on a water-bath no residue remains.—K. WINTERFELD and HANNS VON COSEL. *Apoth. Ztg.*, 51 (1936), 600–602. (H. M. B.)

Musk Odor—Many Membered Rings and. A review of the experimental data on compounds indicates that (1) the musk odor (A) is bound with a very definite ring size, namely, 15–17 members; (2) in order for (A) to be present in any form the basic ring structure must contain at least 14 and less than 19 members, at least one C=O or =NH group; (3) a second C=O group completely destroys the odor; (4) the substitution of one ring member by a heterocyclic oxygen atom increases the intensity of (A) and displaces it in the direction of ambergris; (5) the substitution of 2 or more ring members by heterocyclic atoms decreases the intensity of (A) and renders the tonality coarser; (6) if the ring contains 2 heterocyclic atoms in addition to 2 carbonyl groups

the compounds have a faintly sweet odor resembling musk and is stronger than that of diketones; (7) the lactones are the most interesting compounds in the series; (8) by far (A) is best given by the 16-membered cyclic lactone of 15-hydroxypentadecanoic acid (Exaltolide) $(CH_2)_{14}C=O$; O; $CH.(CH_2)_8O$ $CH.(CH_2)_5C=O$ shows itself to be of equal quality to that in (8). The value of these compounds to the perfumer is discussed.—M. STOLL. *Drug and Cosmetic Ind.*, (1936), 334, 336–337. (H. M. B.)

Oakmoss (Mousse de Chene). A review including the uses of this substance in perfumes. ALFONS M. BURGER. *Riechstoff-Ind. Kosmetik*, 11 (1936), 41–44. (H. M. B.)

Oil of Peppermint—Negative Influence upon, of Its Flower Oil. Experiments on oil of peppermint lead to the following conclusions: Volatile oil from the flowers of peppermint contains a dextrorotatory component. The quantity of this component in the oil increases at the beginning of blossoming. In an oil obtained from the whole plant the quantity of the *d*-component may increase in proportion to the increased percentage of flowers in the raw material. A considerable amount of flower oil in oil of peppermint causes deterioration of the oil during storage.—A. I. BANKOVSKY and F. S. TANASIENKO. *Bull. Medicinal and Technical Plants* (U. S. S. R.), 3 (1935), 65–78. (E. K.)

Oil of Pinus Picea. A discussion of the marketing, composition and properties of the oil of *Pinus picea* (*Picea excelsa* Lk., *Picea vulgaris* Lk., "Norway Spruce"). The properties of oils from Tyrol and Yugoslavia are reported: specific gravity (15° C.), 0.882, 0.883; optical rotation $[\alpha]_D$ −25°30′, −27°15′; refractive index (n_D20° C.), 1.4763, 1.4753; ester value, 22.1 = 7.8%, 27.2 = 9.5% bornyl acetate; ester value after acetylation 40.8 = 11.3%, 43.7 = 12.2% total borneol, soluble in 8 volumes, 7 volumes of 90% alcohol with turbidity. The boiling range is also reported; the former had the highest range. The oil is little known and rarely found on the market.—ERNEST GUENTHER. *Am. Perfumer*, 32, No. 4 (1936), 62. (G. W. F.)

Oil of Pinus Pumilio. A discussion of the distillation, chemical composition, physical and chemical properties, adulteration and employment of dwarf pine needle oil (*P. pumilio* Haenke, *P. Montana* Mill.). The properties for oil obtained from Northern and Southern Tyrol were found to be, respectively: specific gravity (25° C.) 0.864, 0.863; $[\alpha]_D$ −11°50′, −10°55′; n_D20° 1.4777, 1.4765; ester value 21.5, 16.6 = 7.5, 5.87 barnylacetate; ester value after acetylation 41.0, 41.9 = 11.1, 11.6% total borneol; soluble in 6 volumes 90% alcohol with turbidity, with slight turbidity. The principal boiling range was 165–180° C. Adulteration is frequent by both distillers and exporters. The oil is used as a perfume and in medicine.—ERNEST GUENTHER. *Am. Perfumer*, 32 (1936), No. 5, 57–59. (G. W. F.)

Oil of Pinus Sylvestris. A discussion of the marketing, composition and properties of oil of *Pinus sylvestris* L. The latter were found to differ in oils obtained from different localities—Eastern Tyrol, Southern Tyrol, Northern Tyrol and Yugoslavia: specific gravity (15° C.), 0.871–0.876; optical rotation, $[\alpha]_D$ −1°35′ − +2°12′; refractive index (n 20° C.), 1.4743–1.4773; ester value 9.8–10.6 = 3.4–3.7% bornyl acetate; ester value after acetylation, 19.4–20.8 = 5.3–5.8% total borneol, soluble in 5–6 volumes of alcohol with turbidity. The boiling range for each is reported, that of Eastern Tyrol having the lowest. Adulterants are limonene, oil of turpentine and oil of camphor. The oil is employed in toilet and medicinal preparations.—ERNEST GUENTHER. *Am. Perfumer*, 32, No. 4 (1936), 60–61. (G. W. F.)

Oil of Savin. A discussion of the marketing, composition and properties of oil of *Juniperus sabina* L. The properties of oils from Virgen Valley and Oetz Valley are reported: specific gravity, (15° C.) 0.928, 0.913; optical rotation $[\alpha]_D$, 64°30′, 59°40′, refractive index n_{D20}(112°), 1.4722, 1.4726; ester value, 126.8, 117.5; ester value after acetylation 126.8, 117.5; both soluble in 0.5 and more volumes of 90% alcohol. The boiling range is also reported. The oil is employed in pharmacy.—ERNEST GUENTHER. *Am. Perfumer*, 32, No. 4 (1936), 63. (G. W. F.)

Oil of Silver Pine. A discussion of the manufacture, composition and properties of oils obtained from the silver pine (*Abies alba* Mill.). The leaves yield 0.25–0.3% of oil having the following constants: specific gravity (15°): 0.873–0.875; optical rotation: −41°8′ to −47°34′; refractive index (20°): 1.4740 − 1.4749; ester content as bornyl acetate: 5.2–7.2%; solubility: soluble in 5 or more volumes of 90% alcohol; the constants and boiling range of samples

from Eastern Tyrol, Northern Tyrol and Yugoslavia are also reported. The oil is used in both salts, etc., and in medicine in treatment of asthma, etc., by inhalation, externally for rheumatism, and as a flavoring for cough drops. Silver pine cones yield about 0.66% of oil with the following constants: specific gravity (15°): 0.857–0.873; optical rotation: −70°50′ to −78°48′; refractive index (20°); 1.4737–1.4758; ester content as bornyl acetate: 0.3–0.39%; soluble in 5 volumes of 90% alcohol to turbid in 10 volumes 90% alcohol. The constants and boiling range of samples from Tyrol, Yugoslavia, Switzerland and the Black Forest are also reported. This oil is usually employed in conjunction with other pine oils. Silver Pine Balsam, "Strassburger Turpentine," is gathered from drops which exude on the surface of the bark. It has the following properties: specific gravity (15°): 0.988; optical rotation: +3°4′; refractive index (20°): 1.5160; acid value: 72.8; saponification value: 83.1—ERNEST GUENTHER. *Am. Perfumer*, 32 (1936), No. 3, 62–65. (G. W. F.)

Pine Needle Extracts. Concentrated aqueous extracts are prepared from all kinds of pine needles. One sample had the following properties: acid value 47.6%, saponification value 90.5%, insoluble in 95% alcohol 32.1%, loss by heating (steam-bath) 40.9%, ash content 3.2%.—ERNEST GUENTHER. *Am. Perfumer*, 32, No. 5, (1936), 60. (G. W. F.)

Pinus Cembra Oil. A sample of pure Tyrolean oil of *P. Cembra* L. had the following characteristics: specific gravity (15° C.) 0.876; $[\alpha]_D$ − 10°30′; n_D (20°) 1.4754, ester value 18.5 = 6.5% bornyl acetate; ester value after acetylation 27.1 = 7.5% total borneol; solubility positive in 9 volumes 90% alcohol with turbidity. Over 40% boils at 160–165°.—ERNEST GUENTHER. *Am. Perfumer*, 32, No. 5, (1936), 59. (G. W. F.)

Thymol—Sources of. A review of the world sources of thymol. The leading sources of thymol and thymol-containing oils in U. S. S. R. at the present time are *Carum Ajowan*, the seeds of which yield 2.3–6.7% of essential oil containing 30–50% thymol, and several varieties of wild thymus growing in the steppes, the oil from some of which (*Thymus eltonicus*) contains as much as 30% thymol.—I. V. VINOGRADOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 31–35. (E. K.)

Thymus Eltonicus, Klokov et D.-Sch.—Composition of the Essential Oil of. The author gives the following constants for the volatile oil obtained from *Thymus eltonicus:* specific gravity at 20° C. 0.8927–0.9218, optical rotation −4.96° to −8.8°, refractive index at 20° C. 1.4893–1.4977, acid value 1.58–4.42, ester value 8.76–22.3, ester value after acetylization 155.1, solubility in 90% alcohol 1 in 0.1, in 80% alcohol 1 in 0.7, in 70% alcohol 1 in 1.6–1.8. The oil contains 26.4–48.26% phenols which, with the exception of traces of liquid phenols, are thymol. The fraction of the oil boiling under 176° C. contains *l*-α-pinene 25%, *l*-camphene 5%, cineol 2% and para-cymene 20%. The alcohol portion consists of borneol 90% and *d*-linalol 10%. The highest boiling fraction contains sesquiterpenes.—I. V. VINOGRADOVA. *Bull. Medicinal and Aromatic Plants* (U. S. S. R.), 1 (1933), 35–42. (E. K.)

Yarrow—Volatile Oil from Western. Taxonomists disagree on whether *Achillea Millefolium* Linné and *Achillea lanulosa* Nuttall are distinct plants, so constants of the volatile oil of the latter were determined. Report is made about collection of material and method of investigation. Constants are given for it and for the volatile oil of *Achillea Millefolium* Linné. There is a difference in color and in chemical and physical constants. Difference might be due to soil, climate or to being a different species. It is apparent that laboratory control is necessary in acceptance of products from new geographical sources even though taxonomists say the plants are identical.—R. L. MCMURRAY. *J. Am. Pharm. Assoc.*, 25 (1936), 304. (Z. M. C.)

Fixed Oils, Fats and Waxes

Abies Balsamea (L) Miller—Chemical Examination of Seeds of. The seeds were found to contain noticeable quantities of oleoresin situated between the placenta scale tissue of the husk and the endosperm. The dry seeds contained 19.8% oleoresin and 11.7% of fatty oils. The fatty oil, the physical and chemical constants of which are given, was shown to be essentially glycerides of stearic, oleic, linoleic and linolenic acids. A report of the examination of the oleoresin is not given.—S. R. BENSON and H. N. CALDERWOOD. *J. Am. Chem. Soc.*, 58 (1936), 523. (E. B. S.)

Cherry Kernel Oil. A sample of the oil had a light golden-yellow color, bland odor and taste, Sp. Gr. 25° 0.917, soluble in ether, chloroform, benzene, slightly soluble in alcohol, congeal-

ing point below −12° C., acid value 0.1, saponification value 191.0, iodine value 113, negative to the U. S. P. X tests for cottonseed, paraffin and fixed oils. The oil corresponds in many respects to sweet almond oil; skin tests indicate that it causes no irritation and that it might serve as a substitute for the last named oil in cosmetic preparations.—F. SPITALERI. *Drug and Cosmetic Ind.*, 38 (1936), 331–332. (H. M. B.)

Chiu-Hsiang-Chung—Fatty Oil of the Chinese Insect Drug. According to Ouchi the drug "Chiu-hsiang-chung" is derived from *Aspongopus chinensis* Dallas, an insect found along the rivers of S. China and Formosa. Its use in medicine is at least 400 years old. Among the old Chinese materia medicas the name appears first in the "Sheh-sheng-chung-miao-fang" and was later introduced into the "Pan-tsao-kan-mu." It was used for ailments of the stomach, kidney and spleen, and as a sexual tonic. Also it was an ingredient in a pill called "Wu-Lung." Ether extracted a fatty oil which was characterized by: Sp. Gr. 0.8766; acid No. 17.1; sap. No. 188.5; ester No. 171.3; acetyl No. 170; iodine No. 55.3; Reichert-Meissl No. 2.5; Polenske No. 1.1. Stearic acid separated after prolonged storage. In addition, palmitic and oleic acids were identified. The peculiar odor of the oil was thought to be due to a ketone (positive fuchsin color reaction), but no definite substance could be isolated with bisulfite.—L. C. WAUNG. *J. Pharm. Soc. Japan*, 55 (1935), 8–14. (R. E. K.)

Cod Liver Oil—Physical and Chemical Constants of. The effect of various factors on the physical and chemical constants of cod liver oil, and in particular, any relationships to decrease the vitamin A content, are studied on fifteen oil specimens of pharmacopœial grade. Color in Lovibond yellow units, viscosity, acidity, saponification value, iodine value, unsaponifiable residue, sulfuric acid test and antimony trichloride test are tabulated. A few oils also received bio-assay for vitamin A, but this is chiefly followed by spectroscopic assay, and the extinction values calculated to international units. It is shown that the vitamin A may largely be oxidized without alteration of the chemical constants. However, if one or more constants have been altered beyond pharmacopœial limits, it is practically certain that vitamin A has been destroyed. Storage conditions markedly affect the antimony trichloride value and the spectrographic value. The greatest loss occurs in colorless bottles exposed to sunlight and but partly filled, hence with a layer of air above the oil. Storage in full, brown bottles is much better; with such storage at 2° C., there is little loss even at 2 years. Loss in spectrographic value practically parallels loss in blue value. Only with very drastic treatments are the other constants of the oils altered. Despite loss of blue value to zero in 21 months, other physical constants of an oil remained unchanged. The spectrographic determinations were made on the unsaponifiable fraction. This was extracted with 4 portions of ether, the extract evaporated to 100 cc. and the optical and blue value determinations made on aliquots, evaporated and taken up in other solvents. Oxidation causes the formation of a light absorbing substance which interferes with the spectrographic test, and which passes into the unsaponifiable fraction. If flavoring agents had been added to the oils, the unsaponifiable matter was purified by freezing from methyl alcohol, or by digitonin precipitation. Even when more than half the vitamin A was destroyed, the vitamin D value, by bio-assay, remained unaltered. The conversion factor from extinction values to International units of vitamin A, is taken as 1,600. The spectrographic method followed that outlined by the Vitamin Congress in 1934.—H. R. V. LINDHOLM. *Dansk Tids. Farm.*, 10 (1935), 25. (C. S. L.)

Olive Oil—Presence of Hydrocarbons in the Product Removed by the Deodorization in the Refining of. Deodorization of crude olive oil by distillation with superheated steam removes 0.1 to 0.2% of a fatty substance which was fractionated at 5 mm. and the following hydrocarbons were identified by analysis; $C_{13}H_{24}$, olea-tridecene, $C_{16}H_{30}$, olea-hexadecene, $C_{19}H_{36}$, olea-nonadecene, $C_{23}H_{42}$, olea-tricosene, $C_{28}H_{50}$, olea-octacosene, $C_{34}H_{80}$, olea-tetracosane, $C_{26}H_{54}$, olea-hexacosane. All these hydrocarbons exist only in traces in crude olive oil which explains why they had not previously been recognized.—HENRI MARCELET. *Compt. rend.*, 202 (1936), 867. (G. W. H.)

Glycosides, Ferments and Carbohydrates

Acacia Mollissima—Tannin Content of a Variety of. *Acacia mollissima*, Willd, the black wattle, is one of the most valuable of the tan barks. A variety of this occurring in the Bargo district near Sydney has been examined for the tannin value of its bark, and the results recorded under the designation, *A. mollissima*, Willd, var. A. The tannin content is found to be variable,

from 22.9% in the bark of small trees, to 51.5% in the bark of larger trees.—F. A. COOMS, W. MCGLYNN and M. B. WELCH. *J. Roy. Soc. N. S. W.*, 68 (1935), 246; through *Quart J. Pharm. Pharmacol.*, 8 (1935), 731. (S. W. G.)

Blueberry Leaf—New Glucoside from. It has been shown that at least one hypoglycemic substance exists in blueberry leaves and can be extracted in a stable form. The extract erroneously called "Myrtillin" is such a product. The name Myrtillin properly belongs to a galactoside in the fruit of this genus. The entire plant has been studied. A brief botanical description is given and details of the extraction and analysis. The glucoside, $C_{24}H_{36}O_{18}$, has been given the name "Neomyrtillin" and seems to be a methoxygalloylglucose. Some tests for identity were worked out and these are given. The substance was tested pharmacologically on rabbits in which artificial diabetes had been produced. It was found to possess hypoglycemic properties.—N. K. EDGARS. *J. Am. Pharm. Assoc.*, 25 (1936), 288. (Z. M. C.)

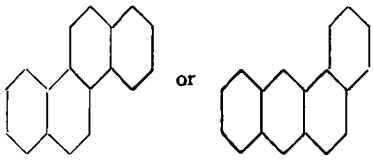
Deuterium Oxide—Effect of, on Action of Some Enzymes. Enzymatic activity was accelerated in presence of deuterium.—DAVID I. MACHT and HILAH F. BRYAN. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 190. (A. E. M.)

Digitalis Glucosides. Treatment of digoxigenin with concentrated hydrochloric acid yielded an unstable chloro-compound which was decomposed with water to yield α-anhydrodigoxigenin (m. p. 192°; diacetate 155°; $[\alpha]^{20°}_{5461}$ + 46° (in methyl alcohol, C = 1). β-Anhydrodigoxigenin (previously reported): m. p. 182°, $[\alpha]^{20°}_{5461}$ −16.3. Both isomerides give the legal reaction, form diacetates and on oxidation form diketones.—SYDNEY SMITH. *J. Chem. Soc.* (1936), 354–55. (G. W. F.)

Glucosides—Comparative Rates of Hydrolysis of Some, under the Influence of Ultraviolet Rays, Acids and Enzymes. The rates of hydrolysis of 9 glucosides; helicin, gentiopicrin, coniferin, amygdalin, salicin, picein, arbutin, methylarbutin and β-methylglucoside were determined under the influence of ultraviolet rays, acids and three enzymes; emulsin from almond, emulsin from *Aspergillus niger* and the dried digestive from snails. The order of the rate of hydrolysis is far from being constant and varies according to the hydrolyzing agent.—GEORGES TANRET. *Compt. rend.*, 202 (1936), 881. (G. W. H.)

Strophanthus Emini—Notes on. The Pharmacopœia Commission of the B. P. has issued a report on the seeds of *Strophanthus Emini*, Ashers et Pax. The evidence offered indicates that the seeds of this species are similar in pharmacological action to the official *Strophanthus kombé;* further, the tincture made from them presents no difficulties in biological assay, and the mixture of glycosidal principles obtained from them is similar in chemical composition and therapeutic effects to the strophanthin obtained from the official seeds. Specimens of the fruits of *S. Emini* were received recently from the East African Agricultural Research Station, and these specimens were examined.—T. C. DENSTON. *Pharm. J.*, 136 (1936), 341. (W. B. B.)

Veratrine Glucosides. Cevanthrol ($C_{17}H_{16}O$, m. p. 197–198°) was obtained by selenium dehydrogenation of cevine. Results of X-ray examination of the crystals of cevanthol (I) and cevanthridine (II) are given. As a result of their measurements the authors suggest the following configurations:

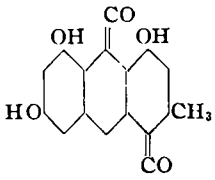


—B. K. BLOUNT and D. CROWFOOT. *J. Chem. Soc.* (1936), 414–415. (G. W. F.)

Other Plant Principles

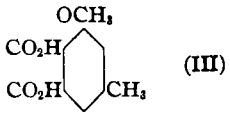
Kermek—Tannin-Containing Plant in Nijnie Povoljie. Investigation of two species of kermek, *Statice gmelini Willd* and *Statice laxiflora (Boiss.) Klok.*, showed that young plants contain less tannin than old plants and that rhizomes contain less tannin than roots. The roots of *S. gmelini* yielded 14–20% tannin, the roots of *S. laxiflora* about 22%. Another variety, *S. latifolia* Smith yielded 23% tannin. All species of kermek are capable of regeneration. Commercial value of the plants is yet to be determined.—L. P. JOUKOVA. *Bull. Medicinal and Aromatic Plants*, (U. S. S. R.), 1 (1933), 65–108. (E. K.)

Lichens—Analysis of. The authors state that the lichens which are found on the Japanese leaves of *Nephromopsis endocrocea* Y. Asahina contain an orange-yellowish coloring material. This material was isolated and had the composition $C_{16}H_{10}O_7$. The new compound was named endocrocin. The 7 oxygen atoms are found to occur in 2 (CO) groups (quinone), 1 (CO_2H) group and 3 phenolic (OH) groups. If this compound is decarboxylized frangula-emodin (II)

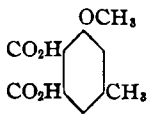


(II)

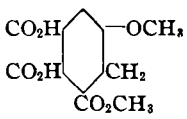
is obtained. The absorption index of endocrocin corresponds with the formula in (II). In order to ascertain the position of the CO_2H group the authors have tried to oxidize CH_3 to CO_2H. Triacetyl endocrocin was built up by using CrO_3, but the trimethyletherendo-rocinmethylester ($C_{20}H_{18}O_7$) with CrO_3 yielded a compound $C_{12}H_{12}O_7$ which had 2 CO_2H, 1CO_2CH_3 and 10 CH_3 groups. It was also established that the trimethyl ether ($C_{18}H_{16}O_5$) can also be oxidized to the well known compound methylether γ-coccinic acid (III).

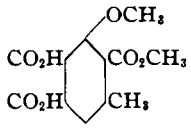


(III)

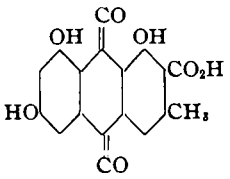
(III)


It follows then that the compound $C_{12}H_{12}O_7$ has either the formula



(IV) or (V)


Formula IV must be eliminated because the methylethercochinillic acid trimethylester had a melting point of 111–113° while the permethyl derivative of $C_{12}H_{12}O_7$ melted at 88°. Formula (V) is then the correct formula. This proves then that formula (I)



is the correct formula for endocrocin.—Y. Asahina and F. Fusikawa. *Ber.*, 68 (1935), 1558; through *Chem. Zentralb.*, 106 (1935), 2383. (G. B.)

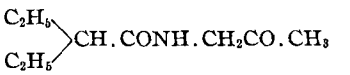
Madder—Coloring Principles of. The chief constituent of madder is the coloring principle alizarin or dihydroxyanthraquinone. Madder contains ruberythric acid; from the treatment of this substance with dilute acids, alizarin along with glucose is known to result. A coloring matter of secondary importance contained in madder is purpurin, and there have also been recognized pseudopurpurin (orange) and xanthopurpurin (yellow).—Anon. *Pharm. J.*, 136 (1936), 188. (W. B. B.)

Unclassified

Acetaldehyde—New Polymer of. The recent work of Travers (*Trans. Far. Soc.*, 32 (1936), 246) concerning the production of a new polymer of acetaldehyde at very low temperatures is confirmed. With fuming nitric acid, this substance gives a very violent reaction producing some nitrobenzene. This reaction is not given with nitric or sulfuric-nitric acids, either pure or containing a trace of mercury.—MORICE LETORT. *Compt. rend.*, 202 (1936), 767. (G. W. H.)

Alkoxymethylhydantoins—Synthesis of Compounds with Hypnotic Properties. A number of 5,5′ hydantoin derivatives containing alkoxyl groups have been synthesized. Three methods were used in their synthesis. Preliminary pharmacological reports are given for ethoxymethylphenylhydantoin and iso-amyloxymethylethylhydantoin, in the form of their sodium salts. The latitude of therapeutic index is too narrow in the case of the former, and the effective dose in the case of the latter is too large for it to be recommended as a soporific.—NEIL E. RIGLER with HENRY R. HENZE. *J. Am. Chem. Soc.*, 58 (1936), 474. (E. B. S.)

Amide—New Type of Hypnotic. N-β-Keto Propyl Diethyl Acetamide. This Compound



was prepared with the hope that the acetonyl residue might contribute the hypnotic activity of the acetone itself to the diethylacetyl residue. Its hypnotic potency was found to be very low. Experimental details are reported.—W. A. LOTT and W. G. CHRISTIANSEN. *J. Am. Pharm. Assoc.*, 25 (1936), 310. (Z. M. C.)

Anisole—Chlor-Alkylation of, Synthesis of Vinyl Anisoles. Anisole can be condensed with aldehydes with the aid of HCl gas giving chiefly *p*-chloralkyl derivatives of the general formula, CH_3-O-C_6H_4-CHCl-R, which are unstable and upon warming with pyridine go quantitatively into the corresponding unsaturated compounds. For the preparation of anethol, anisole and propionic aldehyde are dissolved in a mixture of concentrated hydrochloric and phosphoric acids and saturated with HCl gas at 0°. Upon treatment with pyridine, an 80% yield of pure anethol is obtained. The preparation of the corresponding ethyl and butyl compounds is also described.—RAYMOND QUELET. *Compt. rend.*, 202 (1936), 956. (G. W. H.)

Arsenic—Action of Mould on. Cultures of a mold (*Penicillium brevicaulle*) grown for four days on a bread medium, to which was then added inorganic compounds of arsenic such as arsenious acid, evolved a volatile odoriferous product which was identified as tri-methyl-arsine. Alkylarsonic and dialkylarsonic acids were methylated by the mold to give mixed alkylarsines. This methylated action of the mold was not confined to arsenic. Inorganic compounds of selenium are converted into dimethyl selenide. The methylated compound was usually absorbed in aqueous mercuric chloride, and some idea of the difficulty of preparation is obtained by observing that only about 1 Gm. of the absorption product was obtained after 100 days.—ANON. *Pharm. J.*, 136 (1936), 297. (W. B. B.)

β-Brom-Nicotinic-Acid-Diethylamide. This substance was synthesized from 5-brompyridin-2,3-dicarboxylic-acid-anhydride (m. p. 134–136°) and diethylamine. The product was a black liquid, b. p. 160° at 4 mm. It did not have any cardio-tonic action on frog hearts extirpated by Straub's method.—T. UKAI and S. IZUMI. *J. Pharm. Soc. Japan*, 55 (1935), 4. (R. E. K.)

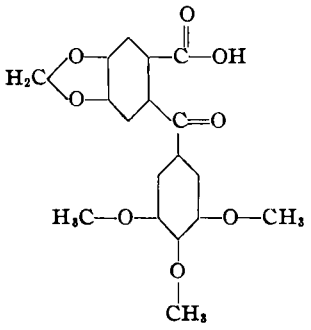
Chemical War Materials. A review.—W. HIRSCH. *Pharm. Monatshefte*, 17 (1936), 17–19. (H. M. B.)

ω-Chloraceto-catechol—Thiazol Derivatives from. Thiourea reacted with ω-chloracetocatechol in acetone to give α-(3,4-dihydroxyphenyl)-μ-amino-thiazol: HCl salt, m. p. 235–236°; acetyl derivative, m. p. 268°. By using substituted thioureas the correspondingly substituted thiazoles were obtained: μ-allylamino compd., m. p. 208–209°, HCl salt m. p. 213°; *N*-phenyl-μ-phenylimide compd. m. p. 251–252°, —HCl m. p. 246–248°; *N*-*o*-tolyl-μ-*o*-tolylimide compd. m. p. 130°, —HCl m. p. 185°; analogous *m*-tolyl derivative m. p. 227–228°, —HCl m. p. 226–227°; analogous *p*-tolyl derivative m. p. 280–281°, —HCl m. p. 170°; *N*-*p*-hydroxy-phenyl-μ-*p*-hydroxyphenylimido-compd. —HCl m. p. 198–200°. By reacting KCSN with ω-chloroacetocatechol in 95% ethanol μ-hydroxy-α(3,4-dihydroxyphenyl)-thiazol was obtained: colorless needles, m. p. 178°. That the new substance was not the normally expected isothiocyanate

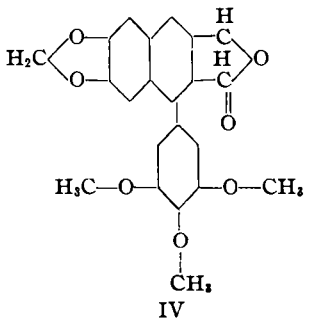
was shown by comparison with the phenacylisothiocyanate of Dyckerhoff.—Z. HORII. *J. Pharm. Soc. Japan*, 55 (1935), 6–8. (R. E. K.)

5,5-Cyclohexenylalkylhydantoins—Process of Preparation of. Derivatives of cyclohexenylalkylcyano-acetic and -malonic acids (cyclohexenexyl alkyl = (R, $CONH_2$)) are treated with hypohalogenides in presence of an alkali and water, R being a CN or $CONH_2$ group.—FABRIQUE DE PRODUITS CHIMIQUES CI-DEVANT SANDOZ. Belg. pat. 411,503, Oct. 31, 1935. (A. P.-C.)

Dehydroanhydropicropodophyllin—Synthesis of. α-Acetyl-β-(3:4-methylenedioxybenzyl)-butyrolactone (I), prepared from safrole oxide and ethyl sodioacetoacetate, hydrolyzed to form methyl-γ-hydroxy-β-(3:4-methylenedioxybenzyl)-propyl ketone. α-(3:4:5-Trimethoxybenzoyl)-α-acetyl-β-(3:4-methylenedioxybenzyl)-butyrolactone, prepared from 3:4:5-trimethoxybenzoyl chloride and the sodio-derivative of I, hydrolyzed to form α-(3:4:5-trimethoxybenzoyl)-β-(3:4-methylenedioxybenzyl)-butyrolactone. This was isomerized by action of methyl-alcohol hydrogen chloride into the lactone of 1-hydroxy-6,7-methylenedioxy-1-(3′:4′:5′-trimethoxyphenyl)-3-hydroxymethyl-1:2:3:4-tetra-hydronaphthalene-2-carboxylic acid. Dehydration of this gave the lactone of 6:7-methylenedioxyl-1-(3′:4′:5′-trimethoxyphenyl)-3-hydroxymethyl-3:4-dihydronaphthalene-2-carboxylic acid (II) which was converted into 3′:4′:5′-trimethoxy-4:5-methylenedioxybenzophenone-2-carboxylic acid (III) which was identical with the acid obtained by oxidation of picropodophyllin. The lactone (II) was converted into the lactone of 6:7-methylenedioxy-1-(3′:4′:5′-trimethoxyphenyl)-3-hydroxymethylnaphthalene-2-carboxylic acid (IV) which was identical with dehydroanhydropicropodophyllin prepared from podophyllotoxin.



III



IV

—R. D. HAWORTH and THOMAS RICHARDSON. *J. Chem. Soc.* (1936), 348–352. (G. W. F.)

Dibarbituric Acid—Constitution of. Researches on Pyrimidines. CLI. By a study of the *N*-methyl homologs of dibarbituric acid it is shown that the molecule consists of two molecules of barbituric acid linked, through the elimination of one molecule of water, by means of a double bond between the 4 and 5[1] carbon atoms. No report on the pharmacological action of the acid or its derivatives is given.—ROLLIN D. HOTCHKISS and TREAT B. JOHNSON. *J. Am. Chem. Soc.*, 58 (1936), 525. (E. B. S.)

Iodoxybenzoic Acid—Improved Method for Preparation of the Calcium or Ammonium Salts of. The method suggested involves two steps: *First*, the preparation of ortho-iodobenzoic acid from anthranilic acid and *second*, the direct oxidation of ortho-iodobenzoic acid into ortho-iodoxybenzoic acid by the use of potassium bromate. Potassium bromate in the presence of sulfuric acid and upon heating with orthoiodobenzoic acid will oxidize at once to ortho-iodoxybenzoic acid, bromine vapors being given off.—FREDERICK R. GREENBAUM. *Am. J. Pharm.*, 108 (1936), 17. (R. R. F.)

2-Ketolevogulonic Acid—Process for the Manufacture of. 2-Ketolevogulonic acid is prepared by transforming levo-sorbose (with the aid of alicyclic ketones containing a nuclear keto group) into bis-methylene-ether derivatives, treating these in alkaline solution with oxidizing agents which oxidize a CH_2OH group to a COOH group, and splitting off the alicyclic ketones from the bis-methylene-ether-2-keto-levo-gulonic acid thus obtained by heating with water at an acid reaction.—TADEUS REICHSTEIN, assignor to HOFFMAN-LA ROCHE, INC., U. S. pat. 2,039,929, May 5, 1936. (A. P.-C.)

Metallo-Albumin-Tannin Compound. A very stable and easily water-soluble metallo-albumin-tannin compound for therapeutic use is produced by combining albumin directly with the tannin compound of a carboxylic acid which is non-volatile at ordinary temperatures, and with a metal.—HENRYK COHN and CONRAD SIEBERT. U. S. pat. 2,035,145, March 24, 1935. (A. P.-C.)

Odor and Constitution. Attention is called to two additional benzothiazole compounds showing relationship between odor and chemical configuration, making a total of eight such compounds. The two substances are 2-alpha-pyrryl-benzothiazole and 2-methyl-6-bromobenzothiazole.—M. T. BAGERT. *Am. Perfumer*, 32, No. 4 (1936), 51. (G. W. F.)

Pharmaceutical and Phytochemical Compounds—Procedures for the Preparation of. Procedures for preparing the following compounds are offered: (1) iodoform, (2) ethyl bromide, (3) potassium alum, (4) precipitated silicic acid, (5) benzoic acid, (6) benzaldehyde cyanhydrin, (7) *l*-mandilic acid, (8) cinnamic acid, (9) benzoyl chloride, (10) hydriodic acid, (11) bismuth oxyiodogallate (Airol), (12) fluorescein, (13) eosin and (14) eosin ammonia.—C. A. ROJAHN. *Apoth. Ztg.*, 51 (1936), 412–414, 566–568. (H. M. B.)

Phenylalkylbarbituric Acids—Converting Alkali Salts of, into Stable Calcium Compounds. A solid alkali salt of phenylalkylbarbituric acid is caused to interact with crystallized calcium bromide, and the product obtained is mixed with wholly or partly dehydrated calcium bromide.—PAUL R. GRÜTER. U. S. pat. 2,036,935, April 7, 1936. (A. P.-C.)

Phytosterol—Process for the Preparation of Concentrated Products of. Material containing phytosterol is steam-distilled in vacuum at a temperature above 200° C. The distillate is mixed with alcohol and allowed to crystallize below 0° C. Constituents rich in phytosterol are then separated.—HANSA-MUHLE A. G. Belg. pat. 411,384, Oct. 31, 1935. (A. P.-C.)

Polymolecular Substances—Structure of. A review of recent work on the structure of rubber, gutta-percha, balata, cellulose and egg albumin.—N. BERG. *Dansk Tids. Farm.*, 10 (1936), 65. (C. S. L.)

Sterols—Neutral Unsaturated Carbonyl Oxidation Products from. Process of Preparation. Neutral unsaturated polycyclic ketones, which still contain the polycyclo-polyhydrophenanthrenic nucleus of sterol, are obtained by treating with oxidizing agents sterols containing at least one double bond in their polycyclo-polyhydro-phenanthrenic nucleus.—SCHERING-KAHLBAUM A. G. Belg. pat. 411,464, Oct. 31, 1935. (A. P.-C.)

Sterols—Studies on. IV. Androsterone Derivatives. In an attempt to prepare water-soluble derivatives of androsterone for physiological testing, 17-aminoandrosterone and 17-aminoandrostane were prepared by the reduction of the oximes of androsterone and 3-chloroandrosterone. The hydrochlorides of these amines were only slightly soluble in water. These amino compounds were also diazotized to the corresponding hydroxy compounds.—RUSSELL E. MARKER. *J. Am. Chem. Soc.*, 58 (1936), 480. (E. B. S.)

Sterols—Studies on. V. Epi-Cholesterol. Cholesterylmagnesium chloride was treated with oxygen and gave a mixture of cholesterol and *epi*-cholesterol which was separated by means of digitonin. The unsaturated cholesteryl-*dl*-3-carboxylic acids were prepared from the Grignard reagent and carbon dioxide. These were converted to their esters and reduced to the saturated acids and esters. Physiological properties of the compounds are being studied.—RUSSELL E. MARKER, THOMAS S. OAKWOOD and HARRY M. CROOKS. *J. Am. Chem. Soc.*, 58 (1936), 481. (E. B. S.)

Sulfonic Acid Ester. In replacing the sodiummercaptan with arsenic and antimony chloride, respectively, new compounds sulfarsenic acid ester and sulfantimonic acid ester:

$$AsCl_3 + 3\ NaS.R = As(S.R)_3 + NaCl$$

were obtained, respectively. In the case of arsenic the substitution reaction occurred in absolute alcohol; on the other hand, because of the instability of the alcoholic solution of the ester, the experiment for the antimony reaction was done in a bomb. The phenyl- and *p*-tolylester are solid, light colored compounds, with a slight odor, characteristic of mercaptans. The benzyl- and *p*-xylic esters are oily substances with a choking odor. The esters are not distillable even in vacuum; with free sulfur they can be changed to the ester of sulfarsenic and sulfantimonic acid, respectively. The last-named compound is replaced as the analogous compound of arsenic. The arsenic compound splits up with water to form Sb_2O_3 and the mercaptan:

$$2\ Sb\ (S.R)_3 + 3H_2O = Sb_2O_3 + 6\ R.S.H,$$

and with alkali sulfide it is changed to the alkaline salt of the sulfonic acid of the mercaptan:

$$Sb\ (S.R)_3 + 3\ Na_2S = Na_3\ SbS_3 + 3\ R.S\ Na.$$

The chemotherapeutic reaction of sulfarsenic acid-*p*-tolylester and sulfantimony acid-*p*-tolylester on *Trypanosoma brucei* (Nagana) is highly satisfactory; sulfantimony-*p*-tolylester is the only compound acting on *Tryptanosoma congolens;* neither of the above named compounds acted against the organism causing "Leishmania Infection."—R. KLEMENT and R. REUBER. *Ber.*, 68 (1935), 1761; through *Chem. Zentralb.*, 107 (1936), 49. (G. B.)

Tetrahydro-N-Methylnicotinic Acid Methyl Ester Salts of, with Amino-substituted Arsonic Acids. The colorless, crystalline, water-soluble salts of tetrahydro-*N*-methylnicotinic acid methylester with acylamino-arsonic acids of the benzene series in which the acyl group is the radical of a lower aliphatic carboxylic acid, are claimed as new.—MAX BOCKMÜHL and GUSTAV EHRHART, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,037,112, April 14, 1936. (A. P.-C.)

2-Thioketo-4-Keto-3,4-Dihydro-1,3-benzoxazin. To prepare salicylallylamide the authors heated salicylic acid and allyl mustard oil according to Diel's method (*Ber.*, 39, 4125). When the reaction was exposed to direct sunlight there was always formed an ether-insoluble by-product: $C_8H_5O_2NS$; m. p. 253°, recrystallized from acetic acid; mono-methyl derivative by CH_2N_2, m. p. 163°; aq. solution acid, but no color with $FeCl_3$; hydrolyzed by acid to salicylic acid, NH_3 and H_2S; H_2O_2 removed S according to Kitamura's method and yielded $C_8H_5O_3N$, m. p. 227°, soluble in ethanol and ether. $C_8H_5O_3N$ was identical with 2,4-diketo-3,4-dihydro-1,3-benzoxazin prepared by known synthesis. The original product therefore was the corresponding 2-thioketo-oxazin.—T. UKAI and M. HAYASHI. *J. Pharm. Soc. Japan*, 55 (1935), 1–3. (R. E. K.)

Unsaturated Pregnanolones and Pregnandiones—Process of Preparation of. Pregnanolones are prepared by reacting together a halogen with a saturated pregnanone containing a substituted group attached to the C-3 atom, and eliminating the hydracid from the resultant monohalogenated compound.—SCHERING-KAHLBAUM A.-G. Belg. pat. 411,249, Oct. 31, 1935. (A. P.-C.)

Ureas—Dialkylamine Acetyl. Two types of ureas have been considerably used as hypnotics, the brominated acyl ureas and the cyclic ureids. The following were prepared and studied: diethyl, di-*n*-propyl, di-*n*-butyl, di-*iso*-butyl, di-*n*-amyl and di-*iso*-amyl-amino acetyl ureas. Experimental work is given in detail. None of the compounds had hypnotic properties.—T. C. DANIELS. *J. Am. Pharm. Assoc.*, 25 (1936), 285. (Z. M. C.)

BIOCHEMISTRY

Arsenic—Elimination of, by the Hair. In non-fatal cases of arsenic poisoning, elimination by the hair is fairly rapid at the start, but continues for a long time after administration of the drug has ceased. Elimination through the kidneys is fairly rapid, and generally ceases about 4 or 5 weeks after ingestion of the drug has ceased. A case is cited in which a definite arsenic ring (estimated at about 0.05 mg.) was obtained from 13 Gm. of hair seven months after administration of arsenic had ceased.—FONZÈS-DIACON. *Ann. Méd. Légale Criminol. Police Sci.*, 15 (1935), 793–795. (A. P.-C.)

Calcium Involvement in Magnesium Deficiency. A greater amount of magnesium is required to prevent the development of deficiency symptoms as the calcium of the diet is increased.—ELMA V. TUFTS and DAVID M. GREENBERG. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 292. (A. E. M.)

Dextrose—Yield of, from Glycinin. The dextrose yield of glycinin is 61%. That of casein is 49%. The dextrose yield of a protein in metabolism cannot be predicted by calculating the amount of dextrose which the component glycogenic amino acids are capable of forming in the animal organism.—J. S. GRAY. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 144. (A. E. M.)

Enzymatic Digestion of Lactalbumin Versus Casein in Vitro. Lactalbumin is less readily digested than casein *in vitro* by trypsin and erepsin when the incubation is carried out under standard and comparable conditions.—M. C. KIK. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 194. (A. E. M.)

Ethyl Alcohol—Simple Method for Determination of, in Blood. The blood (0.5 cc.) was absorbed into filter paper. This was suspended over one cc. of 0.33% potassium dichromate solution in dilute sulfuric acid in a closed flask and heated for 10 minutes in boiling water. The liquid was diluted to 3 cc. and the degree of reduction of the chromic acid observed colorimetrically.—JULIUS C. ABELS. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 346. (A. E. M.)

Follicle Hormone Hydrates—Method of Producing. Follicle hormone hydrates containing two neighboring OH groups are produced by transforming the reduction products of the hormones, which contain one secondary alcohol group in the molecule, into the corresponding unsaturated phenol and treating the latter with an oxidizing agent capable of adding two OH groups to the double bond of the phenols.—FRIEDRICH HILDEBRANDT, HOHEN NEUENDORF and ERWIN SCHWENK, assignors to SCHERING-KAHLBAUM A.-G. U. S. pat. 2,039,414, May 5, 1936. (A. P.-C.)

Physiological Fluids—Methods for the Clinical Testing of. The following methods were selected and compiled in order to foster the uniform execution of clinical tests by pharmacists. It has also been attempted to supply the necessary foundation for the proper evaluation of the results of the tests. Complete tests should always, when possible, be carried out in duplicate or according to two different procedures, as, for example, the identification of sugar and albumin in urine. In stating the results (especially of chemical reactions) in the report, the method by which they were obtained should always be stated. The druggist should be aware that diagnostic conclusions can seldom be drawn with certainty from these results alone. They are, along with many other facts, only aids toward the establishment of a clinical diagnosis. For a complete pathological examination the patient should consult the physician. Wherever the reagents necessary in the methods described are not stated, they are to be found in Table II C of the Swiss Pharmacopœia V and also in the reagent list given in *Schweiz. Apoth.-Ztg., Suppl.*, 73 (1935), 45. The tests described are those necessary for a complete examination of urine-physical, chemical, qualitative and quantitative; for the examination of saliva, gastric juice and blood. A compilation of the normal constants for urine and blood is included. A sample chart for reporting results is given. —H. MÄRKI. *Pharm. Acta Helv.*, 11 (1936), 75. (M. F. W. D.)

Thyroid—Enzymatic Digestion of Desiccated. Digestion with either pepsin or trypsin transforms 55 and 60%, respectively, of the total iodine into the acid soluble form. It is not probable that the thyroglobulin molecule is absorbed unchanged.—SAMUEL B. NADLER and WILLARD O. THOMPSON. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 306. (A. E. M.)

Thyrotropic Hormone—Antibody Nature of Refractoriness to Injections of Hypophyseal Extracts Containing. The development of refractoriness depends on the type and not on the potency of the thyrotropic preparation. Immunizing, but non-stimulating doses of weak preparations produce refractoriness as well as large doses. It is concluded from these and other observations that the refractoriness is caused by formation of antibodies not directed against the hormone itself.—SIDNEY C. WERNER. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 392. (A. E. M.)

Ureic Nitrogen—New Colorimetric Micro-Method for the Determination of. *In Blood.*—Use 0.2 cc. of whole blood, of serum or of plasma that has first been deproteinized by a known method (*e. g.*, with trichloroacetic acid); to 0.5 cc. of the deproteinized filtrate in a centrifuge tube (representing half of the blood or serum taken) add 0.6 cc. of a solution of xanthydrol (0.10 Gm. in 10 cc. of acetic acid and 2 cc. of methanol), let stand for from 1 to 3 hrs., centrifuge for 10 mins., decant carefully, wash the precipitate with a saturated solution of dixanthylurea in methanol, centrifuge again, dissolve the precipitate in 0.7 cc. of $^2/_3$ *N* sulfuric acid, add 1 cc. of trichloroacetic acid. Treat a standard solution of dixanthylurea (using 0.7 cc. of a solution containing 100 mgm. per 100 cc.), heat the tubes for 5 mins. in a boiling water-bath, cool and compare in a Dubosc colorimeter. *In Urine.*—Dilute exactly 1 cc. of urine to 100 cc.; place 1 cc. of the solution in a centrifuge tube, add 1.2 cc. of xanthydrol solution, let stand 1 hr., centrifuge and proceed as for blood, the final volume being 9 cc. *In Cerebrospinal Fluid.*—To 1 cc. of the fluid add 0.5 cc. of 10% sodium tungstate solution and 0.5 cc. of $^2/_3$ *N* sulfuric acid, stir with a glass rod, centrifuge strongly for 30 mins., transfer the deproteinized liquid to another tube, add 1.2 cc. of xanthydrol solution and proceed as for blood, the final volume being 6 cc.—M. ZAPPACOSTA. *Diagnost. Tecn. Labor.*, 6 (1935), 388–396; through *Chimie & Industrie*, 35 (1936), 549. (A. P.-C.)

Vitamin (A and B) Contents of Philippine Foods. Fourteen samples of fruits and vegetables were biologically tested on albino rats for vitamin A content and ten samples were tested for vitamin B_1 content. The results showed that the tested foods varied greatly. In testing for

vitamin A the rats fed with kangkong (*Ipomoea reptans* Linn.) as a supplement to the basal ration, gave the greatest average daily gain in weight (4.03 Gm.). Other foods that appeared to be good sources of vitamin A were lemosa fruit [*Artocarpus Champeden* (Lour.) Spreng.], the leaves of pechai (*Brassica chinensis* Linn.), fern (*Ceratopteris thallictroides* Linn.), saluyot (*Corchorus olitorius* Linn.), squash (*Cucurbita maxima* Duchesne), sweet potato, pods of segadilla [*Psophocarpus tetragonolobus* (Linn.) DC.] and corn. Rats fed with these products gained 2 to 3 Gm. daily. When fed with frozen mango the rats showed an increase of 1.88 Gm. daily indicating that the vitamin A in mangoes is not greatly affected by freezing. Tender leaves and tops of squash gave the best result for vitamin B_1. Mustard, saluyot, sweet potato and the fruit of santol (*Sandoricum Koetjape*) were found to be good sources of vitamin B_1. Only three products were found to be good sources of both vitamins A and B_1, saluyot, squash and sweet potato.—A. J. HERMANO and P. J. AGUILA. *Philippine J. Sci.*, 58 (1935), 425. (P. A. F.)

Vitamin B—Excretion of, in Human Urine. In the search to find a simple method of estimating the state of vitamin B_1 nutrition of human subjects, quantitative studies have been carried out of the day-to-day excretion of vitamin B_1 in the urine. This can be measured simply and rapidly by means of the "bradycardia" method (Harris). It is shown that the output varies with the dietary intake. In a group of nine healthy adults (aged 17 to 37) on "normal" diets the amount excreted (November to February) was of the order of 12–35 I. U. (= 30–90 micrograms of vitamin B_1 hydrochloride) with an average of 20 I. U. per day. This represents only a very small proportion (about 5–8%). The consumption of a diet containing comparatively small amounts of vitamin B_1 led to a proportional reduction in the daily output of the vitamin while a diet containing large amounts produced a corresponding increase. The immediate response in excretion after a large test dose of the vitamin was also appreciably graded, according to the past dietary history. Similar results were obtained with experimental animals (rats): in hypo-vitaminosis-B_1 the amount excreted became negligibly small. Reference is made to preliminary surveys which are in progress to measure the state of vitamin B_1 nutrition in groups of healthy and diseased children and adults. A daily excretion of less than 12 I. U. (corresponding with an average concentration 1 I. U. per 100 cc.) raises the presumption that the diet contains less than a normal allowance of vitamin B_1. Preliminary observations confirm the expectation that in actually developed avitaminosis (beriberi) in man, vitamin B_1 may cease to be excreted in the urine in appreciable amounts (<2.5 I. U. daily).—L. J. HARRIS and P. C. LEONG. *Lancet*, 230 (1936), 886. (W. H. H.)

Vitamin C—Effect of Ingestion of Acid and Alkali upon Amount of, Found in Urine. Alterations in urinary p_H have a definite effect on the vitamin C content of the urine. The amount found is less when the reaction is in the alkaline range.—ESTELLE E. HAWLEY, JOHN FRAZER, LUCIUS BUTTON and DORAN J. STEPHENS. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 218. (A. E. M.)

ANALYTICAL

Absorption Spectrum Analysis. The author reviews the theory of absorption spectrum analysis, the method of execution, and comments upon the results and limitations of its application to the determination of vitamin D, of benzene-toluene mixtures, mixtures of similar alkaloids, vitamin A and various hormones.—LEOPOLD FUCHS. *Scientia Pharm.*, 7 (1936), 34. (M. F. W. D.)

Acetylsalicylic Acid—Decomposition of Salts of. Salts of acetylsalicylic acid are gradually decomposed with liberation of free salicylic acid. If they are saponified by caustic soda, total salicylic acid can be determined by Koppeschaar's bromometric method. Free salicylic acid can be determined by the same method on another portion of sample without saponification, but the result is only approximate because some hydrolysis takes place during bromination. It is therefore preferable to determine free salicylic acid colorimetrically by means of ferric chloride.—V. GERVAY. *Magyar Gyógyszerésztud. Társaság. Értesitője*, 11 (1935), 241–245; through *Chimie & Industrie*, 35 (1936), 636. (A. P.-C.)

Aconite—Study of the Assay of, and the Stability of Its Preparations. The purpose of this investigation was to work out a satisfactory chemical assay and to check the work of previous investigators on the stabilization of its preparations. Fluidextracts and tinctures were studied for changes in p_H and the obvious conclusion was that there was liberation of an acid or acids, confirming previous reports that aconitine is decomposed. Stabilization by addition of acid confirmed

previous workers in conclusions that a p_H of 2.5 to 3.00 is the ideal range for stabilization of preparations of aconite. Before assay procedures could be developed, it became necessary to purify aconitine and prepare benzoylaconine and aconine, and details of this work are reported. Experiments on assay methods which involved separation of the alkaloids on the basis of their solubilities did not prove feasible. A more thorough study of the solubilities of aconitine and benzoylaconine was undertaken and it was taken up from the angle of dissociation constants. That of aconitine has been given as 3×10^{-8} but that for benzoylaconine had to be determined. This was found to be 1×10^{-4}. Proceeding on the basis that a solution with a hydroxyl-ion concentration between 3×10^{-8} and 1×10^{-4} would extract aconitine and leave the stronger base, benzoylaconine, a method was developed. The two alkaloids are extracted with ether from a buffered solution. Tabulations and graphs show results of experimental work in considerable detail. Samples of preparations from reputable manufacturers were obtained and tested and certain indications were noted. The following assay is suggested: "To 10 cc. of the fluidextract, or 100 cc. of the tincture, add 1 cc. of 10% H_2SO_4 and evaporate the alcohol on a steam-bath. Add about 20 cc. of water and filter off the insoluble residue, washing the paper and its contents several times with small portions of water and finally with one or two small portions of acidulated water, collecting the filtrate and washings in a separatory funnel. Shake out with 20 cc. of ether to remove coloring matter and discard ether. Carefully add 10% NH_4OH until the solution is faintly basic to litmus and then completely extract the alkaloids with successive portions of ether. Add 10 cc. of $0.01N$ acid to the combined ether extracts, evaporate the ether on a steam-bath, cool, add 3–4 drops of methyl red and titrate with $0.01N$ base. The number of cc. of $0.01N$ acid consumed multiplied by 6.45 gives the mg. of total alkaloids calculated as aconitine. Transfer the neutralized solution of total alkaloids to a separatory funnel containing 50 cc. of the buffer solution ($0.0159N$ NH_4OH–$0.75N$ NH_4Cl) and extract with four portions of ether, of 25 cc. each, shaking each extraction about 10 minutes. Again add 10 cc. of standard acid to the combined ether extracts and evaporate the ether on a steam-bath, cool, add one drop of methyl red and titrate the excess acid with $0.01N$ base. The number of cc. of $0.01N$ acid consumed is the value substituted for 'y' in the equation: $A = 7.236y - 0.1106h$, in which h = total alkaloids, and A = the number of mg. of aconitine present in the sample."—GEORGE BAKER and CHAS. B. JORDAN. *J. Am. Pharm. Assoc.*, 25 (1936), 291. (Z. M. C.)

Alcohol in Pharmaceutical Liquids—Determination of. I. A Study of the U. S. P. X and U. S. P. XI Methods. Questioning the accuracy of these methods when volatile and substances are present and believing them to be time-consuming, the authors tested accuracy by adding to known alcohol-water mixtures volatile substances commonly found in official products. Details of procedure are given and results are tabulated. It is evident that the methods give low results. Some of these are discussed. It is pointed out especially that "shaking the distillate with benzin or filtering it through talc after it has been made to volume" should not be permitted. A new method has been developed and this will be described in a later issue of the JOURNAL.—KARL BAMBACH and J. H. RIDER. *J. Am. Pharm. Assoc.*, 25 (1936), 313. (Z. M. C.)

Arsenic—Assay of Organic Medicinal Preparations Containing. No general method that is accurate, simple and rapid has yet been developed for these preparations. There are good methods for a given arsenical or even a group, and there are dependable methods that require special equipment or are difficult and time consuming. Brief mention is made of some of the methods. Moist combustion with sulfuric acid may be used to liberate arsenic from organic matter and then the arsenic can be determined quantitatively with standard iodine solution or gravimetrically. This idea has been used by a number of investigators and the modifications they used are reported. Of these the Ewins method reduced the arsenic, all others oxidized it. Some of these with further modifications are discussed and the perchloric acid method is given. The Ewins method has given good results with sodium cacodylate, arsanilic acid and carbarsone, and the authors have undertaken to modify it to hasten digestion time and so reduce possibility of loss of arsenic. Following is the method: "Accurately weigh about 0.25 Gm. of sample on a tared, arsenic-free cigarette paper. Fold and deliver the paper and contents into a Kjeldahl flask containing 6 Gm. of reagent potassium sulfate and 20 cc. of concentrated sulfuric acid. Carefully digest the mixture until colorless over a free flame. Cool and dilute with 150 cc. of distilled water. Cautiously make alkaline to litmus with 1:1 sodium hydroxide solution, then make slightly acid with sulfuric acid and allow to cool. Add 2 Gm., in excess, of sodium bicarbonate, mix thoroughly

and titrate with $N/20$ iodine solution." The Lehmann method as modified in U. S. P. XI, the original Ewins method, the perchloric acid method, the modified Ewins method have been applied to a series of representative arsenicals and results are tabulated. End-points were sharp except in Lehmann's method. It yields results uniformly high except for sodium cacodylate and seems to be best adapted for arsphenamine and neoarsphenamine. Other methods give results that are nearer theoretical amounts. The author believes that the Ewins method is definitely superior for the assay of arsanilic acid, sodium cacodylate and carbarsone. Substitution of arsenic-free cigarette paper in place of starch in the digestion mixture makes this method more rapid without affecting accuracy.—EDWARD J. HUGHES. *J. Am. Pharm. Assoc.*, 25 (1936), 281. (Z. M. C.)

Barium Fluosilicate—Rapid Determination of, in Insecticidal Powders. Suspend 0.50 Gm. of fluosilicate (or an equivalent quantity of insecticide) in 200 cc. of boiling water in a large beaker, titrate the solution at boiling temperature in presence of phenol red with normal caustic soda, 1 cc. of which = 0.0698 Gm. barium fluosilicate ($BaSiF_6 + 4NaOH = BaF_2 + 4NaF + SiO_2 + 2H_2O$). Titration is rather slow on account of the very low solubility of barium fluosilicate. The method is not accurate in presence of alkaline salts (lime, calcium carbonate) or of sulfates which decompose barium fluosilicate; but it still permits of evaluating the efficiency of the product and of determining only the amount of active fluosilicate, as the decomposition (which is fairly rapid in boiling water) also takes place during storage of the powder or in the presence of moisture at the time of use. Sodium fluosilicate, which may be present as an impurity or as an adulterant, can be estimated by suspending 10 Gm. of sample in 100 cc. of cold water, letting stand for 2 hrs. with occasional stirring, filtering and titrating a 20-cc. aliquot with decinormal caustic soda, 1 cc. of which = 0.0047 Gm. sodium fluosilicate; deduct from the result 0.2 Gm. to correct for the solubility of barium fluosilicate. Barium can be determined as sulfate as follows: boil 0.5 Gm. barium fluosilicate (or a corresponding amount of insecticidal powder) for 30 mins. with 20 cc. of hydrochloric acid and 50 cc. of water, cool, dilute to 500 cc., filter and precipitate barium as sulfate in a 200-cc. aliquot in the usual way; $BaSO_4 \times 1.2017 = BaSiF_6$. The method is sufficiently accurate for ordinary industrial control or regulatory work.—J. VINAS and J. SAVE. *Ann. Fals.*, 29 (1936), 152–154. (A. P.-C.)

Beeswax, Pure—Characteristics of. The recently adopted official French constants are: density 0.960–0.966, melting point 62.5° to 66° C.; Hübl ratio 3.4–3.9, saponification value 92–102, acid value 18–22, ester value 72–80.—M. TOUBEAU. *Ann. Fals.*, 29 (1936), 170–171. (A. P.-C.)

Camphor in Camphor Liniment—Studies in the Determination of. IV. Use of Antioxidants. In the U. S. P. X assay of camphor liniment, cotton seed oil is oxidized. Antioxidants have been used in an effort to overcome this. The U. S. P. method was followed except that varying amounts of different antioxidants were added to the samples before heating. Details of experimental work are reported and results are shown by several tables. Procedure is summarized as follows: "Place about 5 Gm. of camphor liniment in a tared dish having a diameter of at least 70 mm., weigh accurately, add either 20 mg. of pyrogallol, *alpha*-naphthol or hydroquinone. The sample is heated for 4 hours at 110° C. in a constant temperature air oven, cooled in desiccator and weighed. The percentage of camphor is calculated from the loss in weight. Porcelain or tin dishes may be used, but aluminum dishes should not be used." Though results were fairly satisfactory, the author believes that the vacuum oven method is better.—CHARLES F. POE. *J. Am. Pharm. Assoc.*, 25 (1936), 279. (Z. M. C.)

Camphor—Titrimetric Determination of, in Mixtures. To 0.2 Gm. of sample in a 100-cc. flask add 1 drop of 0.01% bromophenol blue solution, 0.15 Gm. sodium bicarbonate and 10 cc. of hydroxylamine solution (2 Gm. of hydroxylamine hydrochloride dissolved in 10 cc. of water and 50 cc. of alcohol), reflux gently for 4 hrs., cool, acidify with 1 to 2 drops of 10% hydrochloric acid and titrate with decinormal caustic soda in presence of phenolphthalein to a violet coloration. Titrate similarly 10 cc. of hydroxylamine solution previously brought to the same green color in presence of bromophenol blue. The difference between the two titrations multiplied by 0.0152 gives the weight of camphor in the sample taken. Camphor can thus be determined in a tincture or in oil in preparations containing menthol, thymol, menthyl valerianate and validon. For the assay of Opodeldoch balsam, the camphor and oil are extracted in a Soxhlet by means of petroleum ether, which is then removed by evaporation.—R. WOLSTADT. *Magyar Gyógyszerésztud. Társaság Értesitője*, 11 (1935), 257–265; through *Chimie & Industrie*, 35 (1936), 636. (A. P.-C.)

Cocaine—Microchemical Demonstration of, in Chemico-Legal Examinations. A study of the reaction of cocaine and some other alkaloids with aqueous solutions of potassium permanganate to establish its usefulness for legal and chemical examinations. A 1% permanganate solution forms a characteristic reagent for cocaine, the reaction being most easily obtained by allowing one drop of cocaine-hydrochloride solution to evaporate to dryness at room temperature, adding 1 drop of permanganate reagent and examining under low magnification. After 30 sec. to 2 min. a characteristic sediment forms consisting of reddish violet angular plates and squares, varying in size from 196 to 147,000 $\mu\mu$, the form of which remains unchanged for some days. Free acid does not affect the character of the crystals nor the sensitiveness of the reaction. The reaction always occurs with pure cocaine, and the microscopic appearance is constant; other alkaloids, such as aconitine, scopolamine and tropacocaine, show quite different crystals.—M. D. SCHWAIKOWA. *Sudenbn. Med.*, 1 (1934), 74–103; through *Medico-Legal Criminol. Rev.*, 3 (1935), 332.

(A. P.-C.)

Diaminoacridine—Quantitative Determination of, in Euflavine. Euflavine is not a single substance, but is a mixture of 2,4-diamino-10-methylacridine chloride with 2,4-diaminoacridine hydrochloride. Two assay methods have been reported, one by Gaillot, the other by Hall and Powell, both based on separations by differential solubilities. The author finds that an accurate electrometric or colorimetric assay can be made. On electrometric titration with sodium hydroxide using the glass electrode it is found that the strongest basic amino group of the diaminoacridine is weaker than the basic group of the methyl compound. Consequently there is an inflection in the titration curve when the quantity of sodium hydroxide corresponding to diaminoacridine-HCl has been added. In concentrated solutions this is so sharp that it may be determined with 1% accuracy if the preparations are very pure. The accuracy decreases if they are less pure. Of eleven commercial preparations tested, 3 gave sure results, 4 gave fairly accurate results. Direct colorimetric assay was worked up, titrating in an organic solvent and choosing an indicator with a blue-yellow color change: *Assay Method.*—0.5–0.7 Gm. of Euflavine are dissolved in 10 cc. of water and 90 cc. propanol and 2 cc. thymol blue I are added (if a precipitate forms add more water, dissolve on the water-bath, then add more isopropanol). The solution is titrated with 0.1*N* NaOH till a definite color change to dirty brown occurs. Back titration is conducted with 0.1*N* HCl added a tenth of a cc. at a time till the color no longer changes and is again a clear yellow (this usually takes 0.2–0.5 cc. 0.1*N* HCl). Because of the fluoresence of Euflavine solutions titration by artificial light is not recommended. In spite of the comparatively poor end-point the error is only about 0.1 cc. and at most 0.2 cc. of 0.1*N* NaOH.—F. REIMERS. *Dansk Tids. Farm.* 10 (1936), 81. (C. S. L.)

Ergot—Determination of the Acidity of. The Hungarian Phar. prescribes shaking 5.6 Gm. of the drug for 1 hr. with 40 cc. of alcohol and titrating a 20-cc. aliquot of the filtrate with decinormal soda in the presence of phenolphthalein; the acid value is obtained by multiplying by 2. If the alcoholic extract is red, it is specified that it be decolorized with charcoal. It now seems preferable to dispense with the use of charcoal and use as indicator a 0.1% alcoholic solution of thymolphthalein which gives a sharp end-point even in colored solutions.—P. LIPTAK. *Magyar Gyógyszerésztud. Társaság Értesitője*, 11 (1935), 348–350; through *Chimie & Industrie*, 35 (1936), 636. (A. P.-C.)

Esteriform Derivatives of *p*-Aminobenzoic Acid, Particularly Anesthesine and Novacaine—Gravimetric Determination of, in Presence of Other Substances. After saponification of the ester, the liberated acid is diazotized and coupled with β-naphthol, and the azo derivative thus obtained is separated and weighed. Dissolve 0.02 to 0.1 Gm. of the product in 10 to 15 cc. of hot water slightly acidified with hydrochloric acid; add sufficient 10% caustic soda solution to leave an excess of 1 to 2 cc. after saponifying for 30 mins. on the water-bath (using a reflux condenser if necessary), shake the cooled acidified solution with chloroform which does not dissolve *p*-aminobenzoic acid but removes foreign substances, heat the aqueous solution to remove the chloroform, add 10% caustic soda solution to an excess of 1 cc. and evaporate to dryness on the water-bath. Take up the residue in 5 cc. of water, filter, wash with 25 cc. of water, add 10% hydrochloric acid to leave an excess of 1 cc., cool in ice water, add 10 cc. of approximately decinormal sodium nitrite and after 5 mins. 1 Gm. of carbamide, let stand 30 mins. in ice water and then 1 hr. at room temperature, dilute to about 500 cc., add a solution of 0.1 Gm. β-naphthol in 17 cc. of water and 3 cc. of 10% caustic soda, after 15 mins. add 3 cc. of 10% hydrochloric acid and let stand 15 mins. on the

water-bath, filter through a Gooch crucible, wash successively with 50 cc. of hot water containing a drop of hydrochloric acid and with 50 cc. of cold water, dry 2 hrs. at 100° C. and weigh. Multiply by 0.5652 for anesthesine and by 9.333 for novocaine hydrochloride. I. FLODERER. *Magyar Gyógyszerésztud. Társaság Értesitője*, 11, (1935), 200–218; through *Chimie & Industrie*, 35 (1936), 635. (A. P.-C.)

Fluorine in Dicalcium Phosphate—Determination of Small Quantities of. Previous work bearing upon the subject is referred to briefly. It is pointed out that, during the formation of the permanent teeth, mottled teeth were always associated with the use of water containing more than 0.9 parts of fluorine per million. Dicalcium phosphate is a valuable supplement to the diet. It is manufactured from fluorine-bearing phosphatic rock so a method for its determination is necessary. In experimental work the authors tried Reynolds' modification of the Willard and Winter method but it took too long and there was possible loss of fluorine. A colorimetric method offered most promise. Details of experimental work are reported and procedure is given with an illustration of distillation apparatus. The method consists of measuring the fading of a zirconium alizarin lake produced by the unknown fluorine distillate by comparison with the fading produced by known amounts of fluorine.—S. E. HARRIS and W. G. CHRISTIANSEN. *J. Am. Pharm. Assoc.*, 25 (1936), 306. (Z. M. C).

Guaiac Wood D. A. B. VI—Reactions of. Certain descriptions of the German Pharmacopœia are criticized. Foam tests were carried out as follows: "Boil 1 part of wood with 10 parts of water in a test-tube for one minute, filter through cotton into a second tube; after cooling shake vigorously for $^1/_2$ minute and after the separation of the liquid and foam, measure the height of the foam column and ascertain the length of time the foam lasts." Results obtained are given in the following table:

	Turbidity	Foam Column in Cms.	Time Foam Lasts in Mins.
1 Heart wood	+++	4	2
2 Store product (old)	+++	4.5	1
3 Fresh product	+++	6	2.5
4 Comparison product (sapwood broken)	+++	5	2
5 Sapwood I	+	6	6.5
6 Sapwood II	0	8.5	More than 120
7 Mixture 1 + 1 (pure sapwood and heartwood)	++	7.5	24
8 Mixture 1 + 2 (pure sapwood and heartwood)	++	7	10
9 Mixture 1 + 4 (pure sapwood and heartwood)	+++	4.5	5

The results indicate that most of the saponin is found in the sapwood and the resin in the heart and inner sapwood.—HANS WILL. *Apoth. Ztg.*, 51 (1936), 588–589. (H. M. B.)

Katadyn Method. Its Uses in the Foodstuff Industry. A review.—M. MANSFIELD. *Pharm. Monatsh.*, 17 (1936), 48–51. (H. M. B.)

Mercuric Chloride—New Volumetric Method for the Determination of. The method is based on the quantitative precipitation of the mercury as a complex cupro-iodo-ammoniacal salt. In a volumetric 50-cc. flask place 5 cc. of copper sulfate solution (about 7% $CuSO_4.5H_2O$, the exact copper content of which is determined iodometrically), add about 2 cc. of ammonia, heat to boiling with constant stirring, add 10 cc. of mercuric chloride solution (0.6787 Gm. and 6 Gm. potassium iodide per 100 cc.), let cool, make to volume with slightly ammoniacal 10% potassium iodide solution and filter. Acidify a 25-cc. aliquot with acetic acid, precipitating cuprous iodide and liberating free iodine which is titrated with decinormal sodium thiosulfate. The difference between the number of cc. of thiosulfate used in this titration and the number of cc. used to titrate the excess of copper after precipitation of the complex salt, multiplied by 0.027151 gives the mercuric chloride content of the 10 cc. of solution used in the determination. The error varies from −0.6 to +1.05%.—C. CHINES. *Ann. Merceol. Sicil.*, 2 (1934), 282–286; through *Chimie & Industrie*, 35 (1936), 548–549. (A. P.-C.)

Morphine—Determination of, in Opium Preparations. Weigh 0.5 Gm. of opium (or 5 Gm. of tincture, which is then concentrated on the water-bath to a pasty consistency), dissolve in 2 cc.

of 10% caustic soda, transfer to a 50-cc. volumetric flask using 2 and then 3 cc. of a 10% caustic soda solution containing 1.64 Gm. of lead acetate per 100 cc., make to volume, filter immediately, transfer a 40-cc. aliquot to another 50-cc. volumetric flask, add 1.2 cc. of 50% sulfuric acid, make to volume, filter, neutralize a 40-cc. aliquot to litmus paper with 10% caustic soda and acidify with 1 drop of 10% hydrochloric acid, concentrate on the water-bath to 5 cc., transfer to a separatory funnel, wash with 2 cc. of 10% caustic soda and with 2 cc. of water, shake with 3 20-cc. portions of chloroform washing each extract with 5 cc. of water containing 3 drops of 10% caustic soda, neutralize the combined aqueous solutions with 50% sulfuric acid, make alkaline with caustic soda, neutralize or make faintly acid with hydrochloric acid, shake the solution (measuring 20 to 22 cc.) with 25 cc. of a 3:1 chloroform-isopropyl alcohol mixture, add 5 cc. of 4% sodium carbonate solution and shake again, immediately filter the lower layer through absorbent cotton into an Erlenmeyer flask, repeat the extraction 3 times, concentrate the chloroform solution to 10 cc. and evaporate to dryness on the water-bath; take up the residue in 20 cc. of 0.02*N* sulfuric acid (shaking with a little chloroform if necessary) and titrate the excess acid in the cold with fiftieth normal caustic soda in presence of 3 drops of 0.1% methyl red and 1 drop of 5% methylene blue, to a greenish end-point; 1 cc. 0.02*N* sulfuric acid = 0.005703 Gm. of anhydrous morphine.—F. SZEGHÖ. *Magyar Gyógyszerésztud. Társaság Értesitõje*, 11 (1935), 222–230; through *Chimie & Industrie*, 35 (1935), 635–636. (A. P.-C.)

Mucilaginous Drugs—Determination of Some, by Means of the Viscosity of Their Aqueous Extracts. The authors investigated the effect of simple maceration, of decoction, of filtration through single and double filters, the duration of extraction, heating over a free flame and the size of the particles, on the viscosity of the extract obtained from agar, chondrus, iceland moss, salep tubers and acacia. Salep tubers, because of their high starch content, could not be treated with hot water. As the result of these studies they suggested the following assays. *For Agar.*—About 5 Gm. of the whole drug is cut up coarsely and of this 2 Gm. is further cut up and 0.05 Gm. placed in a 200-cc. flask, treated with 100 Gm. of boiling distilled water and allowed to remain in a boiling water-bath for one hour, during which time it is shaken vigorously every ten minutes, the solution cooled, the water lost by evaporation made up, filtered through a single filter and the viscosity determined at 20° C. When this method is followed, a good sample should show a relative viscosity of 1.22. *For Chondrus.*—The determination was carried out in the same fashion as for agar except that 10 Gm. of drug was ground to pass through a No. 5 sieve (0.3-mm. mesh) and a 0.1-Gm. sample used to prepare the extract which was filtered through a double filter. A good sample should show a relative viscosity of 1.70 by this method. *For Iceland Moss.*—This was also determined in the same manner as agar except that 10.0 Gm. was ground in a mill to pass through a No. 5 sieve and 1.0 Gm. of the powder extracted as before and filtered through a double filter. By this method a good sample should show a relative viscosity of 1.65. *For Salep Tubers.*—0.1 Gm. of fine powder (No. 6 sieve 0.15-mm. mesh) is placed in a 200-cc. cylinder, treated with 100 Gm. of distilled water, allowed to stand two hours with shaking every ten minutes, filtered through a single filter and the viscosity determined at 20° C. A good sample should show a relative viscosity of 1.50 by this method. *For Acacia.*—20 Gm. of the whole drug are powdered to pass through a No. 5 sieve and 0.5 Gm. of this powder treated with 99.5 Gm. of distilled water in a beaker for one hour with stirring every ten minutes, filtered through a single filter and the viscosity determined at 20° C. A good sample should show a relative viscosity of 1.25.—E. WALDSTÄTTER and H. FEUER. *Scientia Pharm.*, 7 (1936), 41. (M. F. W. D.)

Nitroglycerin—Investigation of the Content of 1-Mg. Tablets of, Prepared by Different Methods. The nitroglycerin content of the tablets varies with the conditions of drying and with the composition. The nitroglycerin was determined after preparation by the method of Schulek and Karenyi, and a loss was always observed after drying in a current of air; after 1 hr. at 10° to 12° C. the average loss was 24%; after 5 hrs. at 50° C. it was 48%, after 24 hrs. at 20° C., it was 39%. The loss varied with the composition of the tablets. Two mixtures are recommended, one consisting of cocoa, arrowroot, gum tragacanth, gelatin, paraffin oil and talcum; the other, of cocoa, sugar, arrowroot and gum arabic. The concentration of the nitroglycerin solution used also affected the results. The loss on drying being smallest with the more concentrated solutions (5 to 10%), but their use is not advisable because of the activity of nitroglycerin. It is rather difficult to obtain perfect mixing of dilute solutions of nitroglycerin with the tablet mass, and the nitro-

glycerin content of some of the tablets may be too high.—Z. BARI. *Magyar Gyógyszerésztud. Társaság Értesitője*, 11 (1935), 68–81; through *Chimie & Industrie*, 35 (1936), 635. (A. P.-C.)

p_H in Drugs and Cosmetics. Applications of such measurements to drugs and cosmetics are discussed under the following headings: (1) Biological effects, (2) stability and activity of preparations and (3) stability of emulsions.—JOSEPH KALISH. *Drug and Cosmetic Ind.*, 38 (1936), 487–489. (H. M. B.)

Potassium—Gravimetric Determination of as Cobaltinitrite. The concentration of the solution must be of the order of 1–4 mg. potash per cc. To the sample solution add a few drops of 0.04% alcoholic solution of thymol blue; if the solution turns red add saturated sodium acetate solution to a yellow color, if it is blue, add acetic acid; heat to gentle boiling, slowly add 20 cc. of Carola and Braun's reagent so as not to stop boiling, remove from the flame, let stand 2 hrs., filter through a tared crucible, wash with water and then with 90% alcohol, dry at 80° to 90° C. and weigh. Contrary to the usual techniques, this procedure yields a precipitate of constant composition ($NaK_2Co(NO_2)_6.3H_2O$) having a factor of 0.1918 for K_2O. It obviates the necessity of eliminating lime and magnesia.—A. BOUAT. *Ann. École Nat. Agr. Montpellier*, 23 (1935), 197–200; through *Chimie & Industrie*, 35 (1936), 803. (A. P.-C.)

Refractive Index of Liquids—Determination of, as a Pharmaceutical Examination Method. Methods are discussed, especially the application of the visual method involving the determination of streaks.—ADOLF MAYRHOFER. *Pharm. Monatsh.*, 17 (1936), 41–45. (H. M. B.)

Sodium—Volumetric Determination of. The method consists essentially in distilling the triple uranium magnesium sodium acetate and titrating the liberated acetic acid instead of weighing the precipitate. To 0.5–2 cc. of the solution to be analyzed add 1.5–6 cc. of freshly prepared Kahane's reagent (dissolve 32 Gm. uranium acetate crystals, 100 Gm. magnesium acetate, 20 cc. of acetic acid and 500 cc. of 90% alcohol in water to 1 L.), shake, let stand 1 hr., filter, wash with 2 cc. of pure alcohol, transfer the precipitate and filter to a 100-cc. flask, add 0.5 Gm. of tartaric acid, steam distil 150 cc. and titrate with decinormal barium hydroxide in presence of phenolphthalein; subtract 0.4 cc. per 100 cc. distilled to correct for the apparent acidity of freshly distilled water.—J. DULAC and A. BOUAT. *Ann. École Nat. Agr. Montpellier*, 23 (1935), 191–193; through *Chimie & Industrie*, 35 (1936), 802. (A. P.-C.)

Soft Soap—Determination of Free Alkali in. Three basic methods are described in the literature: barium chloride precipitation method, salting-out method, alcohol solubility method. All seem to be faulty. The alcohol method of the U. S. P. is in slight error because small amounts of carbon dioxide are absorbed and traces of alkali carbonates and silicates dissolved in the alcohol. The deviation seems almost negligible. Experiments are being conducted to determine whether some of the free alkali in the soap when manufactured is gradually neutralized by the fatty acids in the soap.—ROBERT M. LINGLE. *J. Am. Pharm. Assoc.*, 25 (1936), 286. (Z. M. C.)

Sunburn Protective Agents—Measuring. A machine is described for relative measurement of sunburn protective value. The absorbing percentage of ultraviolet light (2900–3200 Å.) of several substances was found as follows: Solvents—white mineral oil 0%, coconut oil 23, peanut oil 24, olive oil 23, poppy seed oil 23, cottonseed oil 26, sesame oil 39; finished commercial products 27–98.9; aqueous solutions (1% and 5%)—quinine bisulfate 31–98.5; R salt (23.6 naphthol disulfonic acid sodium salt) 14–65; beta-oxynaphthoic acid (alkaline) 36–98; aesculetin (alkaline) 94; resorcin 4–9.9; cystine (alkaline) 5–12.5; trade name product IV (2% in glycerin) 96; white mineral oil solutions—benzamidazol (1%) 40, benzyl cinnamate 0, phenol ether of phenyl salicylate 42.5, abietin 28, xanthon 94.2, trade name products 92.9–98.8.—J. W. ORELUP. *Am. Perfumer*, 32 (1936), No. 5, 49–51, 87–89. (G. W. F.)

Universal Indicator—Two-Solution. A two-solution method of determining the p_H value of a liquid by means of a universal indicator has been devised. One solution is for determining the p_H value of acid solutions over a range from $p_H = 1$ to 7, and the other is for testing alkaline solutions, *i. e.*, over the range $p_H = 7$ to 14. The first is composed of:

Thymolsulphophthalein	0.035 Gm.
Tropeolin 00	0.020 Gm.
Tetrabromophenolsulphophthalein	0.010 Gm.
Bromocresol Green	0.030 Gm.
Bromocresol Blue	0.040 Gm.
Alcohol, 50%	100 cc.

It shows the following characteristic colors: p_H 1, cinnabar red; p_H 2, orange yellow; p_H 3, yellow; p_H 4, yellowish green; p_H 5, green; p_H 6, greenish blue; p_H 7, ultramarine. The second indicator which is for use with alkaline solutions, contains:

Neutral Red	0.035 Gm.
Thymolsulphophthalein	0.015 Gm.
Thymolphthalein	0.0125 Gm.
Nitramine	0.100 Gm.
m-Nitrophenol	0.060 Gm.
Alcohol, 50%	100 cc.

This solution shows the following characteristic: p_H 7, cinnabar red; p_H 8, yellow; p_H 9, yellowish gray; p_H 10, grayish green; p_H 11, grayish blue; p_H 12, grayish violet; p_H 13, brownish violet. --J. V. DUBSKY and A. LANGER. *Chemicky Obzor.*, 11, (1936), 29–30; through *Pharm. J.*, 136 (1936), 422. (W. B. B.)

TOXICOLOGICAL CHEMISTRY

Alcohol—Determination of, in Putrefied Blood and Tissues. Application to the Study of the Changes in Alcohol in Blood Undergoing Putrefaction and in the Cadaver of a Mammal (Mouse). Nicloux's dichromate method (originally published in 1896) is not applicable to putrefied blood owing to the production of volatile products that reduce dichromate. These interferences can be overcome by treating the sample with suitable reagents (such as silver nitrate, mercuric chloride) and the distillate with a potassium hypochlorite solution rendered alkaline with sodium carbonate, followed by successive distillations from alkaline and acid solution, respectively. Alcohol disappears more rapidly from putrefied blood as the temperature rises; at 20° to 22° C. disappearance is complete in from 13 to 16 days; in the refrigerator, in the same time about 11 to 12% of the alcohol is destroyed. In mice into which alcohol was injected, in the early stages of putrefaction the amount of alcohol found was appreciably greater than the total injected, which was due to production in the tissues of a non-negligible amount of alcohol-reacting substances during the first stages of putrefaction; the subsequent destruction of alcohol was similar to that in blood. No alcohol-reacting substances were formed in blood during the early stages of putrefaction.--MAURICE NICLOUX. *Ann. méd. légale criminol. police sci.*, 16 (1936), 113–114. (A. P.-C.)

PHARMACOGNOSY

VEGETABLE DRUGS

Valerian—Detection of Adulterations of. The following procedure is suggested especially for the detection of chicory root in valerian root: "Treat 5 Gm. of the root with 3–4 times its weight of water and allow to stand for 1/4 hour. Pour off the water and overlay the wet drug with iodine-potassium iodide solution. After 5 minutes all pieces of genuine valerian are colored black. Parts of the root stock are dark blue to black; the thin secondary roots are brown on the outside and in cross section show the typical black color. These colors are due to appreciable quantities of starch. Chicory root contains no starch but inulin and, therefore, remains white.--FRANZ BERGER. *Pharm. Monatsh.*, 17 (1936), 51–52. (H. M. B.)

PHARMACY

GALENICAL

Adrenaline Hydrochloride Solution. As it was found that a brand of solution of adrenaline hydrochloride, which keeps almost water white indefinitely, was much more acid than the B. P. product, it was decided to test various other samples; also the keeping property of solution of adrenaline hydrochloride containing acid in excess of the B. P. requirements. Ten cc. of solution of adrenaline hydrochloride was diluted with 50 cc. of distilled water, ten drops of solution of phenol red were added and the solution titrated with $N/100$ NaOH to a full pink. Three samples of solution of adrenaline hydrochloride were made strictly according to the B. P. formula, using three different makes of adrenaline, and the excess acid determined. Samples of solution of adrenaline

of various makes were then obtained and the excess of acid determined. These were purchased direct from the makers, in 1-oz. bottles. Tables are given which demonstrate the relationship between the acidity and the keeping properties of this preparation. It was concluded that the B. P. formula would be improved by the addition of 0.15% of sodium acid phosphate, which, from a clinical standpoint, is probably better than an increase in hydrochloric acid.—J. RAE. *Pharm. J.*, 136 (1936), 447. (W. B. B.)

Arbutin Content of Infusions, Decoctions and Macerations of Bearberry Leaves. Z. shows that these preparations made in the usual way do not remove all of the arbutin from the leaves and that the greatest yield is obtained by maceration methods. It is recommended that a minimum standard for arbutin in leaves be established.—L. ZECHNER. *Pharm. Monatsh.*, 17 (1936), 47–48. (H. M. B.)

Derris Root Preparations. Control of Warble Fly. An order by the English Ministry of Agriculture insists on the treatment of all cattle visibly infested with the maggot of the warble fly and specifies a standard for preparations used in the treatment. Specification with which dressings to be used for the purpose of compliance with the order must comply: The dressing shall be prepared immediately before use by diluting with water a preparation, in powder form, containing powdered derris root. The directions for the dilution of the preparation shall be such that each gallon of dressing produced shall contain: (*a*) Either 1 $^1/_2$ ounces of derris resins or half an ounce of rotenone; and also (*b*) 4 ounces of soap, which may be added at the time of dilution or may be incorporated in the preparation in powdered form. Thus it is possible to use a derris powder that is devoid of rotenone, provided that it contains not less than 9.4% of derris resins. There is no indication as to the method to be used for the determination of the rotenone content; neither is the solvent mentioned in the case of the resin content. Of five published methods for determining the rotenone content of roots the method giving the highest result can show a yield of rotenone three times higher than the method giving the lowest result. One of these methods is to determine the optical rotation of a benzol extract of the root and compare with the optical rotation of a pure solution of rotenone. The order states that the cattle should be treated at intervals of not less than twenty-seven days and not more than thirty-two days between the dressings, commencing between the fifteenth and twenty-second days of March or as soon thereafter as the maggots appear under the skin, and continuing so long as the maggots continue to appear.—ANON. *Pharm. J.*, 136 (1936), 423. (W. B. B.)

Derris Wash—Rotenone Content of. In order to produce a Derris Wash containing 2% rotenone, it is necessary to take 25 oz. of powdered derris root to 1 gallon of finished dressing, which must also contain 4 oz. of soap.—ANON. *Pharm. J.*, 136 (1936), 391 (W. B. B.)

Digitalis Leaf Powder, High Grade—Method of Utilizing in Pharmaceutical Practice. The activity of Hungarian digitalis leaf powder is frequently 50 to 100% greater than that of the International Standard, and the tolerance is only ±15%. In order to avoid mixing with a powder of lower activity, extracts differing from the standard potency by not more than 20% can be prepared by using a smaller quantity of the powder, calculated from its previously determined potency.—I. SZONGOTT. *Magyar Gyógyszerésztud. Társaság Értesitője*, 11 (1935), 346–348; through *Chimie & Industrie*, 35 (1936), 636. (A. P.-C.)

Drug Extraction. VIII. Effect of Maceration and Rate of Flow on the Efficiency of Percolation. This is a continuation of previous work on drug extraction, this report having to do with work on belladonna root, cinchona and nux vomica. The following conclusions were reached: "Maceration before packing is of no importance in increasing the efficiency of extraction of belladonna root in a percolation process; maceration after packing causes a slight increase in efficiency of extraction of total alkaloids and total extractive. Experiments on yellow cinchona and nux vomica also tend to show that maceration after packing increases the efficiency of extraction to a slight extent. Slow percolation gave slightly more concentrated percolates than rapid percolation in case of nux vomica and yellow cinchona. Percolation of belladonna root at a moderate rate gave just as efficient extraction as the slower rates tested."—WILLIAM J. HUSA and C. L. HUYCK. *J. Am. Pharm. Assoc.*, 25 (1936), 311. (Z. M. C.)

Drug Extraction—Methods of. C. states that common flaws in drug extractions are (1) alcohol losses, (2) excessive labor involved, (3) variations in yield (4) excessive amounts of related processings such as concentration, drying rectification, etc. and (5) equipment costs. In such problems rates of penetration, solution, diffusion and separation are to be dealt with and upon the

last named one depends the yield, alcohol losses, labor and efficiency of the method used. Ways and means in overcoming difficulties with certain drugs are discussed.—FRANCIS CHILSON. *Drug and Cosmetic Ind.*, 38 (1936), 477–478 and 484. (H. M. B.)

Formulæ from Abroad. Three formulæ are listed. (1) Siropus Iodotannicus Phosphoricus: Tannic acid, 2.5 Gm.; extract of rhatany, 4 Gm.; iodine, 2 Gm.; alcohol (95%), 100 Gm.; simple syrup, 170 Gm. (2) Williams' Eye Lotion: Sodium borate, 2 Gm.; camphor water, 100 cc. (3) Ether-Oil Mixture: Ether 2½ oz.; quinine, 20 gr.; alcohol, 45 minims; paraldehyde, 2 dr.; liquid paraffin or olive oil, to 4 oz.—ANON. *Pharm. J.*, 136 (1936), 343. (W. B. B.)

Gelatin—Use of, as an Emulsifying Agent. The use of gelatin to prepare economically thin, stable and whiter emulsions containing no carbohydrate with a minimum amount of emulsifying agent (0.6% as compared with 5–10% acacia) is discussed.—LINWOOD F. TICE. *Drug and Cosmetic Ind.*, 38 (1936), 635–636. (H. M. B.)

Iron and Ammonium Citrate Solution—Deposit in. A solution containing 1 part of iron and ammonium citrate in 3 parts of chloroform water should not deposit on standing for a reasonable length of time, provided precautions are taken against loss of chloroform. The formation of a green deposit after two or three days is a definite indication that the sample is not satisfactory.—ANON. *Pharm. J.*, 136 (1936), 414. (W. B. B.)

New Apparatus in 1935. Some new pieces of apparatus are described and illustrated. Those described are: a lime drying chamber which is adapted to drying the crude drugs for which this is specified in the pharmacopœia; Duplophiolen which are joined to ampuls by a capillary tube sealed with a soft metal plug—the one half contains the drug, the other the solvent which are then mixed when used by melting the little plug; an apparatus for sterilizing water with ultraviolet light and having a capacity of 2000 L. per hour; a pressure filter for sterilizing solutions; a combination filter and ampul-filling device. KONRAD SCHULZE. *Scientia Pharm.*, 7 (1936), 31. (M. F. W. D.)

Ointment Jars of Pressed Artificial Resin. The author wishes to correct a statement made in a previous article (*Schweiz. Apoth.-Ztg.*, 73 (1936), 239) that ointments kept in Bakelite containers undergo change because of the formaldehyde and ammonia liberated. The Bakelite Co. (Berlin) informed him that properly hardened material will neither split out formaldehyde nor ammonia. The author investigated another type of pressed artificial resin jar prepared by Owo-Presswerke (Mümliswil) and found that ointments kept in them for four weeks underwent no change. He also investigated the ointments which in his previous work he had found to undergo change and likewise found them stable in this new container.—SCHENKER. *Schweiz. Apoth.-Ztg.*, 74 (1936), 269. (M. F. W. D.)

Phenol Suppositories. The usefulness of water for phenol suppositories will depend on how phenol distributes itself between water and cocoa butter. A crude determination of the solubility of phenol in cocoa butter gave a value for temperature range at which a suitable suppository mass should be set, of about 1 to 1.5; the curve rises steeply with temperature. In a mixture of cocoa butter, phenol and water, in which the cocoa butter is in excess, miscibility and partial pressure data for phenol and water yield an estimated distribution ratio in the neighborhood of 1 to 5 in favor of the cocoa butter. Alcohol and glycerin are superior solvents for phenol, but both must be regarded as slightly miscible with cocoa butter, and the presence of phenol increases the miscibility. Glycerin appears to be the most useful solvent, and 5-gr. phenol suppositories containing 22% and 27% of glycerin were made without the use of ice, the mass being firm enough to remove from the mold after about three hours.—J. JACKSON. *Pharm. J.*, 136 (1936), 367. (W. B. B.)

Sterilization of Medicated Solutions. The second of a series of articles deals with the methods used for the determination of sterile medicaments including (1) chemical and physical methods such as (*a*) p_H measurements, (*b*) fluorescence measurements, (*c*) interferometry, (*d*) polarimetry and (*e*) colorimetry and (2) heat sterilization. The first substance examined was adrenaline (suprarenin) with the following observations: (1) with a p_H more acid than 4 and in concentrations of about 1:1,000, this substance is for all practical purposes and to a sufficient degree stable to heat, (2) in neutral and especially in weakly alkaline solution or at great dilutions it is quickly oxidizable, a condition which is chiefly recognized by color and turbidity, (3) the extent and duration of heat as well as pressure play subordinate rôles, (4) upon storing heated and unheated solutions stabilized solution may be obtained by the addition of 0.001 Gm. sulfur dioxide or 0.1 Gm. mannite for each mg. of suprarenin. Nine trade products were studied. *II. Phenylquinolin carbonic*

acid (*Atophan*).—Solutions of the salt, Atophanyl, consisting of equal parts of atophan sodium, and sodium salicylate were compared whereby one solution was unheated and others were heated to 120° C. for 15 minutes. The solutions were assayed by the method of Sanchetz (*Pharm. Zentralhalle*, 71 (1930), 328) and found that heat did not affect the compound. *III. Cardazol* (*Pentamethylenetetrazol*).—The following method of assay of Cardazol is proposed: "Five cc. 10% cardazol solution is treated with 25 cc. 5% sublimate solution, shake for a short time and filter off the precipitate in a tared glass filter crucible, wash with 5 × 5 cc. water allowing the water to remain in contact with the precipitate for 2 minutes before sucking off. After drying a 92.6 % yield is obtained. The compound formed corresponds to the formula $C_5H_{10}N_4.HgCl_2$." Heating for 30 minutes to 125° had no effect on 10% solutions and there was very slight change in the p_H of the solution (unheated 6.31%; 6 hours at 100°, 6.21%; 8 minutes at 120°, 6.16%). *IV. Physostigmine* (*Eserine*) *Salicylate*.—Solutions of this substance when given a p_H of 3–4 heated for a short time in an autoclave showed only a slight rose coloration with a decomposition of 0.5–1.0% and may, therefore, be considered as thermostable. *V. Apomorphine hydrochloride*.—This substance in solutions with a p_H = 3.2 is considered thermostable. *VI. Hexamethylenetetramine*.—This compound in the usual strong solutions may be heated in an autoclave without harm.—F. SCHLEMMER and O. SCHMIZ. *Apoth. Ztg.*, 50 (1936), 355–359, 376–378. (H. M. B.)

Sterilization of Steel Instruments. The addition of alkali, *e. g.*, 1% of borax or sodium carbonate, is useful to prevent steel instruments from rusting when boiled in water. Furthermore, the use of the soda increases the bactericidal action of the boiling water, and helps to remove stains.—ANON. *Pharm. J.*, 136 (1936), 461. (W. B. B.)

Syrup of Hypophosphites, Compound—Deposit in. Quinine alkaloid replaces in the new Codex the quinine hypophosphite of the B. P. C. 1923. This change has effected a great improvement in the keeping qualities of Syr. Hypophosph. Co. probably owing to the fact that quinine hypophosphite of commerce is often contaminated with a substantial proportion of phosphate.—ANON. *Pharm. J.*, 136 (1936), 391. (W. B. B.)

PHARMACOPŒIAS AND FORMULARIES

British Pharmacopœia Addendum. The principal recommendations of the B. P. Committees and Sub-Committees in so far as new monographs for the inclusion in the Addendum are concerned, are summarized; some explanatory matter has also been added. Notes on alterations in and additions to existing monographs of the B. P. 1932 will be published later, together with abstracts of the recommendations of the Vitamin Committee. The Sub-Committee on Sterile Solutions have considered questions relating to the sterilization of solutions for injection and members of the Sub-Committee have carried out investigations dealing with the effect of sterilization on the chemical, physical or biological properties of certain substances. Three different Sub-Committees have considered problems which have arisen from the pharmacy and pharmacognosy of the B. P. 1932. A list of chemicals, drugs and oils is given, along with recommendations by the various Sub-Committees of the General Chemistry Committee for changes in standards, methods of assay, etc.—ANON. *Pharm. J.*, 136 (1936), 315, 346, 400. (W. B. B.)

National Formulary and the Physician, the Dentist and the Pharmacist. The new book is discussed first as to development and scope. Under vehicles the following preparations are discussed: syrup of acacia, syrup of cherry, syrup of prepared cacao or "chocolate syrup," syrup of cinnamon, aromatic syrup of eriodictyon, syrup of glycerrhiza, syrup of raspberry, syrup of thyme; aqueous elixir and iso-alcoholic elixir and a number of other flavored elixirs. Medicated elixirs are elixir of phenobarbital, elixir of sodium thiocyanate. Emulsions, glandular products and tablets are discussed as well as some miscellaneous preparations. Dental preparations are a valuable group and among those discussed are glycerite of iodine and zinc iodide, compound dental liniment of aconite and iodine, compound paste of acetylsalicylic acid ("dental anodyne paste") and others.—ADLEY B. NICHOLS. *J. Am. Pharm. Assoc.*, 25 (1936), 344. (Z. M. C.)

Pharmacopœia of the Queen's Hospital for Children. Less than a quarter of this pharmacopœia is devoted to pharmaceutical formulæ, but these are sufficient to indicate the guiding hand of an experienced pharmacist. Formulæ for preparations for internal administration are set out in the apothecaries' system, the quantities given being those required for one dose. For preparations used externally, the metric system has been used, quantities given being sufficient to make

100 Gm. or 100 cc. The nomenclature conforms in the English names of ingredients with that of both the B. P. and B. P. C.—ANON. *Pharm. J.*, 136 (1936), 425. (W. B. B.)

Swiss Pharmacopœia V. The article is a reprint of an address delivered to a convention of Swiss pharmacists at the cantonal hospital at Lausanne. The author reviews the new pharmacopœia under four headings: (1) the introduction, general statements and tables at the end of the volume; (2) the simple drugs of vegetable origin; (3) the chemicals biologicals and organotherapeutic agents; (4) the galenical preparations. The review is quite complete.—R. FREUDWEILER. *Schweiz. Apoth.-Ztg.*, 74 (1936), 193, 209, 225, 241. (M. F. W. D.)

NON-OFFICIAL FORMULÆ

Aromatics—New Methods of Preparation in the Chemistry of. A review in the advances made in the manufacture of esters used in perfumes.—A. LEWINSON. *Riechstoff-Ind. Kosmetik*, 11 (1936), 53–56. (H. M. B.)

Cetyl Alcohol Cosmetics. Cetyl alcohol is to be recommended from a dermatological point of view, owing to the fact that it is an excellent emollient, stable, and free from any tendency to irritate. As a cosmetic base it is favored on account of the characteristically velvet-like texture it gives to the skin; the fact that it takes up water, and the smoothness, homogeneity, penetrating properties and stability it imparts to the finished cream. Cetyl alcohol is not influenced by weather conditions, does not oxidize, polymerize or turn rancid, thus exhibiting a marked superiority over certain widely used cosmetic oils and fats, such as spermaceti. A number of formulæ are given which are intended to illustrate the scope and utility of cetyl alcohol in typical modern cosmetics, including preparations as creams of the skinfood and massage type, shaving creams—ordinary and brushless—lotions, beauty milk, lipsticks and eyeshadow. Cetyl alcohol is useful in an acid cream, not only as an auxiliary emulsifying agent but also as a stable emollient.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 27 (1936), 154. (A. C. DeD.).

Cholesterol Hair Pomade. A formula is given for an ointment containing cholesterol and triethanolamine for falling hair. It is as follows: Cholesterol, 3.0; wool fat, 25.0; cacao butter, 25.0; olive oil, 25.0; triethanolamine, 7.0; stearin, 15.0.—ANON. *Pharm. J.*, 136 (1936), 438. (W. B. B.)

Cosmetic Salves and Creams—Modern Formulas for. In a lecture before the Naerke-Warmland (Sweden) Pharmaceutical and Laboratory Club, S. Norstrom describes modern cosmetic cream and salve formulas made with the newer emulsifying agents, Tegin (= A) and triethanolamine stearate (= B). Formulas cited include:

I

B	5 Gm.
Vaseline	15 Gm.
Liq. Paraffin	5 Gm.
Dist. Water	75 Gm.
(Methyl parahydroxybenzoate 0.10%)	
Perfume	*q. s.*

II

B	5 Gm.
Acidum stearic (Swed. Phar. X)	10 Gm.
Vaseline	15 Gm.
Liq. Paraffin	5 Gm.
Dist. Water	65 Gm.
Methyl parahydroxybenzoate	0.15 Gm.
Perfume	*q. s.*

These can be used as salve bases for *Unguenti pro naso.*

III (For Chapped Hands)

A	120 Gm.
Vaseline	60 Gm.
Adeps lanæ	40 Gm.
Paraffin liq.	60 Gm.
Ol. amygdalæ	60 Gm.
Glycerin	30 Gm.
Methyl parahydroxybenzoate dissolved in spirit (1 + 4)	2 Gm.
Aq. dist.	628 Gm.
	1,000 Gm.
Perfume	*q. s.*

IV "Opa" Cream

I Monostearin (= C)	120 Gm.
Normal NaOH	18 cc.
II *Cetaceum*	100 Gm.
III *Agar pulv.*	2.5 Gm.
Glycerin	100 Gm.
Aq. dist.	610 Gm.
IV Methyl parahydroxybenzoate	0.5 Gm.
Spir. conc. (+ perfume)	50 Gm.

Bath Preparations.

Item	Purpose	Properties	Composition	Formulas			
Bath Salts	To soften and perfume bath water	Loose crystals which do not form lumps. Usually tinted	Sodium sesquicarbonate is most useful. Sodium carbonate, phosphates and borax also used. Sodium chloride acts to refresh the skin. Sodium benzoate and talc are perfume fixatives	Sodium sesquicarbonate..	50	40	60
				Borax.....	25	10	..
				Sodium chloride.....	22	45	35
				Talc.....	..	0.5	..
				Sodium benzoate.....	3	..	5
				Perfume and color stable to alkalies			
				Tragacanth binder for tablets			
Effervescing Salts	Liberate gas (oxygen or carbon dioxide) in addition to softening and perfuming water	Effervescing tablets or crystals similar in appearance to bath salts	Carbonate and perborate combinations with solid organic acids, liberating gas when dissolved. Manganese salts as catalysts for perborate. Color and perfume stable to oxidation and alkalis. Binder for tablets	Sodium bicarbonate.....	50	40	15
				Sodium perborate.....	..	..	60
				Tartaric acid.....	40	..	..
				Potassium acid tartrate..	..	50	24
				Sodium sulfate.....	10	..	..
				Starch.....	..	10	..
				Manganous sulfate.....	..	..	1
Bath Oils	To perfume bath water and leave fine emollient film on skin	Clear or milky liquid which turns bath water milky and usually colors it	Perfume and cosmetic oils mixed with sulfonated oils or with emulsifiers which cause dispersion in water. Perfumes should be purchased, not individually compounded	Perfume oil.....	30	40	38
				Sulfonated castor oil.....	50	40	..
				Triethanolamine oleate...	..	..	12
				Vegetable oil.....	20	..	50
				Water.....	..	20	..
Dusting Powder	To dry and leave the skin smooth	White or tinted and perfumed absorbent powder	Primarily talc, but may contain absorbents and covering agents	Talc.....	60	70	80
				Zinc oxide.....	5	..	5
				Precipitated chalk.....	20	..	15
				Colloidal kaolin.....	15	15	..
				Boric acid.....	..	5	..
				Pigment and perfume....			
Toilet Water	To perfume and refresh the skin	Clear, sparkling, pleasant smelling liquid which evaporates rapidly	Combination of alcohol and essential oils gives astringent, antiseptic and stimulating effect	Solutions of floral type perfumes in alcohol (70-90%). Water used as rose or orange flower water. Solution absolutely clear. Perfumes such as lavender, eau de Cologne, etc., should be purchased rather than compounded.			

—ANON. *Drug and Cosmetic Ind.*, 38 (1936), 640-641. (H. M. B.)

In compounding Formula IV, C, the monostearin (made from stearic acid, Swed. Phar. X, 500 Gm., esterified with glycerin, 400 Gm.) is melted and mixed with the NaOH solution, then II is added, then the boiling solution of III added, stirred, cooled and finally IV added. About 50 Gm. of the water is evaporated per kilo of salve in compounding.

V Lanoline Milk

Emulgator 157 (Goldschmidt A-G., Essen, Germany)	8 Gm.
Aq. dist.	50 Gm.
Adeps lanæ	4 Gm.
Paraffin liq.	35.5 Gm.
Acid. stearic, Swed. Phar. X	1.4 Gm.
Acid. oleic pur.	1.3 Gm.

VI A Substitute "Milk"

Triethanolamine oleate (= D)	4 Gm.
Aq. dist.	72 Gm.
Vaselin	22 Gm.
Acid. stearic	2 Gm.

For Formula VI, D is made by adding 48 Gm. of triethanolamine slowly with stirring to 100 Gm. of warmed pure oleic acid. It should be made fresh as it turns brown on color on a few days' standing. Compounding directions are given for all the formulas cited.—S. NORSTRÖM, reported by G. FORSMAN, *Farm. Revy*, 35 (1936), 233, 248. (C. S. L.)

Cosmetics—Color Problems in. Part I. Raw Materials. The color producing raw materials used in the cosmetic industry may be classified as follows: (1) Soluble colors: (*a*) Natural, mainly of vegetable origin; (*b*) Synthetic dyes. (2) Insoluble colors: (*a*) Mineral ochres and pigments; (*b*) Insoluble lakes. The natural coloring materials are of least importance for cosmetic work since they are weak in tinctorial power, cumbersome in use, and often not very fast to light. Many show inconvenient variations in color with the acidity of alkalinity of the solvent used. Alkanet root is used to some extent; it contains an oil-soluble red coloring matter and may be used to tint brilliantine and creams. Chlorophyll was formerly used to tint brilliantines. The synthetic dyes possess many advantages over the natural dyes. The prime consideration in choosing colors for use in cosmetics should be freedom from toxicity and all possible effects on the skin. Toxicity of dyestuffs may be attributed to either or both of two causes: 1. Toxicity due to toxic impurities introduced during manufacture. 2. Inherent toxicity. The group of insoluble natural earths known as ochres embraces some of the most widely used colors for cosmetic work. Chemically they consist substantially of hydrated ferric oxide $2Fe_2O_3.3H_2O$, with traces of other metallic oxides. Well-recognized members of this group are yellow ochre, red ochre and Armenian bole. Ochres which have been fired to remove organic impurities are known as burnt sienna and burnt umber. They are useful in face powders. Synthetically prepared ochres are available, although the cost is higher than that of the natural products, but the color is usually cleaner and the pigmenting power higher. Vermilion (HgS), orange chrome (lead chromate) and red lead (lead oxide) are contraindicated for use in cosmetics since they are decidedly poisonous. Yellow chrome-zinc chromate is a borderline case so far as toxicity is concerned. There is no evidence of zinc being absorbed and causing trouble, but the chromate ion is toxic and this color though used, must be regarded with suspicion. Cadmium sulfide-yellow pigment is usually conceded to be harmless and non-toxic on the skin. The insoluble lakes constitute the most important class of colors for use in lipsticks, rouges and highly colored cosmetics generally. The ingredients required for the production of a lake are usually: (1) the soluble dye, (2) the precipitant, (3) the substrate. The precipitant for acidic dyes is usually a barium, calcium, aluminum or other metallic ion. The substrate may be alumina, kaolin, baryta, etc. The question of toxicity in lakes is more complicated than in the other coloring matters. Not only is there the possibility of inherent toxicity and toxic impurities in the parent dye, but the precipitant and substrate may be toxic or contain toxic impurities. Lakes containing barium or other poisonous metals should be entirely avoided.—M. L. HEWITT. *Perfumery Essent. Oil Record*, 27 (1936), 120, 165. (A. C. DeD.)

Depilatory—Notes on Cream. Since depilatories in order to be of value must dissolve hair, they also remove the epidermis or outer horny layer of the skin, which is similar to hair; they should, therefore, not be reapplied too soon. Cream depilatories are not really creams but aqueous solutions of sulfides—barium sulfide is recommended—with inert materials or fillers to give a smooth paste. As fillers titanium oxide, blance fixe, hydrated calcium sulfate or barium sulfate may be used; talc and kaolin for colored pastes. To obtain a product with more body and

smoothness and less filler, tragacanth, agar, starch or flour may be used to give a gelatinous product. For perfuming aromatic alcohols and ketones, blended rose odors, ionones, anise and safrol are suggested.—O. DEXTER NEAL. *Drug and Cosmetic Ind.*, 38 (1936), 633–634. (H. M. B.)

Dusting Powders—Simple and Medicated. The components of these preparations are discussed.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 38 (1936), 475–476. (H. M. B.)

Face Powder Manufacture. Part II. A continuation of an article which appeared in the *Perfumery Essent. Oil Record*, 27 (1936), 106.—HAROLD SILMAN. *Perfumery Essent. Oil Record*, 27 (1936), 174. (A. C. DeD.)

Face Powder Processes. Various elaborations of the wet and dry methods of preparation are discussed and the following formula given: Talc 66.06 Gm., zinc oxide 16, zinc stearate 6, heavy precipitated chalk 10, ochre 1.4, brilliant pink lake color 0.04 and perfume oil or compound 0.5.—ANON. *Drug and Cosmetic Ind.*, 38 (1936), 625–626. (H. M. B.)

Facial Masks. Fluid masks should have the following functions: (1) possess astringent properties and (2) have absorption power and a consistency about that of castor oil. They should contain acacia, a small amount of dextrin, alcohol, glycerin, a non-irritating preservative such as methyl *p*-hydroxybenzoate, a trace of cetyl alcohol, boric acid and may be perfumed with camphor, menthol and lavender. The following formula is suggested: No. 1.—Acacia 37 Gm., dextrin (optional) 2 Gm., boric acid 0.5 Gm., water 50 cc.; No. 2.—Alcohol 9 cc., glycerin 1 cc., cetyl alcohol, 2 Gm., methyl parahydroxybenzoate 0.15 Gm., camphor 0.2 Gm., oil lavender 0.3 cc., menthol 0.1–0.2 Gm., water *q. s.* 100 cc. A small amount of tincture of benzoin may be added if a more opaque product is desired. No. 1 and No. 2 are mixed separately and then No. 2 is poured slowly and with constant stirring into No. 1.—THORPE W. DEAKERS. *Drug and Cosmetic Ind.*, 38 (1936), 479–480. (H. M. B.)

Hydrogen Peroxide Compounds—Stable, for Cosmetic Preparations. Three samples of urea-hydrogen peroxide were prepared from chemically pure urea and 30% Perhydrol by crystallization at ordinary temperature: (1) crystalline, (2) powder and (3) powder stabilized with 0.08% citric acid and each showed a peroxide content of 35.3%. These samples, along with the following trade products (*a*) Hyperol, a urea-hydrogen peroxide stabilized with 0.08% citric acid, (*b*) Hydrobake, a combination similar to (*a*), and (*c*) Ortizon, similar to (*a*) with glucose as a stabilizer instead of citric acid, were preserved in clear or amber bottles provided with cotton plugs and tested for stability when placed in diffused light and in the dark from time to time for a year by the usual methods. It was observed that the decrease in hydrogen peroxide was greater for samples in diffused light (2–6.7%) than in the dark (0.8–3.5%). Further studies showed that the products of hydrogen peroxide with sodium pyrophosphate were much more stable if water-free salts were used.—A. FOUQUET. *Riechstoff-Ind. Kosmetik*, 11 (1936), 44–46. (H. M. B.)

Red Squill—Use of, as Substitute for Strychnine as Rat Poison. Red squill is recommended by the Ministry of Agriculture as a substitute for strychnine in the extermination of rats and mice. For use in the open, where water is available, solid bait is preferable to liquid poison. A suitable formula is as follows: Red squill powder, 20; bread, 30; fat, 30; syrup, 20; aniseed oil, *q. s.* Barium carbonate may also be used, but it is not recommended for putting down in farmyards or other places accessible to farm or domestic animals.—ANON. *Pharm. J.*, 136 (1936), 359. (W. B. B.)

Soap Manufacturer—From the Notebook of the. Transparent Soaps with Resin. A discussion with formulas.—KARL PFAFF. *Riechstoff-Ind. Kosmetik*, 11 (1936), 47–48. (H. M. B.)

Terpeneless Oils in Cosmetics—Use of. A review.—JOSEF AUGUSTIN. *Riechstoff-Ind. Kosmetik*, 11 (1936), 69–70. (H. M. B.)

DISPENSING

Practical Pharmacy—Practice of, in Free Hospital and Clinic of Jefferson Davis Hospital of Houston, Texas. This is a story from behind the scenes in the drug room of a hospital with free clinics serving a city of three hundred thousand population. It does not lend itself to abstraction but contains a wealth of detail about how the work is handled, all of which should be extremely interesting to those engaged in hospital pharmacy.—F. N. BONS. *J. Am. Pharm. Assoc.*, 25 (1936), 325. (Z. M. C.)

Pharmaceutical History

Alchemy and Technique. Historical.—Franz Strunz. *Pharm. Monatsh.*, 17 (1936), 52–53. (H. M. B.)

Anesthetics—History of. Historical.—Anon. *Pharm. Post*, 69 (1936), 182. (H. M. B.)

Apothecaries of the District of Königsberg in Neumark—History of. The fifth of a series of articles dealing especially with the history of apothecaries in the city of Furstenfeld.—George Edmond Dann. *Apoth.-Ztg.*, 51 (1936), 547–548. (H. M. B.)

Galenicals—Historical Development of. A description of an interesting exhibit where the historical development of a few of the older pharmaceutical preparations were shown. The formulæ were obtained from the old pharmacopœias and dispensatories, and the preparations made, as far as possible, in accordance with the processes laid down. Among the galenicals described were the Ergot Preparations, Syrup of Lemon, Sal Volatile and Spirit of Nitrous Ether.—Anon. *Pharm. J.*, 136 (1936), 342. (W. B. B.)

German Apothecaries as Poets and Thinkers. A historical review dealing with the careers of the following apothecaries: (1) Theodor Heinrich Mayer, (2) Emil Uellenberg, (3) Albert Trautmann, (4) Artur Hoger, (5) Johannes Richter, (6) Fritz Bouchholtz, (7) Walther Zimmermann, (8) Georg Loerke, (9) Georg Trakl, (10) Klara Bahrenburg.—Roderich Wald. *Süddeut. Apoth.-Ztg.*, through *Pharm. Post*, 69 (1936), 204–210. (H. M. B.)

German Apothecaries as Poets and Thinkers. (See *Pharm. Post*, 69 (1936), 210.) The second article deals with such eminent pharmacists as (1) Kasper Ludwig Merkl, (2) Adolfs Hermsens, (3) Louis Grellepois, (4) Alfred Dorner, (5) Ludwig Leiner, (6) Rudolf Uhland and (7) Franz Xavier Münzel.—Roderick Wald. *Süddeut. Apoth.-Ztg.*, through *Pharm. Post*, 69 (1936), 216–219. (H. M. B.)

Medical Practices and Drugs of California Indians. In this interesting account of the California Indians there is an introductory section dealing with the Indians themselves. The scope of the paper is shown by the following sub-titles: General Medical Theory of the California Indians, Diseases, Medicine Men, Surgery and Therapeutic Practice. Under Therapeutic Practice, drugs used are put into three classes: those absolutely useless; those that are supposed to cure because of resemblance to a part of the body or the disease; and those that actually produce a therapeutic effect. The last group contains quite a number of drugs and the method of using these is discussed.—John Culley. *J. Am. Pharm. Assoc.*, 25 (1936), 332. (Z. M. C.)

Microchemistry—Contribution to the History of. The second of a series of articles dealing especially with the influences of Johann Wolfgang Döbereiner. (See also *Apoth. Ztg.* (1931), No. 90; (1932), Nos. 83–86.)—Herbert Harms. *Apoth. Ztg.*, 51 (1936), 581–587. (H. M. B.)

Pharmacists Who Have Influenced the Development of Chemistry. The continuation of a series of articles dealing with (1) Justus von Liebig, (2) Karl Friedrich Mohr, (3) H. von Regnauld, (4) Karl Friedrich Rammelsberg, (5) Hermann Hager, (6) Max von Pettenkofer, (7) L. Remigius Fresenius, (8) Friedlieb Ferdinand Runge, (9) Marzellin Berthelot, (10) Lukasiewicz, (11) Wilhelm Merck, (12) Eugen Dieterich, (13) Ernst Ludwig, (14) Wilhelm Gintl, (15) Gustav Hell, (16) Ernst Schmidt, (17) Johann Karl W. F. Tiemann, (18) Karl Arnold, (19) Hugo Schrötter, (20) Hermann Thoms, (21) Josef Tambor and (22) Karl Dieterich.—Frido Kordon. *Pharm. Post*, 69 (1936), 137–143, 148–151. (H. M. B.)

Pharmaceutical Education

Pharmacists—Qualifications of New. The author points out that, though many factors are responsible for the condition which exists in pharmacy to-day, chief among them "can be very definitely proved to be our failure to more properly and carefully select those who have been allowed to enter the practice of pharmacy." There has not been too much care as to technical and scientific qualifications of men and women but there has been tragic carelessness as to their qualifications of character. Solution of the problem must be at the hands of individuals. Pharmaceutical groups must accept responsibility. There must be demand for those of proper character on boards and college faculties. Schools must quit thinking of the size of enrollments and begin thinking of fitness. Boards must have ideals in order to pass upon those who enter the practice.—Robert C. Wilson. *J. Am. Pharm. Assoc.*, 25 (1936), 340. (Z. M. C.)

MISCELLANEOUS

Pharmacy—Status of. A discourse dealing with various problems confronting professional pharmacy.—E. S. PECK. *Pharm. J.*, 136 (1936), 347. (W. B. B.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

***p*-Amino-Phenylsulfamide—Treatment of Experimental Streptococcic Septicemias by.** *p*-Amino-phenylsulfamide was administered orally in the form of the free base and parenterally in the form of the hydrochloride to rabbits and white rats infected with an extremely virulent hemolytic streptococcus, and prevented or delayed the death of these animals. It is the active nucleus of the new series of antistreptococcic nitrogenous substances such as "Prontosil," sulfamido-1-phenylazo-4-1'-diamino-2'-4-benzene.—FREDERICO NETTI and DANIEL BOVET. *Compt. rend.* 202 (1936), 1221. (G. W. H.)

Copper—Action of, on Anemia Produced in Young Rats by an Exclusive Milk Diet. Experimental anemia was produced in young white rats subjected to an exclusive milk diet with woman, ass and cow milks. Normally, the average red corpuscle count of rats is 4,200,000, the leucocyte count is 7,800, and the hemoglobin content 85 to 90%. During the first period of 1 to 6 weeks nearly all presented, irrespective of the kind of milk, a loss in weight during the second and third weeks and a progressive falling off in the hemoglobin content and red corpuscle count; the animals were apathetic and had diarrhœa. Toward the sixth week these symptoms increased, the teguments were pale, the hair fell, the weight decreased, the hemoglobin fell to 60 to 45% and the red corpuscle count to 1,500,000 to 3,000,000, the evolution being more rapid in young than in adult rats. Daily ingestion at this stage of 1 drop of 0.20% of copper sulfate solution (= 0.02 mg. of copper) produced an increase of 500,000 to 600,000 in the red corpuscle count in one week; with 0.1 mg. of copper daily there was a transformation in the general condition; diarrhœa stopped, the hair became glossy, the teguments took on color, the eyes became brighter, hemoglobin rose to 80% and the red corpuscle count rose above the normal figure to return to normal in about a fortnight. These results confirm previous observations of Elvehjem and Hart and contradict the criticisms of Drabkin and Waggoner.—S. B. BRISKAS. *Rev. Pathol. Comp. Hyg. Gén.*, 34 (1934), 1783; through *Bull. Soc. Sci. Hyg. Aliment.*, 24 (1936), 79–80. (A. P.-C.)

Digitalis Extracts—Potency of, Prepared by Different Methods. The active ingredients of extracts of digitalis leaf powder prepared by the methods of the various pharmacopœias were determined by Hatcher's modified cat method. The aqueous extracts prepared in the cold have a higher potency when assayed with frogs; by the cat method aqueous extracts prepared hot showed a higher potency than those prepared by maceration or percolation with cold water. Contrary to the indications given in the Hungarian Phar., extracts prepared in accordance with its directions or by the cold percolation do not lose any greater amount of active substances, whether filtered through paper or muslin, the cat method giving the same results in both cases.—I. SZONGOTT. *Magyar Gyógyszerésztud. Társaság Értesiteői*, 11 (1935), 339–345; through *Chimie & Industrie*, 35 (1936), 636. (A. P.-C.)

Drug Addiction—Rat Test for. The degree of hyperirritability developed after 24 hours' abstinence following drug treatment was observed. Morphine and dilaudid did not show any difference. Barbiturates showed a decrease in irritability. Acetanilid does not produce addiction. Insulin had no noticeable influence in morphine habituation.—E. J. STANTON. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 340. (A. E. M.)

Ergot—Pharmacological Evaluation of. Adrenaline retards the rhythmic movement of the rabbit intestine, and this action is itself inhibited by the alkaloid of ergot. Moreover, these phenomena are reversible, so that a series of comparisons can be carried out on the same organ. The action is not proportional to the quantity of ergotamine, the method being relatively more sensitive with smaller ergotamine contents, and even at that the differences must be greater than 25%. Sensibamine prepared from a Hungarian ergot was as active as ergotamine, and the same is true of the so-called amorphous alkaloids fraction consisting chiefly of ergotoxine.—B. ISSEKUTZ and MARIA LEINZINGER. *Magyar Gyógyszerésztud. Társaság Értesitője*, 11 (1935), 171–179; through *Chimie & Industrie*, 35 (1936), 635. (A. P.-C.)

Pharmacology for Pharmacists. The third chapter of a series of articles dealing specifically

with agents for the heat and vascular system including such cardiac tonics as digitalis, strophanthus, squill, convallaria and adonis.—H. FÜHNER. *Apoth. Ztg.*, 51 (1936), 392–393. (H. M. B.)

Pharmacology for Pharmacists. The ninth and tenth articles deal with (1) *Angiotonics* (Vasotonics) such as nitrites, adrenaline and suprarenal, sympatol, ephedrine and ephetonin and (2) *Styptics* (Hemostatics), and (3) agents for the respiratory organs such as (*a*) *Antasthmatics* such as hyoscyamus, stramonium and lobelia, (*b*) *antirhinitics* (catarrhal remedies including menthol, (*c*) *antipertussics* (remedies for whooping cough) including bromoform, thyme and drosera preparations, (*d*) *antibechics* (antitussics) (cough remedies) such as althea preparations, farfara, Iceland moss and gum arabic.—H. FÜHNER. *Apoth. Ztg.*, 51 (1936), 509–512, 602–604. (H. M. B.)

Pyrethrin I and Pyrethrin II—Evaluation of the Toxicity of. The following method is recommended: use standard 5-day old male flies, that have been kept at −1° C. for 10 to 15 mins., place on a slab of cold marble, to the thorax of each fly apply by means of a micropipette 0.75 cu. mm. of a solution of the pyrethrin in pure absolute alcohol (which was confirmed to exert no toxic action), replace in a chamber at 28° C. and count the number of dead flies at the end of 24 hrs. The average lethal dose can be calculated either from: (1) Kärber's formula, $aM = Dm - \sum \frac{z.d}{m}$, in which aM = mean lethal dose, Dm = dose giving 100% mortality, z = half the sum of dead flies in two consecutive groups, d = the difference in the doses corresponding to the same consecutive groups, m = no. of flies in each group, or (2) Wiechowski's formula, $aM = \sum \frac{a.b}{m}$, in which m = no. of flies in each group, a = difference in the number of dead flies in two consecutive groups, b = average of the doses used in the same consecutive groups. Both formulas gave practically the same results. The method gives results that are strictly comparable to chemical determinations by Ripert's method (JOUR. A. PH. A. ABS. (1935), 68). In direct contact with flies pyrethrin I is approximately two and a half times as toxic as pyrethrin II; on fish, the toxicity of pyrethrin II is about twice as great as that of pyrethrin I, on frogs it is only about 30% greater and on mice about 50% greater than that of pyrethrin I.—J. RIPERT and O. GAUDIN. *Ann. Fals.*, 29 (1936), 132–141. (A. P.-C.)

Synergy—Quantitative Study of the Phenomena of. Contribution to the Study of the Mechanism of Potentialization of the Hypnotic Action with the Rat. A continuation of the work previously described (*Compt. rend.*, 201 (1935), 796). The alcohol was determined after varying lengths of time in the blood and brain of rats receiving either alcohol alone or an association of alcohol and ethylbutylbarbituric acid. The results obtained show: (1) that an association of active doses of alcohol and ethylbutylbarbituric acid produces a sleep, the duration of which is sharply superior to the sum of the durations of sleep produced by each substance used alone; (2) that there is not any difference in the fixation of alcohol in the blood and the brain of the animals receiving either only alcohol or the association of alcohol and ethylbutylbarbituric acid, although at the moment of the determinations the state of the animals is sharply different, wakefulness with the animals receiving the alcohol and sleep with the animals receiving the association of hypnotics; (3) that the potentialization of the hypnotic action with the rat, due to the association of alcohol and ethylbutylbarbituric acid, was not on account of the more complete or more rapid penetration of the alcohol.—LAIA OLSZYCKA. *Compt. rend.*, 202 (1936), 1107. (G. W. H.)

Thyrotropic Extracts—Prolonged Injections of, without Development of Refractoriness. Highly purified extracts prepared by the flavianate method, do not develop refractoriness, whereas less pure preparations do.—SIDNEY C. WERNER. *Proc. Soc. Exptl. Biol. and Med.*, 34 (1936), 390. (A. E. M.)

Vitamin D—Skin Absorption of. A review.—R. SCHULER. *Drug and Cosmetic Ind.*, 38 (1936), 485–486. (H. M. B.)

Vitamin F—Evaluation of. The measurement of amounts of this vitamin necessary in creams to render the skin healthy is the object of the study. Female white rats weighing 45–55 Gm. which at the end of the 28th day are put on the Burr fat deficiency diet supplemented daily with fat-free yeast, irradiated ergosterol, beta-carotene and unsaponifiable extract from wheat germ oil to give proper amounts of vitamins B, G, D, A and E. The following symptoms appear: (1) scaliness (nutritional eczema) on the tail and hind legs in about 30 days, (2) scurf (dandruff) in

the fur, (3) hair rough, dull and lustreless, falling out, (4) nails brittle, (5) swelling at tips of the tail, which is characteristically ridged, swollen parts become necrosed and fall off. To detect the presence of vitamin F, material is applied to the skin of the tail of the animal and such animals fail to develop the Burr Syndrome. Details of application are described. The unit for evaluation of the vitamin is defined as the amount or preparation in mg. which applied daily by inunction to the skin of rats placed on the Burr diet will, after 10 applications, prevent the appearance of the symptoms characteristic of the deficiency which develops in 30 days. It appears that the value of ointments may have been due to the presence of lard as a base which is rich in this vitamin.—MARY I. SHEPHERD and DOROTHY R. LINN. *Drug and Cosmetic Ind.*, 38 (1936), 629–632. (H. M. B.)

Vitamins—Local Action of. In various ways, several investigators have shown that vitamin D calcifies a cell (even *in vitro*) in the same way as it recalcifies a rachitic organism. The same phenomenon of local activity has been noted with vitamin A and probably occurs also with vitamin C and with the parathyroid hormone. It can be legitimately supposed that the same is true of other vitamins and hormones. This return of vitamin and endocrine research toward cellular biology evokes a parallel with bacteriology; before the work of Besredka, infection and immunity were considered as general phenomena of the organism as witnessed in the humors by the antibodies, but it is now known that immunity can be a local phenomenon and that a tissue may possess a certain autonomy.—L. H. DEJUST. *Rev. Pathol. Comp. Hyg. Gén.*, 34 (1934), 1771; through *Bull. soc. sci. hyg. aliment.*, 24 (1936), 79. (A. P.-C.)

TOXICOLOGY

Amanita Phalloides—Hypoglycemia in the Course of Poisoning by. Extracts from dried *Amanita phalloides* were administered orally and subcutaneously to dogs and rabbits and the blood analyzed at hourly intervals until death. There is a gradual and pronounced diminution of the blood sugar. The convulsions observed with the rabbit are hypoglycemic convulsions. Extracts from non-poisonous mushrooms gave negative results.—LEON BINET and J. MARCK. *Compt. rend.*, 202 (1936), 1219. (G. W. H.)

Amidopyrine—Action of, on Bone Marrow. The author publishes a preliminary statement in the course of which he notes that hitherto the study of the action of amidopyrine on the blood of persons sensitive to this drug has been confined to the peripheral blood stream. At a hospital in Denmark he has investigated the changes proceeding in the bone marrow before and after the administration of amidopyrine to such sensitive persons. The technique he followed was that of Arinkin for exploratory puncture of the sternum. Three amidopyrine-sensitive patients were given small quantities of this drug by mouth, their bone marrow being examined before and after its exhibition. It was found to have an extraordinarily severe and protracted inhibitory effect on the granulocytopoiesis. In one experiment the bone marrow showed complete absence of the promyelocytes and an almost complete absence of the myelocytes three days after the last two doses of amidopyrine. The author concludes that the previously described leucopenia after the administration of amidopyrine is to be considered as due to a decrease in the production of granulocytes.—P. PLUM. *Ugeskrift. f. Laeger* (Jan. 30, 1936), 91; through *Brit. Med. J.*, 3930 (1936), 924D. (W. H. H.)

Arsine—Five Cases of Poisoning by. A description of five cases (two fatal) which occurred in a metallurgical (zinc) plant.—JEAN FIRKET. *Ann. méd. légale criminol. police sci.*, 16 (1936), 122–129. (A. P.-C.)

Carbon Monoxide Poisoning, Acute. A detailed description of a rather unusual case of carbon monoxide poisoning which was elucidated through coöperation between a doctor, an industrial chemist and an architect.—P. MAZEL. *Ann. méd. légale criminol. police sci.*, 16 (1936), 115–122. (A. P.-C.)

Carbon Tetrachloride Intoxication—Part Played by Cutaneous Absorption in. Experimental Investigation on White Rats and Guinea Pigs. It is concluded that, while cutaneous absorption may come into play, its importance is very slight as compared with that of the respiratory tract, and that inhalation of even small quantities of carbon tetrachloride vapors is particularly to be guarded against.—P. LANDE and P. DERVILLÉE. *Ann. méd. légale criminol. police sci.*, 16 (1936), 104–109. (A. P.-C.)

Cresol—Non-Fatal Poisoning by Voluntary Absorption of 150 Cc. of. A very detailed description of the case, which is of particular interest because cases of poisoning by ingestion of cresol are very rare. There is slight increase in the urea content of the blood reaching a maximum (about 0.05 Gm. per L.) on the 4th and 5th days, and a somewhat more marked, but parallel, increase in the polypeptide content; decrease beyond the maximum was coincident with an improvement in the condition of the patient. The action of cresol on the organism was in all points similar to that of phenol.—C. CAMUS and L. DÉROBERT. *Ann. méd. légale criminol. police sci.*, 16 (1936), 205–216. (A. P.-C.)

THERAPEUTICS

Acne (Acne Vulgaris; Acne Simplex). Causes of the disease are discussed. Treatment involves (1) removal of comedones and cleansing and disinfection, (2) daily application of preparations which are antiseptic and drying to lessen the oiliness of the skin and render it as aseptic as possible. Among the more common useful agents are salicylic acid, sulfur, resorcinol, ichthyol, ichthalbin (ichthyol albuminate) and pixalbol (purified colorless coal tar) applied as lotions or pastes and not as ointment since these preparations are too fatty. Recommended formulas for 13 lotions and 6 pastes are given.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 38 (1936), 627–628, 632. (H. M. B.)

Anemia—Composition for the Treatment of. A neutralized solution of a highly soluble, non-poisonous ferrous salt in water, containing sufficient glycerine to normally prevent precipitation of the iron.—ARTHUR E. MEYER, assignor to CHAPPELL BROS., INC. U. S. pat. 2,083,586, April 28, 1936. (A. P.-C.)

Aromatherapy. A number of observations are reported on the use of essential oils in the treatment of eczema, scalp disease, influenza, plague, amebian dysentery, piles, cancer, varicose ulcers and wounds.—R. M. GATTEFOSSÉ. *Parfumerie Moderne*, 30 (1936), 71–88. (A. P.-C.)

Athlete's Foot—Ti-Tree Oil in Treatment of. The following formula has been recommended in the treatment of athlete's foot: Ti-tree oil, 1 part; teaseed oil, 3 parts. Ti-tree oil is an essential oil, distilled from the leaves of *Melaleuca alternifolia*.—ANON. *Pharm. J.*, 136 (1936), 438. (W. B. B.)

Congo Red in Hæmophilia. C. P. Waldorp and A. G. Alvarez (*Semana méd.* (Jan. 3, 1935), p. 6), not having succeeded in the treatment of hæmophilia with numerous therapeutic agents such as calcium chloride, sodium citrate, electrogol, hepracton-campolon, sodium hyposulfite, horse serum, inhalations of CO_2 (5% in oxygen), vitamin rich dietary, ovarian extract, corpus luteum, folliculin and transfusion of 300 cc. of blood, found that Congo Red, given intramuscularly or intravenously (1 cc. per 9 Kg. of body weight), was of great value. Though not exerting much influence on the time of coagulation, its effect upon hæmarthrosis was most beneficial. Believing that the variations of coagulation time in hæmophiliacs cannot be assigned to known physical, chemical, biological or meteorological factors, these authors are inclined to attribute them to an idiosyncrasy.—*Brit. Med. J.*, 1 (1935), 1156B. (W. H. H.)

Ergotine—Use of, in the Treatment of Some Mental Diseases. Ergotine gave favorable results in hysterical crisis, delirium, excitation and mania.—ANTONIO CARELLI. *Semana méd.* (*Buenos Aires*), 42 (1935), 1571. (A. E. M.)

Glucose and Physiological Saline. When "glucose and saline" is prescribed, the formula from which it is made is: Glucose, 5%; sodium chloride, 0.9%; water to 100. In small quantities, the use of this solution is not attended by noticeable secondary effects, but when it is injected by the intravenous method continuously, in amounts up to 6 pints in twenty-four hours, the patient is apt to develop a rigor. Any substance present in an intravenous injection in undue proportion is capable of upsetting the very narrow margin within which life can be continued. A solution which has not yet caused rigor, although administered in amounts up to 20 pints in 4 days, and in one case 500 cc. in half an hour, has been prepared. Many more cases must be treated before it can be passed as completely satisfactory. In fact, experience with other injections, experimental and routine, would seem to indicate that they have an infinite capacity for giving trouble in at least a small proportion of patients. The formula at present in use is: Glucose, 250 Gm.; gum acacia (specially selected), 50.00 Gm.; magnesium sulfate, 1.00 Gm.; sodium bicarbonate, 16.50 Gm., sodium chloride, 30.00 Gm.; potassium dihydrogen phosphate, 0.90 Gm.; potassium sulfate, 1.75 Gm.; water, to 5,000 cc.; carbon dioxide, a sufficient quantity.—E. LLOYD, *Pharm. J.*, 136 (1936), 399. (W. B. B.)