# PHARMACEUTICAL ABSTRACTS

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

ABSTRACTORS



CONTENTS

### Toxicological Chemistry

**Arsenic—New Device for the Toxicological Determination of.** The apparatus includes various simplifications but its chief feature resides in the use of a quartz tube heated electrically to 850° C. (by means of a Lhomme et Darcy element) which ensures complete decomposition of the arsine and formation of remarkably uniform rings. As little as 0.01 mg. of arsenic can be detected, and formation of the ring is complete in 30 minutes. A series of standard rings can be formed on the same tube by successively moving the heating element along the quartz tube. The rings can be identified by dissolving in nitric acid, evaporating the nitric acid completely and treating for 10 minutes on the water-bath with a hydrochloric acid solution of sodium hypophosphite.—E. Kohn-Abrest. *Ann. fals.*, 28 (1935), 537–539. (A. P.-C.)

**Bismuth—State of, in Body Fluids and Tissues.** This report is concerned with the results obtained upon six different compounds of bismuth, the state of which has been determined in pure solution or suspension, after their addition to body fluid and tissues, and after intramuscular injection. It was found that all the compounds existed only in the electronegative state in varying amounts in the body regardless of their ionic state in pure solution or suspension. The preparations studied were bismuth oxychloride, bismuth oxysalicylate, sodium bismuthate, sodium iodobismuthate, sodium bismuth thioglycollate and sodium bismuth tartrate.—P. J. Hanzlik and A. P. Richardson. *J. Pharmacol.*, 55 (1935), 447. (H. B. H.)

## PHARMACOGNOSY

### Vegetable Drugs

**Aconite Root.** Many varieties other than *A. napellus* are to be found in commerce, such as *A. Fischeri* (*japonicum*) and *A. ferox* (*indicæ*). Distinctions are cited.—Anon. *Farm. Revy*, 34 (1935), 735. (C. S. L.)

**Ash Pictures—Identification of Drugs by. I. Classification of the Rutaceæ.** (Ref. *Yearbook*, 20–21 (1931–1932), 56.) A critical study of the ash pictures of 46 native, Japanese *Rutaceæ* and of the diagnostic value of the $CaC_2O_4$ patterns led to the following conclusions: 1. It is characteristic of this family, except *Bœnninghausenia japonica* Nakai, that $CaC_2O_4$ is present as single or twinned crystals, concretions or sand. The sub-family *Aurantioideæ*, except *Murraya exotica L.* and *M. Kœnigii* Spring., show the mixed type of individual crystals, whereas the *Toddalioideæ* and *Rutoideæ* show chiefly the mesophyll type of concretions. As exceptions the nerve-type of ash picture was found in *Evodia rutæcarpa* Hook. f. et Thoms., *Phellodendron amurense* Rupr. and *Ptelea trifoliata*, L. 2. Neither source nor age of the plant material caused any significant variation in the type of ash picture, except that the mixed type can be recognized with certainty only in the matured leaf because it is variable in younger leaves. In general the classification of the *Rutaceæ* on the basis of crystal habit and distribution pattern of $CaC_2O_4$ in the ash picture coincides with the accepted taxonomy. The form and distribution of the $CaC_2O_4$ crystals appear to be governed by genetic factors. They are not readily altered by external factors and are therefore suitable diagnostic characters. Fifty-three photomicrographs in 7 plates and 1 systematic table elucidate the text.—Y. Kondo. *J. Pharm. Soc. Jap.*, 54 (1934), 211–217. (R. E. K.)

**Ash Pictures—Identification of Drugs by.** (Supplement to III paper, ref. *Yearbook*, 20–21 (1931–1932), 511.) Ten additional leaf drugs have been examined in both the fresh and dried states. Various forms of calcium oxalate crystals were observed in: *Vaccinium myrtillus* L., *Myrtus communis* L., *Rhus toxicodendron* L., *Cassia acutifolia* Delile, *Agrimonia eupatoria* L., and *Betula alba* L. Amorphous structures were present in *Peumus boldus* Molina and *Piper augustifolium* Vahl, whereas neither oxalate crystals nor amorphous structures were found in *Mentha crispa* L. and *Pogostemon patchouli* Pal. The types of calcium oxalate crystals and their distribution were discussed in detail. A key to the identification by means of the ash pictures of all the leaf drugs studied is given. The original abstract should be consulted for the details of this key as well as for 14 photomicrographs (opposite pages 946–947 of the Japanese text).—Y. Kondo. *J. Pharm. Soc. Jap.*, 54 (1934), 179–186. (R. E. K.)

**Ash Pictures of Important Poisonous Plants.** The ash pictures of 39 dioctyledonous, poisonous plants, representing 17 families, were studied. The results were summarized in a table and illustrated by 32 photomicrographs. The occurrence of type-patterns of $CaC_2O_4$ crystals was

*as follows:* 1. Nerve-types. *Pieris japonicum, Sophora angustifolia, Cæsalpinia japonica.* 2. Mesophyll-types. *Datura Stramonium, Nicotiana longiflora, Nicotiana rustica, Solanum lyratum, Styrax japonicum, Rhododendron japonicum, Ricinus communis, Orixa japonica, Phytolacca esculenta, Phytolacca decandra.* 3. Mixed types. *Impatiens Textori.*—Y. KONDO and M. KAWAMURA. *J. Pharm. Soc. Jap.*, 54 (1934), 217–226. (R. E. K.)

**Geranium Species—Pharmacognostic Examination of Japanese Drugs from.** Since ancient times the native Japanese *Geranium nepalense* Sweet (= *G. Thunbergii* Sieb. et Zucc.) has been used as the drug "Bo-gyu-zi-byo (in Chinese, "Mang-niu-er-miao"). It consists of the decumbent, downy stems with the petioled leaves which attain a length of 15 cm. The leaves are 3–5 lobate, crenulo-serrate, with palmate venation. The upper epidermis consists of polygonal cells, the lower of sinuate cells; stomata occur in both surfaces. The mesophyll consists of a layer of long palisade cells and a rather loose, spongy tissue. Calcium oxalate secretions occur particularly in the palisade tissue. On the epidermis conic-acute, mono-cellular hairs 1000$\mu$ long are interspersed with shorter, mono-cellular, capitate hairs up to 60$\mu$ long mounted on a 2- to 4-celled stem. The leaves of other *Geranium* species are very similar and scarcely distinguishable anatomically, except *G. Robertianum* L. Admixture of *Erodium, Aconitum* and *Ranunculus* species with *Geranium* species is easily recognized. The anatomical distinctions are found chiefly in the cells of the leaf epidermis, nature of the hairs, the palisade-parenchyma and the shapes of the Calcium oxalate crystals. Twenty-nine figures depict the anatomy of 6 *Geranium* species and 4 adulterants.—T. MUHESADA. *Pharm. Soc. Jap.*, 54 (1934), 187–193. (R. E. K.)

**Myristica Seed.** This seed is sometimes found in commerce in a form longer (up to 4.5 cm.) and smaller than the official drug, and resembling Macassar nutmeg. The seed tapers toward the chalaza. The taste is less aromatic but sharper.—ANON. *Farm. Revy*, 34 (1935), 734. (C. S. L.)

**Parsley Root.** Parsley root (*Radix petroselini*) is difficult to distinguish macroscopically from parsnip root. Microchemical distinction is simple. The *apiin* (glucoside) of the parsley root gives a color with ferrous sulphate, sodium hydroxide and sulphuric acid.—ANON. *Farm. Revy*, 34 (1935), 734. (C. S. L.)

**Polygala.** *P. amara* is more lank than other species often found as impurities, and has an upright stem. The rossette of spade-like base leaves is characteristic.—ANON. *Farm. Revy*, 34 (1935), 733. (C. S. L.)

**Sambucus Ebulus L.—Histologic Staining by the Pigments of.** The method of preparing the reagent by extraction of the pigments from the plant is given. The procedure for the histologic use of the reagent is outlined. The authors claim that the results are as good as those obtained by the more common methods using hematoxylin or brazilin.—P. FOURMET and H. ROQUES. *Bull. soc. pharm. Bordeaux*, 73 (1935), 194–200. (S. W. G.)

**Sarsaparilla.** The Vera Cruz drug is coarse and poorly cleaned. The Jamaica drug is sometimes coarse and often rubbed up with laterite giving it a ruddy color. The endodermis cells of the two varieties differ under the microscope.—ANON. *Farm. Revy*, 34 (1935), 734. (C. S. L.)

**St. John's Wort.** *Hypericum perforatum* may be distinguished by the transparent vesicles in its leaves and by its acuminate sepals from other *Hypericum* species. *H. maculatum* for example is characterized by a four-ridged stem and more obtuse sepals. *H. hirsutum* (a German species) is hairy.—ANON. *Farm. Revy*, 34 (1935), 733. (C. S. L.)

**"Sump" Method—Application of the, to Leaf Drugs.** "Sump" is an abbreviation for "Suzuki's universal microprinting." This method involves softening a strip of celluloid with a patented solution consisting chiefly of amyl acetate; the surface to be studied is pressed onto the celluloid and then removed. The surface-relief can then be studied under a microscope. The method is simple and gives excellent detail. Heretofore the epidermal cells, cell patterns and venations of leaf drugs have been described. The same may be seen more clearly from "sump" impressions. Comparisons of fresh and herbarium specimens showed that there were no differences in leathery-leafed drugs such as *Prunus macrophylla, Fol. Laurocerasi, Fol. Lauri, Fol. Uvæ ursi* and *Fol. Sennæ.* Drugs of leaves with a thin epidermis, such as *Fol. Scopoliæ, Fol. Belladonnæ, Fol. Stramonii* and *Fol. Hyoscyami*, show distorted pictures because of wrinkling. The original should be consulted for 107 photomicrographs.—N. FUJITA and K. HARADA. *J. Pharm. Soc. Japan*, 54 (1934), 111–115. (R. E. K.)

**Valerian—A Review of the Various Types of, and the Determination of Their Therapeutic**

**Value.** The author reviews the literature of the various species of valerian plants, among them *V. sambucina*, Mikan; *V. officinalis*, L.; *V. exaltata*, Mikan (*V. altissima*, Koch); *V. media*, Koch; *V. angustifolia*, Koch; *V. exaltata*, Koch; *V. excelsa*, Poir; *V. sambucifolia*, Mik.; *V. latifolia*, Vahl; *V. tenuifolia*, Vahl; *V. mikanii*, Syme. A very complete morphological description is given for each species. The author also describes several plants grown by himself. He classifies the various types into four general groups or types: (1) Sambucifolia-type; (2) Minor-type; (3) Anglica-type; and (4) Kesso-type. It is difficult to arrive at any conclusion as to the therapeutic quality of valerian as the constituents are not well enough understood. It is doubtful whether the quantity of volatile oil or the quantity of acid indicates therapeutic value. The pharmacologic action seems to be due to more than one constituent and the author suggests that clinicians, pharmacologists and pharmacists coöperate to find a satisfactory solution.—P. VANDE VYVERE. *Pharm. Tijdschrift*, 13 (1935), 101. (E. H. W.)

### ANIMAL DRUGS

**Endocrine Glands—Microscopy of Powdered Desiccated.** Studies made by the author are presented with a view toward providing microscopical standards for powdered desiccated thyroid, suprarenal, whole pituitary, anterior pituitary, ovary, ovarian residue and corpus luteum. Detailed methods of identifying the various substances are given.—HEBER W. YOUNGKEN. *Am. J. Pharm.*, 107 (1935), 463. (R. R. F.)

## PHARMACY

### GALENICAL

**Adiantum Capillus-Veneris—Contribution to the Pharmacognosy and Pharmacy of.** The pharmacognosy of the Maidenhair (Venus Hair) fern is completely discussed, covering its botany, microscopy, constituents, history and the pharmacopœias in which it is official. The manufacture of a fluidextract and a syrup are discussed. The fluidextract should be allowed to settle for a week before filtering. Four drops of the fluidextract mixed with 10 cc. of water and 1 drop of ferric chloride should give a voluminous black precipitate which after 5 minutes has not deposited and still has a height of at least 1 cm. in an ordinary test-tube. A good product leaves a residue on evaporation of at least 12% (corresponding to a sp. gr. of 1.010).—A. MAUDENS. *Pharm. Tijdschrift*, 13 (1935), 82. (E. H. W.)

**Apparatus—Small Scale, for the Pharmacist.** The Swiss made "Securo" distillation jar which offers a considerable saving in heat and time amounting to as much as 80% as compared to ordinary apparatus, and which may be used as a container for heating substances, and for distillation or sterilization at normal or high pressures is described. It meets the requirements of the Swiss Phar. V.—GRETLER. *Schweiz. Apoth.-Ztg.*, 73 (1935), 649. (M. F. W. D.)

**Atropine Eye Ointments—Deterioration of, on Storage.** The following procedure was used in assaying the preparations: From 5 to 20 Gm. of the sample, contained in a dry beaker, was dissolved by the aid of gentle heat in a mixture of chloroform and dilute sulphuric acid and the solution was transferred to a separating funnel, the beaker being washed with more of the chloroform and dilute acid mixture. After shaking and standing, the chloroform was drawn off and extracted twice more with dilute sulphuric acid. The acid extractions were washed in succession with two portions of fresh chloroform in order to remove all trace of fatty basis, then mixed, rendered alkaline with ammonia, and the liberated alkaloid extracted with chloroform in the usual manner. The final alkaloidal residue was dissolved in $N/50$ sulphuric acid and the excess of acid titrated with $N/50$ sodium hydroxide, using methyl red as indicator. The findings are summarized as follows: It has been demonstrated that all the atropine eye ointments examined became weaker in atropine after storage. Ointments containing atropine base, with or without mercuric oxide, deteriorated most rapidly when stored in glycero-gelatin capsules. Glycero-gelatin does not accelerate the deterioration of ointments made with atropine sulphate. Yellow eye ointment with atropine B. P. C., 1923, loses alkaloidal strength rapidly and is an unsatisfactory preparation. The alkaloidal content of eye ointment of atropine with mercuric oxide B. P., 1932, falls to about four-fifths of its original value in about a month and then remains nearly constant for a considerable time. The alkaloidal strength of iodoform and atropine eye ointment B. P. C., 1934, was well maintained during the period of the observations. All results are tabulated.—N. L. ALLPORT. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 429–434. (S. W. G.)

**Black Currant Flavor.** A discussion of the use of black currant (*Ribes nigrum* L.) flavor and Jensen's formula for synthetic black currant flavor. The natural flavor may be obtained by pre-fermentation of the fruit pulp with sugar for a few days and extraction with alcohol. A ratio of 55:100 as between acid and sugar is recommended. Passion fruit (*Passiflora edulis* Sims) has a similar flavor to that of black currant.—H. S. REDGROVE. *Am. Perfumer*, 31 (1935), No. 5, 94–95. (G. W. F.)

**Cachous—Manufacture of.** The icing sugar should be in a fine condition. It is first dried carefully, and then passed through a sifting machine. What small lumps remain in the drum of the sifter are transferred to a mortar and, after pulverizing, are again sifted. The other ingredients are passed through the same sifting machine, and the scent and coloring applied in the same manner as in the manufacture of face powders. The final addition is the vehicle or "excipient." A small but varying proportion of lactose is included, as it ensures thorough absorption of the essential oils. As the mass is expected to be well formed together, powdered acacia, tragacanth or similar gum is added, but syrup acts equally well, depending on its selection. In some cases all three are added to the icing sugar. The product is then finely pulverized, passed through a sifting machine and then transferred to the hopper of the tablet machine. As an alternative, the mass, as directly mixed and sifted is mixed with the binding medium, and the plastic mass rolled out by hand on a board. When sufficiently thin, a tinplate cutter is pressed on the flat sheet of material, whereby the desired shapes of lozenges are obtained. The lozenge form of cachou is sometimes brushed with sugar dust to ensure that the surface is free from any slight inequalities. If sticking to the board is noticed, a thin layer of potato starch is covered over the board. The perfume of the cachou is not infrequently based on cloves, cinnamon or vanilla, but these are carefully masked by addition of rose, musk, lavender oil, patchouli oil. After the cachous have been prepared, they are packed in well-made, small boxes, or cartons, by machinery.—A. G. AREND. *Perfumery Essent. Oil Record*, 26 (1935), 386. (A. C. DeD.)

**Capsicum—Examination of the Extractives of.** The following summary is given: 1. The so-called oleoresins of capsicum vary in appearance, solubility and degree of pungency according to the solvent used for extraction. 2. Oleoresins of capsicum extracted with ether or acetone are soluble in ether, acetone, fixed oils and turpentine, but are insoluble in alcohol. 3. Oleoresins of capsicum extracted with alcohol (90%) are insoluble in ether, acetone, fixed oils and turpentine, but are soluble in alcohol (90%). When extracted with alcohol (60%) the oleoresin is insoluble in alcohol (90%) and any of the above solvents. 4. Both ether and alcohol extract much non-pungent matter from capsicum. 5. Oleoresin of capsicum B. P. C., 1934, is prepared by extracting an ether oleoresin with alcohol (90%) and is soluble in ether, alcohol (90%), acetone, benzene, chloroform, petroleum benzin, fixed oils and turpentine. It has a greater pungency value than any of the other oleoresins of capsicum, the pungency being about three or four times that of oleoresin of capsicum, B. P. C., 1923, which was extracted with alcohol (60%).—H. BERRY. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 479–483. (S. W. G.)

**Cinchona and Belladonna Root—Percolation of.** Powders of various degrees of fineness were percolated with 80% alcohol in the experiments with cinchona and 7 parts of alcohol (90%) and 1 part of distilled water in the experiments with belladonna. With both drugs, extraction of alkaloids was best with a moderately coarse powder (22–60) as compared with a fine powder (85) and a moderately fine powder (44–85). The relative percentage of alkaloids to other solids increases in successive fractions of percolate. When the powders in a single lot of cinchona were graded and packed in the percolators in progressive sizes, it was found that the most satisfactory extraction occurs when that portion of drug most difficult to extract (*i. e.*, the finest powder) is packed on top and thus comes into contact with fresh menstruum.—A. W. BULL. *J. Pharm. Pharmacol.*, 8 (1935), 378–385. (S. W. G.)

**Cresol Solution, Compound—A Study of.** Experience over a period of years has shown that students have more difficulty with the U. S. P. X formula than that of U. S. P. IX and that the present formula is objectionable for the following reasons: (1) The time required for completing the reaction and effecting a solution is too long; (2) Two alkalies are used where one is sufficient; (3) Possible loss of cresol, and changes in the product, due to continued heating necessary to complete the reaction. Other methods were studied with the hope of eliminating these objectionable features. Other oils with saponification values close to that of linseed oil have been studied with respect to phenol coefficient, surface tension, ease of manufacture, penetration power

and general appearance. From the standpoint of time the U. S. P. IX formula is better than VIII or X. It contains one alkali and alcohol. To prove the assumption that alcohol catalyzes the saponification reaction, alcohol was added in varying amounts and at various stages in the process. Without alcohol the time was much longer. Methyl alcohol was no better than ethyl and chloroform was hard to remove. The use of other oils was studied: almond, olive, corn, sesame, sunflower, peanut and soy bean. Results are tabulated, showing specific gravity, color, effect of dilution, phenol coefficient and penetration. The eight oils gave products much alike. Much has been said about soy bean oil because it is cheaper, and the product comparable to the official. Opposing arguments say the product is viscid, unsuited to dilution, that it gelatinizes upon cooling in the absence of excess alkali or when potassium hydroxide has been used alone. So a special study was made, using potassium hydroxide alone in varying quantities and with sodium hydroxide in varying quantities. None of the samples gelatinized when cooled to 15° C.; all dilutions up to 1–250 were clear except one deficient in alkali; use of mixed alkalies was no advantage. Gelatinization was traced to inferior cresol. Cresol of the U. S. P. quality gives no trouble. The following formula is proposed: "Cresol 500 cc., Oil (any fixed oil mentioned in this study) 300 Gm., potassium hydroxide 80 Gm., alcohol 10 cc., water, sufficient to make 1000 cc. *Procedure.*—Put the potassium hydroxide into 80 cc. of water. When solution is about three-fourths complete, add the alcohol and stir until solution is effected. Add this solution to the oil which has been previously warmed to about 60° upon a water-bath, and stir gently. When saponification is complete, as shown by testing with water, in the usual way, or by appearance, add the cresol, in small portions, with stirring. Finally, remove from the water-bath, cool and adjust the volume to 1000 cc. with distilled water." Fifteen minutes was sufficient time, so losses and changes due to continued heating are minimized. Surface tension was studied and relative surface tension measurements of two different dilutions of eight samples are given. Dilutions were 0.5% and 5% by volume, the usual ones when this product is used. Measurements were made with a Cenco-du Noüy Precision Tensiometer.—K. L. KAUFMAN and C. O. LEE. *J. Am. Pharm. Assoc.*, 24 (1935), 966. (Z. M. C.)

**Drug Extraction. V. The Extraction of Belladonna Root with Glycerinic Menstrua.** Details of procedure are reported. Four different menstrua were used and results are tabulated. They show that glycerin retards extraction, retardation increasing with increasing concentration of glycerin and with decreasing concentration of alcohol. These results uphold the general opinion that glycerin does not aid in extraction of alkaloidal drugs.—WILLIAM J. HUSA and LOUIS MAGID. *J. Am. Pharm. Assoc.*, 24 (1935), 839. (Z. M. C.)

**Emulsions—Observations on the Stability of.** The following conclusions are given: In order that an emulsion should be stable, it is necessary that it should contain (1) a suitable emulsifier and (2) a suitable phase ratio having regard to its type. If the emulsion is homogenized in an efficient machine the second is not so important as the first, as there will be little creaming. Experiments described have indicated that, as a general rule, the homogenization of an emulsion containing more than approximately 74% by volume of disperse phase leads to a partial breakdown, and accordingly emulsions which are to receive this treatment should not contain a larger proportion of disperse phase than 74%. On the other hand, if the emulsion is prepared by agitation alone, then the percentage of disperse phase should be at least 74% by volume, otherwise it is very probable that creaming will occur. Very stable non-creaming emulsions are possible if the continuous phase can be induced to set to a jelly-like form by the addition of a substance such as gelatin. This substance is subject to decomposition under the action of bacteria, and this greatly lowers its value. The ideal non-creaming emulsion would contain just sufficient disperse phase for the globules to be packed closest when the emulsion had been homogenized. It is not necessary that the disperse phase of an emulsion should be homogeneous. For example, in an oil-in-water emulsion there is nothing to prevent the emulsification of a relatively large volume of water in the oil by the aid of a suitable oil-soluble emulsifier before the final emulsification of the whole in water by means of a water-soluble emulsifier. Photomicrographs of particles of simple and complex emulsions are included.—JOSEPH B. PARKE. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 484–489. (S. W. G.)

**Epinephrine Solutions—Stabilization of.** Metabisulphite is held to be the best stabilizing agent for epinephrine solutions. Dental epinephrine-novocaine solutions should be buffered

with hydrochloric acid. Thus one cc. of $N/10$ HCl per 100 cc. solution gives $p_H$ 4.35.—ANON. *Farm. Revy*, 52 (1935), 836. (C. S. L.)

**Fluidextracts—Preparation of.** A glass tube 1 m. long is recommended as suitable percolator for the preparation of fluidextracts. The diameter of the tube should be regulated by the amount of the material to be extracted but too wide a tube should not be taken so that the layer of drug material will be as high as possible. The best form of the drug to use is a moderately coarse powder (sieve IV) from which the finer particles have been separated. Preliminary moistening, recommended by the D. A. B. to drive out air, is not necessary if the drug is evacuated. The whole process works best in an evacolator constructed according to Kessler. With this apparatus it is possible to prepare extracts most rapidly at the lowest cost without evaporating, without contact with metal and without pressing.—E. KESSLER. *Suddeut. Apoth.-Ztg.* (1935), 42; through *Squibb Abstract Bull.*, 8 (195), A-1333.

**Gentian—Galenical Preparations of. IV.** The Swiss Phar. V directs the distillation of the second fraction of percolate of gentian root in the preparation of the extract to be made under reduced pressure. This offers considerable inconvenience. The author shows that the extract obtained is the same whether the official method is followed or whether most of the alcohol is removed at ordinary pressure on a water-bath and the aqueous residue then distilled under reduced pressure. The author gives data to prove that there is no greater loss of alcohol when the distillation is carried out under reduced pressure than ordinarily, provided a good circulation of water through the condenser is maintained. The physical properties of the extract prepared by the author's and the official methods are compared. The composition of the extract is worked out. It was found that the gentian root of commerce did not contain much of gentiopicroside which is recognized as being responsible for the therapeutic activity of the drug. The pharmacopœia does not include an assay for this constituent. The extracts prepared by both methods represented accurately the activity of the drug and did not differ except that the author's extract had a slightly duller color and contained a slightly smaller amount of holosides.—C. BÉGUIN. *Pharm. Acta Helv.*, 10 (1935), 150. (M. F. W. D.)

**Glycols—Some Properties of the.** The following summary and conclusions are given: 1. Attention is directed to the toxicity of diethylene dioxide and ethylene glycol. 2. In assaying propylene glycol galenicals, involving the use of ether or chloroform for extraction, the galenical should be diluted with at least one-fifth of its volume of water. 3. Solutions of certain alkaloids in propylene glycol can be freely diluted with water without precipitation. 4. Propylene glycol tends to mask the reaction of certain alkaloidal reagents, notably picric acid and tannic acid. 5. Phenolphthalein can be dispensed in solution in therapeutic doses. 6. The halogen salts of sodium and potassium are very soluble in propylene glycol. 7. Dyes are readily soluble. Propylene glycol would, therefore, be a suitable preservative. 8. Propylene glycol would make a suitable preservative for syrups. 9. It is a solvent for most volatile oils. 10. It may be a suitable menstruum for tinctures (especially senega) owing to its non-volatility, its solvent powers, miscibility with water and alcohol and its preservative action. 11. Propylene glycol considerably retards the volatilization of ethyl nitrite and may conveniently replace ethyl alcohol in sweet spirit of nitre.—C. L. M. BROWN. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 390–397. (S. W. G.)

**Hexamethylenetetramine Camphorate—Ampuls of.** The author discusses the manufacture of the acid hexamethylenetetramine camphorate which may be obtained by evaporating an alcoholic solution of 1 mol. of camphoric acid (10 parts) and 1 mol. of hexamethylenetetramine (7 parts) in a vacuum at a temperature below 50°, and of hexamethylenetetramine camphorate which is obtained in similar manner by using 1 mol. of camphoric acid (10 parts) and 2 mols. of hexamethylenetetramine. Preparations on the market such as amphotropin are of the latter combination. Directions for making Camphoras Hexamethylentetramini are as follows: Mix 100 parts of camphoric acid and 140 parts of hexamethylentetramine; dissolve the mixture in alcohol by warming to 50°, and evaporate the solution at a temperature not exceeding 50°, preferably in a vacuum. Dry in a vacuum desiccator. Directions for preparing Ampullæ Camphoratis Hexamethylentetramini are as follows: dissolve 4.8 parts of Camphoras Hexamethylentetramini and 37.2 parts of Hexamethylentetraminum in enough sterilized distilled water to make 100 volumes; filter; fill into ampuls and sterilize. Care should be used against contamination during preparation.—H. J. VAN GIFFEN. *Pharm. Weekblad*, 72 (1935), 1153. (E. H. W.)

**Homogenizing Apparatus.** A small scale apparatus called "Emulgor" made by the firm A. Munding (Stuttgart) selling for 36 marks is described. The authors find the apparatus satisfactory for making cod liver oil emulsions.—E. WETZEL and E. RIEDEL. *Apoth.-Ztg.*, 50 (1935), 1435-1436. (H. M. B.)

**Isopropyl Nitrite Solution—Note on.** Isopropyl nitrite solution may be prepared extemporaneously as follows: Dissolve 3.5 Gm. of sodium nitrite in 5 cc. of water and add the solution a drop at a time with constant shaking to a mixture of isopropyl alcohol 6 cc., pure sulphuric acid 1.5 cc. and water 6 cc., well cooled in running water. Transfer the product to a four-ounce bottle containing 25 cc. of brine solution and shake well. Suck the mixture up into a glass syringe, allow to separate and expel the lower aqueous layer. Wash again with 30 cc. of saturated sodium carbonate solution. Make up to 100 cc. with isopropyl alcohol. If excess alcohol is used a diluted product is obtained containing approximately 38% v/v of alcohol and having boiling-range 42–42.5° C. and sp. gr. 0.8445. The purified product had b. p. 39.5–40° C., and sp. gr. 0.8684 at 15° C. The preparation is more stable than sweet spirit of nitre, and is suggested as a substitute for the latter preparation.—C. L. M. BROWN. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 386–389. (S. W. G.)

**Javel Water—Influence of Time, Light and Temperature on the Preservation of.** Light plays the greater rôle in the decomposition of hypochlorite, about 60% being decomposed after 27 days; a rise in temperature has but slight effect on this decomposition. But the decomposition of chlorite into chlorate and chloride is essentially dependent on the temperature and is only slightly affected by light. The decomposition of dilute solutions is more rapid than that of concentrated solutions. The antiseptic power of a dilute solution kept in the light at 30° C. is practically nil after one month.—R. P. JACQUEMAIN and J. H. DOLL. *Bull. soc. chim.* [5], 2 (1935), 1669. (E. G. V.)

**Kaolin—Drying.** For small scale manufacture of quantities of about 10 lb. the kaolin for Cataplasma Kaolini, B. P., is dried most conveniently in an electric oven provided with thermostatic control, the kaolin being placed in metal trays, and in shallow layers to ensure thorough sterilization by heat.—ANON. *Pharm. J.*, 135 (1935), 616. (W. B. B.)

**Luminal Preparations for Injection.** A method for the preparation of an intramuscular injectable luminal preparation is given. Diethylamine is used as the base. If the preparation is made at 60–65° the luminal remains unaltered, but if the preparation takes place at 100° about 1% of the luminal is converted into phenylethylacetylcarbamide.—C. J. BLOK. *Pharm. Weekblad*, 72 (1935), 1221. (E. H. W.)

**Ointments and Ointment Bases I.** An important quality of ointment bases is their ability to absorb water. The so-called "cooling salves" depend on this for their value. The authors have coined a term "Water Number" (W. No.) which they define as the largest amount of water which 100 Gm. of ointment base will hold at normal temperature (20° C.). The bases studied were those official in the Swiss Phar. The incorporation of the maximum amount of water was effected in a mortar by adding water to the melted base and triturating until cool. If no water remained, more was added in small amounts until no more was taken up. The ointment was transferred to a jar and kept in a refrigerator for several hours at about 0° C., then allowed to come to room temperature and rubbed on a slab with a spatula. This procedure was repeated until no more water exuded. The water present in a 5- or 10-Gm. sample of base was determined by the method of Pritzker and referred to 100 Gm. of base. The result does not possess the exactness of other analytical methods since various interfering factors cannot be well controlled. In order to determine the quality of the emulsion, the saturated base was observed under a microscope, the water phase being colored with methylene blue 1–100,000. Five commercial vaselines were investigated and found to give pseudo-emulsions when water was incorporated, the globules varying considerably in size up to a diameter of 300$\mu$. The addition of spermaceti to vaseline, even up to 40% increases only slightly the ability to hold water. The studies of the addition of cetyl alcohol to vaseline showed that true W/O emulsions were formed, all globules having a diameter of 10$\mu$ or less. Cetyl alcohol ranging from 3 to 5%, regardless of whether it still contains esters, is mixed with higher alcohols or consists entirely of hexadecanol, increased the water absorbing capacity of vaseline from 3 to 4 times. It is significant that only 1% of cetyl alcohol raises the W. No. close to the maximum. Studies with pure wool fat showed that it is possible to prepare a mass having a W. No. of 475 which on continued working falls to 186. The

water globules measure not over 1$\mu$. The addition of varying amounts of wool fat to vaseline indicated that 10% of wool fat imparts the maximum W. No. without making the ointment spongy. The W. No. of a mixture of 86 parts vaseline, 4 parts cetyl alcohol and 10 parts of wool fat official in the Swiss Phar. V as "Unguentum cetylicum" was determined. It was found that the water slowly separated from the base on repeated working at intervals, but in about 6 months had reached a constant value which was taken as the maximum. It was found that the W. No. was roughly the sum of the increases in water absorption produced by wool fat and by cetyl alcohol. A mixture of vaseline, cetyl alcohol, wool fat and olive oil, the base of "Unguentum refrigerans" of the Swiss Phar. V, showed a much lower W. No. when rose water is used than would be expected. The reason for this is the entirely different behavior of absorbing bases toward solutions in water and toward water alone. Since the formula is such that the theoretical water content represents a W. No. of 85 and studies show that with rose water this base exhibits a W. No. of only 49, the reason for the separation of the ointment is apparent. Hydrogenated peanut oil itself, introduced into the Swiss Phar. V as a substitute for lard, showed a W. No. of 75. Since wool fat raises the W. No. of vaseline considerably, it might also be expected to raise that of hydrogenated peanut oil. However, 1 to 2% of wool fat raised the W. No. only slightly and 3 to 5% not at all. On the other hand, only 1% of cetyl alcohol more than doubled the value of peanut oil alone. The W. No. of lard is low (7.5–14%) depending upon the source and quality. It forms a pseudo-W/O-emulsion with water in which the globules are smaller than with vaseline, none being over 30$\mu$ in diameter. The addition of cetyl alcohol (1%) increased the W. No. 30 times, 3% being the optimum (W. No. 245). Mixtures of wool fat and lard showed some increase in W. No. but the increase was less than that for vaseline and wool fat. The addition of white wax to lard increased the W. No. nearly three times. The article will be continued.—P. CASPARIS and E. W. MEYER. *Pharm. Acta Helv.*, 10 (1935), 163. (M. F. W. D.)

**Ouabain and *k*-Strophanthin—Stability of Aqueous Solutions of.** The following findings are reported: 1. Variation in $p_H$ affects the stability of aqueous solutions of *k*-strophanthin and ouabain, but the latter is stable over a wider range of $p_H$ than the former. 2. In order to ensure perfect stability of *k*-strophanthin solutions under ordinary dispensing conditions they should be buffered at about $p_H$ 6.5. This is unnecessary with ouabain. 3. *k*-Strophanthin solutions buffered at 6.5 may be sterilized by the official process of autoclaving without loss of activity and should be very stable during storage. Unbuffered ouabain solutions may be similarly sterilized, and should be very stable during storage. 4. Glass containers for *k*-strophanthin solutions should comply with the tests for limit of alkalinity.—H. BERRY. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 464–471. (S. W. G.)

**Pastes—Official.** Pastes are sugar-containing preparations of plastic consistance which do not adhere to the fingers. They are essentially composed of sugar and acacia, from which the water of the solution is evaporated after addition, in the desired conditions, of the medicinal substances. They may be transparent or opaque, depending on whether air is beat into the mass while cooling. The pastes are covered with a layer of crystalline sugar. Formulas of pastes of lichen, licorice, eucalyptus, menthol and eucalyptus, tolu and codeine, licorice, tar and balsam of tolu are given and changes are pointed out.—*Supplement French Codex, Union pharm.* (Aug. 1935), 249; through *J. pharm. Belg.*, 17 (1935), 764. (S. W. G.)

**Pharmaceutical and Phytochemical Substances—Procedures for the Preparation of.** A continuation of a series of articles in which directions are offered for the making of the following substances: (1) sodium bromide, (2) sodium iodide, (3) soluble starch, (4) sodium chloride, (5) hydrochloric acid, (6) amygdalin, (7) mercuric acetate, (8) acetanilid, (9) citric acid, (10) mercurous chloride, (11) benzoic acid, (12) silver nitrate, (13) *o*- and *p*-nitrophenol, (14) palmitic acid, (15) copper sulphate, (16) methyl iodide, (17) berberine sulphate, (18) hydrastine, (19) oleic acid, (20) glycerin, (21) iodic acid, (22) lithium acetylsalicylate, (23) tartaric acid and (24) artificial resin.—C. A. ROJAHN. *Apoth.-Ztg.*, 50 (1935), 1566–1568, 1604–1605, 1638–1639, 1677–1679. (H. M. B.)

**Tablet Making—Fundamentals of.** The following operations are listed: pulverizing, sifting, mixing, granulating, drying, grinding and lubricating. Bases, binders, disintegrators and lubricants are discussed.—H. J. SANDER. *Drug and Cosmetic Ind.*, 37 (1935), 737–738, 742. (H. M. B.)

**Tablets—Development and Use as Galenical Preparations.** The article is a review

of tablet literature. Definitions are stated for tablets, tablet triturates and pastilles. The manufacture of tablets is reviewed in a general way under the topics of granulations, exact dosage, firmness of the tablet, the stability toward chemical and physical changes on storage, and speed of disintegration. The article is concluded with a very complete bibliography of tablet literature arranged according to the date of publication.—P. KÄMPF. *Pharm. Acta Helv.*, 10 (1935), 195. (M. F. W. D.)

**Tincture of Digitalis—Relative Merits of Maceration and Percolation for the Preparation of.** The processes of percolation and maceration have been compared on a sample of standardized digitalis leaf. The percolation was carried out with 10 Gm. of powdered drug, 100 cc. of percolate being collected. Maceration was carried out by adding 100 cc. of menstruum (70% alcohol) to 10 Gm. of the powdered drug and collecting 90 cc. of macerate. The total solids extracted and the potency of the tincture have been determined for a variety of conditions. Percolation extracted a larger amount of total solids than did maceration. The potencies were approximately the same for both types of preparation. Maceration for two days with occasional shaking, extracts the activity as effectively as percolation, and should give more uniform results.—H. BERRY and H. DAVIS. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 443-446. (S. W. G.)

**Tincture of Nux Vomica—Preparation of.** Dickens and Nitardy (*J. Am. Pharm. Assoc.*, 22 (1933), 40) have followed numerous experiments for finding a more satisfactory method for the preparation of tincture of nux vomica. Their object was to determine the advantages and disadvantages of menstrua containing acetic acid and hydrochloric acid, respectively, and to study the influence upon the speed of extraction of the alkaloid contained in the drug, by the duration of the maceration and by the velocity of percolation. They agree upon the conclusion that for the complete extraction of the drug (94.03–96.58% of alkaloid contained) there is necessary an adequate maceration (24 hours) and a slow percolation (0.5 cc. per minute) using menstrua having, respectively, the following composition: alcohol 750 cc., water 240 cc., acetic acid 10 cc. and alcohol 750 cc., water 245 cc., hydrochloric acid (33%) hydrochloric acid) 5 cc. and completing the percolation with a mixture of 3 volumes of alcohol and 1 volume of water. Inferior quantities of acid cause incomplete extraction. Defatting the tincture by cooling at 5° C. does not remove the alkaloids and avoids formation of precipitation as the tincture ages. The authors prefer the use of acetic acid to that of hydrochloric acid because a precipitate is not formed in the tincture, and noting that the U. S. P. prescribes that the menstruum for tincture of nux vomica should contain 1% of acetic acid. Ponte subjected to control the method of extraction indicated by Dickens and Nitardy on three samples of drug, along with the method given in the Italian Phar. The three samples of drug used contained respectively the following amounts of alkaloid: A = 2.33%; B = 2.90%; C = 2.90%. These values representing the average of numerous determinations. For the preparation of tincture of nux vomica according to the Italian Phar. the drug was defatted with petroleum ether in the cold (48 hours) and the samples of the tincture prepared according to Dickens and Nitardy were defatted by cooling to 5° C. The amount of alkaloids present was determined and the results recorded. According to the results the method indicated by Dickens and Nitardy yields a more complete extraction. The defatting with petroleum ether removes a quantity of the alkaloid which explains the poor extraction of the drug.—DINO PONTE. *Giorn. farm. chim.*, 84 (1935), 152. (A. C. DeD.)

**Tincture of Opium.** It is pointed out that tincture of opium made according to the U. S. P. precipitates badly and continues to precipitate even after aging and subsequent filtration. The sediment remains suspended for a long time. A quotation from the U. S. Dispensatory states that "death has resulted in infants from doses which would have been entirely safe if the tincture had been clear." Experimental work was undertaken to find a method which would eliminate precipitation. The following was finally chosen as best: Granulated opium 100 Gm., Paraffin 50 Gm., Alcohol 200 cc., Distilled water *q. s.* 1000 cc. The opium was mixed with about 200 cc. of hot water and allowed to stand over night; filtered, and the filter paper washed with sufficient water to make about 250 cc. This aqueous mixture was boiled for 15 minutes. The paraffin was added to this, and allowed to melt. The mixture was then thoroughly beaten and allowed to stand over night. The pellicle was punctured and the liquid drained off. The paraffin was washed with enough distilled water to make a total of 800 cc. This was filtered and 200 cc. of alcohol mixed with the filtrate. A portion was assayed and it was then diluted according to the assay. The precipitate was much reduced and at the end of eighteen months had shown no fur-

ther sedimentation. Since the addition of caramel as a coloring agent had been suggested, a portion of all the samples was colored with caramel. The result in every case was an increase in precipitate or a change in character of it. There was a fine well-suspended precipitate which had no tendency to coagulate and was easily mixed by shaking. This was like that in the U. S. P. product. So caramel is objectionable. It is suggested that the U. S. P. method for tincture of opium be changed so that a clear product may be obtained.—P. L. BURRIN and F. E. BIBBINS. *J. Am. Pharm. Assoc.*, 24 (1935), 964. (Z. M. C.)

**Vitamin A Concentrate—Preparation of Potent.** The non-saponifiable material in halibut liver oil was removed by methyl alcohol and transferred to pentane. The cholesterol was frozen out with carbon dioxide snow and alcohol. Concentration was carried out in Tswett Columns, using first an activated carbon, followed by treatment with a column of specially prepared magnesia. The most potent concentrate obtained had a blue value of 140,000.—HARRY N. HOLMES, HAROLD CASSIDY, RICHARD S. MANLY and EVA R. HARTZLER. *J. Am. Chem. Soc.*, 57 (1935), 1990. (E. B. S.)

### PHARMACOPŒIAS AND FORMULARIES

**British Pharmacopœia 1932. Report of Work on the Addendum.** A report of the British Pharmacopœia Commission 1933–1936 to the Pharmacopœia Committee of the General Medical Council. It is proposed that Solution of Calciferol, a solution of pure calciferol in a vegetable oil, shall replace the Solution of Irradiated Ergosterol of the B. P. 1932. The doses of the B. P. 1932 have been reviewed, and certain changes have been included in the draft Addendum. Monographs on Ergometrine, Calcium Gluconate and Mersalyl, can now be completed.—ANON. *Pharm. J.*, 135 (1935), 595. (W. B. B.)

**Swiss Pharmacopœia V—Remarks of a Pharmacist on.** The articles considered in this paper are: the bismuth preparations, the assay of fluidextract of hydrastis, carlsbad salt, tinctures of rhatany, sabadilla and valerian, ointment of ammoniated mercury and Hebra's lead ointment.—K. SEILER. *Schweiz. Apoth.-Ztg.*, 74 (1936), 27. (M. F. W. D.)

**Swiss Phar. V—Remarks of a Pharmacist on.** The author states that several obvious errors present in the German edition should be corrected before the fifth edition is declared effective in the spring of 1936. The comments are chiefly upon the identity tests, incompatibilities, etc., rather than upon procedures. Among the topics commented upon and which are considered in some detail are the test for methyl alcohol in ethyl alcohol using Schiff's reagent and the behavior of solutions of sodium sulphite toward thymolphthalein as applied in the assay of formaldehyde.—K. SEILER. *Schweiz. Apoth.-Ztg.*, 73 (1935), 677, 694, 709. (M. F. W. D.)

**United States Pharmacopœia—Additions to the New Revision.** A compiled list of articles that have been added to the eleventh revision of the U. S. Pharmacopœia.—ANON. *Pharm. J.*, 135 (1935), 595. (W. B. B.)

### NON-OFFICIAL FORMULÆ

**Alsol Nasal Ointment.** A formula of the Danish Medical Society: *Liquor Alsoli* (50%) 2 Gm. and Dermophil 23 Gm.—Lægeforeningens Medicinfortegnelse (1935); *via Arch. Pharm. og Chemi*, 42 (1935), 563. (C. S. L.)

**Ammonium Chloride Bathing Water.**—A formula of the Danish Medical Society: *Ammonium chloridum* 10 Gm., *Acidum tartaricum* 0.05 Gm., *Aqua destillata* 100 Gm.—Lægeforeningens Medicinfortegnelse (1935); *via Arch. Pharm. og Chemi*, 42 (1935), 563. (C. S. L.)

**Astringents.** The various astringents and their actions are discussed.—E. G. MCDONOUGH. *Drug and Cosmetic Ind.*, 37 (1935) 733–734, 736. (H. M. B.)

**Cetyl Alcohol—The Universal Cream Base.** The properties and uses of this alcohol are discussed.—J. KALISH. *Drug and Cosmetic Ind.*, 37 (1935), 595–596, 598. (H. M. B.)

**Cetyl Alcohol—Water-in-Oil Emulsions with.** The properties of this compound are discussed and the following cream formulas offered: (1) Cetyl alcohol 6.7%, petrolatum 60.0, water 33.3. Melt the alcohol and petrolatum together, stir until homogeneous, cool to about 35° C. and add water heated to the same temperature in small portions stirring vigorously; after all the water has been added stir slowly until cold. (2) Cetyl alcohol 6%, petrolatum 50, paraffin 6, water 38. Melt the first 3 ingredients together, cool until viscous and then add the water. Addition of 50 cc. of mineral oil will give a softer mass. (3) *Cleansing Cream.*—(*a*) Cetyl alcohol

5%, petrolatum 20, paraffin 5, mineral oil 45, water 25. (*b*) Cetyl alcohol 5%, beeswax 15, mineral oil 50, water 30. (4) *Tissue Cream.*—Cetyl alcohol 5%, lanolin 5, cocoa butter 5, cholesterin 1, beeswax 5, peanut oil 10, mineral oil 15, petrolatum 24, water 30. Dissolve the wax in the mineral oil, add the alcohol and cool to 45° C., then add the other ingredients except the water. Stir until homogeneous and incorporate the water.—J. KALISH. *Drug and Cosmetic Ind.*, 37 (1935), 739–740. (H. M. B.)

**Cholesterin—Significance and Value of, in Creams and Ointments.** A discussion and the following formulas are offered: (A). Cholesterin (10%) Base 20, beeswax 4, ceresin 10, mineral oil 10, glycerin 5, water 51. This is a firm cold cream. (B) Cholesterin (5%) Base 30, lanolin 3, mineral oil 5, glycerin 5, water 57. (C) Cholesterin (10%) Base 22, lanolin 3, mineral oil 6, glycerin 5, water 64. B and C are good nourishing creams which offer good protection against sun, wind and cold. B also serves as a good base for such substances as boric, citric and acetic acids, Burow's solution, calomel, camphor, mercury, white precipitate, phenyl mercuric nitrate, sulphur, tannin, bismuth oxychloride and zinc oxide.—R. A. KRAMER. *Drug and Cosmetic Ind.*, 37 (1935), 741–742. (H. M. B.)

**Cocaine Powder.** A formula of the Danish Medical Society: *Cocaini hydrochloridum* 0.1 Gm., *Mentholum* 0.1 Gm., *Saccharum lactis ad* 5 Gm.—*Lægeforeningens Medicinfortegnelse* (1935); through *Arch. Pharm. og Chemi*, 42 (1935), 563. (C. S. L.)

**Colors in Cosmetics.** The use of colors to improve the appearances of cosmetic products is discussed.—ANON. *Drug and Cosmetic Ind.*, 37 (1935), 597–598. (H. M. B.)

**Deodorants—Improved.** Basic formulæ for the liquid type, sticks, creams and dusting powder deodorants are given. The active ingredient of the vast majority of liquid deodorants is aluminum chloride—about 15 to 20% usually being shown on analysis. Deodorant sticks represent the most recent advance in convenience of format and pack. A stiff mixture of fats and waxes provides the most suitable base, and typical products now on the market are manufactured with such a base, together with the addition of suitable deodorants. The sale of deodorants in powder form shows definite signs of being on the increase. Talc or face powder is used as the base, a higher percentage of zinc or magnesium stearate being added to cause the powder to adhere with maximum efficiency. There is no particular difficulty in packaging any of these products.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 26 (1935), 375. (A. C. DeD.)

**Eczema Dermatitis.** The following formulas are offered: (1) For dry skin to be used after bathing: Glycerite of boroglycerin 60%, hydrous wool fat 20, petrolatum 40; (2) for early or vesicular stages: Calamine Lotion, N. F. is useful, or a dusting powder consisting of boric acid 8%, zinc oxide 40, talc 72, or a combination of menthol 2.5 Gm., boric acid 60, talc to make 120 Gm. or White's Crude Coal-Tar Ointment; (3) for the subacute stage Becker's, Boeck's, Lassar's and Unna's Soft Zinc Pastes are most commonly used. The Zinc Glycerogelatins of the N. F. are also recommended as well as the following combinations: (*a*) Ammoniated mercury 6 parts, solution of coal tar 24, hydrous wool fat 60, petrolatum to make 120 parts; (*b*) Precipitated sulphur 4.0 parts, salicylic acid 1.2, white wax 8.0, hydrous wool fat 40.0, petrolatum to make 120 parts; (*c*) Resorcinol 6 parts, white wax 8, hydrous wool fat 40, petrolatum to make 120 parts; (4) *An Alkaline Cooling Cream.*—Petrolatum 6.0 parts, wool fat 12, rose water 6, solution calcium hydroxide 6. Pick's Paste is used as a drying protecting coating on the face in infantile eczema-dermatitis.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 37 (1935), 585–586, 600. (H. M. B.)

**Emulsions.** A discussion of emulsions, emulsifying agents, apparatus used and especially their application to toilet articles. The following formulæ are given: *Liquid cream.*—I $3^3/_8$ lb. stearic acid, 136 almond oil, 32 spermaceti, 13 beeswax, 40 water, $1^3/_4$ triethanolamine, $2^1/_4$ borax; use 25 lb. of (I) and mix with $2^1/_2$ lb. powdered neutral soap, 1 borax and $2^1/_4$ bentonite; gradually add solution of 175 lb. water and 1 lb. borax; finally add $3^3/_4$ gal. alcohol (S. D. 39B), 10 oz. benzaldehyde F. F. C., 2 oz. geraniol abs. *Cold Cream.*—30 lb. paraffin, 30 ceresin, 60 beeswax, 450 mineral oil, 200 distilled water, 7 borax, *q. s.* perfume. *Vanishing Cream.*—25 lb. stearic acid xxx, 2 anhydrous lanolin, 5 mineral oil, $1^1/_4$ triethanolamine, 9 glycerin, 60 water, *q. s.* perfume. *Lanolin Derivative Cream.*—23 lb. lanolin derivative, 10 olive oil, $^1/_2$ cetyl alcohol, $^1/_2$ beeswax, 70 distilled water, 5 glycerin, 3 oz. epsom salt, 5 oz. perfume.—E. G. THOMSSEN. *Am. Perfumer*, 31 (1935), No. 5, 59–60, 96–98. (G. W. F.)

**Face Powder—Types of.** The table on pages 329–330 of *Pharm. Abstracts* (1935) is from *Drug and Cosmetic Ind.*, 37 (1935), 178–179. (H. M. B.)

**Glycerogelatin Dressing.** Zinc glycerogelatin dressing is made up of: mixed zinc oxide and calamine, 15 parts; gelatin, 28 parts; glycerin, 28 parts; water, 29 parts. It should be thin enough to spread without dragging.—WM. A. PUSEY, JR. *Arch. Dermatol. Syphilol.*, 32 (1935), 290; through *Squibb Abstract Bull.*, 8 (1935), A-1276.

**Hair—Preparations for the Care of the.** Shampoo powders, liquid shampoos, shampoo soaps and soapless foaming shampoos are discussed and the following formulas offered: (*a*) *Shampoo Powder.*—Marseilles soap 65 Gm., coconut oil soap 5, nipagin 0.2, sodium perborate 15, borax 15, Curacit-sodium 0.8, lilac, rose or lavender perfume oil 0.5–1.5. (*b*) *Liquid Shampoo.*—Olive oil 6 Kg., coconut oil 3, castor oil 1, potassium hydroxide 4.35–4.5 (50° B.) and water about 35.—JOSEF AUGUSTIN. *Riechstoff-Ind. Kosmetik*, 10 (1935), 215–217. (H. M. B.)

**Hair Fixative.** A hair fixative can be made by boiling one part of quince seeds with 24 parts of water. The time of boiling and the pressure during straining will affect the consistency of the product. A small proportion of formaldehyde should be added as a preservative, and, if desired, coloring with a blue dye, such as methyl violet.—ANON. *Pharm. J.*, 135 (1935), 616. (W. B. B.)

**Hand Lotions—Trend in.** The advantages and disadvantages of the old soap-water lotion are discussed. The requisites of the ideal lotion are (1) it must replace the natural oils of the skin; accomplished by the use of oxycholesterin base along with 2% beeswax in order to raise the melting point, (2) should be soothing; accomplished by the use of mucilages such as equal parts of quince seed and tragacanth, (3) should be antiseptic; 0.12% methyl-*p*-hydroxybenzoate in the water phase and 0.10% propyl-*p*-hydroxybenzoate in the oil phase provide this; these also act as preservatives of the mucilages; for germicidal effect use the benzyl ester, (4) possess such a viscosity as to be capable of penetrating cracks and crevices of the skin; an alcoholic concentration of 12% is recommended, (6) slightly acid by the use of 0.5% boric acid, (7) perfume concentration not to exceed 0.3% and (8) emollient action by the use of 2% glycerin and 2% cetyl alcohol.—T. W. DEAKERS. *Drug and Cosmetic Ind.*, 38 (1936), 37–38, 40. (H. M. B.)

**Ichthyol Ophthalmic Ointment.** A formula of the Danish Medical Society: *Ichthyolum* 0.07 Gm., *Zinci Oxydum venale* 3 Gm., *Vaselinum album*, 7 Gm.—*Lægeforeningens Medicinfortegnelse* (1935); through *Arch. Pharm. og Chemi*, 42 (1935), 563. (C. S. L.)

**Lips.** The treatment of chapped lips and cold sores involves (1) lubrication, nutrition and emollientation, (2) mechanical protection and antisepsis, (3) ease of application and minimum obtrusion and (4) relief of pain. The following formula is offered: Lanolin anhydrous 18%, absorption base 10, benzocaine 0.5, vegetable oil 20, phenyl mercuric nitrate *q. s.* 1:5000, spermaceti 10 and water 42. Melt the greasy components on a water-bath, add the benzocaine and then the water in which the nitrate has been dissolved. Vigorously agitate until cool. May be stiffened to mold into lipsticks by the addition of spermaceti or white wax.—ANON. *Drug and Cosmetic Ind.*, 38 (1936), 47–48. (H. M. B.)

**Lotion Preparations.** The following are offered:

| Item | Purpose | Properties |
|---|---|---|
| Skin tonic | To tone and tighten the skin; remove last traces of make-up | Sparkling clear liquid, perfumed and colored |
| Liquid make-up | As liquid powder or base | Suspension or emulsion containing powder tinted to match skin tones |
| After shave | To tone and smooth the skin after shaving | Clear liquid, tinted, fresh odor |
| Hand lotion | To soften, whiten hands and remove alkali left by soap | Liquid, stable emulsion, tinted or white. Must not separate and should be of intermediate consistency |
| Mouth wash | To dedorize and sweeten the oral cavity | Clear liquid with pleasing color, odor and flavor |

| | Composition | Formulæ | | | |
|---|---|---|---|---|---|
| Skin tonic | Alcoholic solns. containing astringent; wetting agt. may be included for detergents; acids mild as boric, lactic, acetic, phosphoric, etc. | Alcohol | 30.0 | 20.0 | 25.0 |
| | | Aromatic water | 65.0 | 72.8 | 68.5 |
| | | Alum | 1.0 | 0.7 | 0.5 |
| | | Acid | 1.0 | 1.5 | 2.0 |
| | | Glycerin | 3.0 | 5.0 | 4.0 |
| | | Color and perfume | | | |
| Liquid make-up | Suspending liquid alcohol, water, glycerin or vegetable or mineral oil. Powder need only contain covering agent and absorbent | Water | 70.0 | ... | 73.0 |
| | | Glycerin | 5.0 | ... | 6.0 |
| | | Oil | ... | 85.0 | ... |
| | | Alcohol | 10.0 | ... | 5.0 |
| | | Lanolin | ... | 2.0 | 1.0 |
| | | Talc | 7.5 | 4.0 | 5.0 |
| | | Zinc oxide | 3.0 | 8.0 | 5.0 |
| | | Colloidal clay | 4.5 | 1.0 | 5.0 |
| | | Color and perfume | | | |
| After shave | Aqueous-alcoholic soln. containing astringent and if desired, styptic and emollient | Alcohol | 20.0 | 25.0 | 15.0 |
| | | Aromatic water | 75.0 | 71.5 | 77.5 |
| | | Alum | 0.4 | 0.4 | 0.4 |
| | | Acid | 1.5 | 1.0 | 2.0 |
| | | Glycerin | 3.0 | 2.0 | 5.0 |
| | | Menthol | 0.1 | 0.1 | 0.1 |
| Hand lotion | Aqueous emulsion of emollients; acid in reaction | Spermaceti | ... | 1.0 | ... |
| | | Cetyl alcohol | 2.0 | 3.0 | 5.0 |
| | | Glycerin | 3.0 | 4.0 | 2.0 |
| | | Glyceryl monostearate | 4.0 | ... | ... |
| | | Lauryl Sulphate | ... | 0.3 | 0.5 |
| | | Lanolin | ... | ... | 0.5 |
| | | Acid | 0.5 | 1.0 | 0.5 |
| | | Alcohol | 5.0 | 8.0 | 5.5 |
| | | Water | 85.5 | 82.7 | 86.0 |
| Mouth wash | Water-alcohol solution containing mild astringent and antiseptics | Alcohol | 15.00 | 80.00 | 75.0 |
| | | Water | 84.65 | 16.50 | 19.9 |
| | | Menthol | 0.05 | 2.00 | 1.8 |
| | | Thymol | 0.05 | ... | 1.0 |
| | | Eucalyptol | 0.25 | ... | 2.0 |
| | | Salol | ... | 1.40 | ... |
| | | Cloves | ... | 0.05 | 0.2 |
| | | Saccharin | ... | 0.05 | 0.1 |
| | | Color | | | |

ANON. *Drug and Cosmetic Ind.*, 38 (1935), 30–31. (H. M. B.)

**Manicure Preparations.** The following table is offered:

| Item | Purpose | Properties |
|---|---|---|
| Nail polish | To polish and tint nails | Liquid, powder or paste, perfumed. Color very important. Powder or paste to be used with a buffing pad. Liquid applied with brush should dry rapidly, adhere well and have good lustre |
| Polish remover | To remove previously applied polish | Liquid, should rapidly and completely remove lacquer, yet not dry nails and make them brittle |
| Cuticle remover | To dissolve or soften cuticle and facilitate removal of dead skin | Caustic solution containing glycerin with or without soap |
| Nail white | To whiten underside of nailtips | Perfumed white pigment mixture. Should spread rapidly and evenly |
| Nail cream | To soften brittle nails and prevent them from cracking | Soft pleasing cream, not too greasy |

| Item | Composition | Formulæ | | | | | |
|---|---|---|---|---|---|---|---|
| | | Liquid | | Paste | | Powder | |
| Nail polish | Powder is mixture of fine, soft abrasives; paste contains lubricating vehicle also; liquid is nitrocellulose in medium rapid drying solvent, should contain a plasticizer to give flexibility and gum for adhesion | Celluloid | 9.0 | Tin oxide | 20.0 | Tin oxide | 70.0 |
| | | Amyl acetate | 57.0 | Zinc oxide | 15.0 | Talc | 20.0 |
| | | Acetone | 15.0 | Petrolatum | 35.0 | Zinc oxide | 10.0 |
| | | Butyl alcohol | 18.0 | Ceresin | 24.0 | | |
| | | Castor oil | 1.0 | Beeswax | 6.0 | | |
| | | Color, perfume. | | | | | |
| Polish remover | Acetone is popular; less volatile, odorless nitro-cotton solvents being used. Vegetable oils to keep nails from becoming brittle | Glycol ether | 10.0 | 20.0 | 50.0 | | |
| | | Acetone | 48.0 | 38.0 | 9.0 | | |
| | | Ethyl acetate | 35.0 | 30.0 | 24.0 | | |
| | | Alcohol | 5.0 | 10.0 | 15.0 | | |
| | | Castor oil | 2.0 | 2.0 | 2.0 | | |
| | | Perfume. | | | | | |
| Cuticle remover | Moderately dil. caustic potash solution, with glycerin to slow the action | Potassium hydroxide | 1.5 | 2.0 | 1.0 | | |
| | | Glycerin | 20.0 | 10.0 | 15.0 | | |
| | | Potassium stearate | .. | .. | 1.0 | | |
| | | Water | 78.5 | .. | 83.0 | | |
| | | Rose water | .. | 88.0 | .. | | |
| | | Perfume stable to alkali. | | | | | |
| Nail white | Pigment and binder, mixture. Use white, non-poisonous pigment of high covering power and binder easily removed with water | Sodium stearate | 23.0 | 5.0 | .. | | |
| | | Titanium oxide | 48.0 | 30.0 | 20.0 | | |
| | | Glyceryl stearate | .. | 10.0 | 18.0 | | |
| | | Precipitated chalk | .. | 15.0 | 10.0 | | |
| | | Kaolin | 13.5 | 5.0 | 10.0 | | |
| | | Dextrin | 15.5 | 5.0 | .. | | |
| | | Water | .. | 30.0 | 42.0 | | |
| | | Perfume. | | | | | |
| Nail cream | Good lubricating cream | Cholesterin absorption base | .. | .. | 25.0 | | |
| | | Cetyl alcohol | .. | 5.0 | .. | | |
| | | Lanolin | 9.6 | 5.0 | 3.0 | | |
| | | Spermaceti | 12.8 | 5.0 | .. | | |
| | | Beeswax | 7.7 | 2.0 | 3.0 | | |
| | | Vegetable oil | .. | 10.0 | 10.0 | | |
| | | Mineral oil | .. | 20.0 | 10.0 | | |
| | | Petrolatum | 58.1 | 23.0 | .. | | |
| | | Water | 12.8 | 30.0 | 49.0 | | |
| | | Perfume. | | | | | |

*Drug and Cosmetic Ind.*, 37 (1935), 728–729. (H. M. B.)

**Lubricreme.** A name suggested for tissue creams and consists of the following components: (1) *Bases* such as beeswax, ceresin, paraffin, ozokerite and petrolatum emulsified or mixed, (2) *emollients* as lanolin, absorption bases derived from lanolin, cetyl, stearyl and oleyl alcohols, cacao butter, lecithin, cholesterin and spermaceti and (3) *lubricants* as mineral and vegetable oils. The following formulas are offered: *Lubricating Cream, Non-Greasy.*—Glyceryl monostearate 12.0%, glycerin 10, octyl alcohol 5, cholesterin 1, lecithin 0.2, spermaceti 8, mineral oil 3, methyl para-hydroxybenzoate 0.1, perfume oil 0.7, water 60. Put all ingredients in a vessel except the perfume and heat until the wax and stearate have melted and the mass has become smooth and white by steady mixing. Strain, stir until cool enough to add the perfume. *Lubricating Cream, Semigreasy.*—Cocoa butter, odorless 5%, lanolin 3, cetyl alcohol 3, petrolatum 45, spermaceti 15, mineral oil 20, white beeswax 5, water 3.5 and perfume 0.5. Melt all of the ingredients, water excepted, together, strain; heat the water and stir in the mixture and add perfume. The cream

may be made white and more stable by the addition of 0.75% borax dissolved in the hot water. *Absorption Base Cream.*—Lanolin absorption base 40%, cetyl alcohol 5, white beeswax 10 and water 45. Melt the wax and alcohol, stir until the temperature drops to 45° C., stir in the base. Heat the water to 45° and add slowly with stirring to the mixture.—*Drug and Cosmetic Ind.*, 37 (1935), 457–458. (H. M. B.)

**Noviform Ophthalmic Ointment.** A formula of the Danish Medical Society: *Noviform* 0.5 Gm., *Vaselinum album* 4.75 Gm., *Adeps lanæ* 4.75 Gm.—*Lægeforeningens Medicinfortegnelse* (1935); through *Arch. Pharm. og Chemi*, 42 (1935), 563. (C. S. L.)

**Perfumery—The Progress of, in 1935.** A review of the outstanding advances in perfumery and cosmetics during 1935 as recorded month by month in the Perfumery and Essent. Oil Record is given.—ANON. *Perfumery Essent. Oil Record*, 26 (1935), 449. (A. C. DeD.)

**Shaving Preparations.** The following table is offered:

| Item | Purpose | Properties |
|---|---|---|
| Pre-shave | Applied before shaving to assist in wetting and softening beard | Liquid or soft cream, pleasant, easy to apply and mixes well with shaving cream applied afterward |
| Shaving cream | To soften beard and hold hairs upright against the blade | A soft superfatted soap. Should give a quick, dense lather which does not dry easily. Must not irritate the skin |
| Brushless shave | To hold hairs upright against the blade and lubricate skin and blade | A vanishing cream mixed with sufficient water. Should spread readily, be not too greasy, easily washed off, non-irritating and should contain emollients |
| After shave lotion | To remove last traces of cream and to act as slight astringent, disinfectant and styptic | Alcoholic solution with pleasant odor. Should leave little residue; usually a clear tinted liquid |
| Talc | To make skin appear smooth and to remove shine after soap or cream | Color and odor are major properties. Color should blend with the skin and odor attractive to men |

| Item | Composition | | Formulæ Liquid | Cream | Cream |
|---|---|---|---|---|---|
| Pre-shave | Liquid or cream containing effective amounts of wetting agents as sodium cholate, sodium lauryl sulphate, sulphated triethanolamine soaps, etc., along with emollients | Lanolin | .. | .. | 3.0 |
| | | Stearic acid | 15.0 | 15.0 | 12.0 |
| | | Potassium hydroxide | 0.5 | 1.0 | 1.0 |
| | | Water | 89.0 | 74.0 | 76.5 |
| | | Cetyl alcohol | .. | 2.0 | 1.0 |
| | | Wetting agent | 2.5 | 1.0 | 1.5 |
| | | Glycerin | 5.0 | 7.0 | 5.0 |
| | | Perfume as desired. | | | |
| Shaving cream | Must be mild but effective soap mixture. Use combination of fats, stearic acid with a mixture of sodium and potassium hydroxides; emollients to superfat. Avoid excess alkali; use wetting agent to increase lathering | Coconut oil | 20.0 | 10.0 | 15.0 |
| | | Tallow | 10.0 | 15.0 | 15.0 |
| | | Stearic acid | 10.0 | 15.0 | 8.0 |
| | | KOH | 8.0 | 7.0 | 6.5 |
| | | NaOH | 0.5 | 0.8 | 0.8 |
| | | Petrolatum | .. | .. | 2.0 |
| | | Cetyl alcohol | 2.0 | 1.0 | .. |
| | | Glycerin | 5.0 | 10.0 | 3.0 |
| | | Wetting agent | 1.0 | 1.0 | 1.0 |
| | | Water | 43.5 | 40.2 | 48.7 |
| | | Perfume as desired. | | | |
| Brushless shave | Vanishing cream containing oils for dry skins. Must be soft to spread readily and easily mix with water, should lubricate the skin and razor and | Stearic aid | 25.0 | 20.0 | 2.0 |
| | | Glyceryl monostearate | .. | .. | 10.0 |
| | | KOH | 1.0 | 0.5 | 1.0 |
| | | Borax | .. | 0.5 | 0.5 |
| | | Lanolin | .. | 5.0 | 5.0 |

| | | | | | |
|---|---|---|---|---|---|
| | contain emollients | Mineral Oil | 5.0 | .. | 3.0 |
| | | Glycerin | 5.0 | 3.0 | 3.0 |
| | | Water | 63.5 | 71.0 | 76.9 |
| | | Perfume as desired. | | | |
| After shave lotion | Alcohol is the usual astringent and somewhat antiseptic; menthol the cooling agent, triethanolamine or glycerin are emollients, boric acid antiseptic. Aromatic waters may be witch-hazel, orange flower, etc. | Aromatic water | 57.9 | 60.9 | 63.9 |
| | | Glycerin | 5.0 | 7.0 | 10.0 |
| | | Alcohol | 35.0 | 30.0 | 25.0 |
| | | Triethanolamine | 2.0 | .. | .. |
| | | Boric acid | .. | 2.0 | 1.0 |
| | | Menthol | 0.1 | 0.1 | 0.1 |
| | | Perfume and color as desired. | | | |
| Talc | Like the usual bath or dusting powder | Talc | 79.0 | 95.0 | 90.0 |
| | | Zinc oxide | 4.2 | .. | .. |
| | | Precipitated chalk | 16.8 | .. | 7.0 |
| | | Boric acid | .. | 3.0 | .. |
| | | Zinc stearate | .. | 2.0 | 3.0 |
| | | Perfume and color. | | | |

*Drug and Cosmetic Ind.*, 37 (1935), 590–591. (H. M. B.)

**Skin Tonics.** Facial or skin lotions are divided into 3 general classes: (1) skin tonics for daily treatment of the skin, (2) special astringents to correct oily skin and enlarged pores and (3) special cleaners for occasional use. (1) and (2) should be slightly acid and (3) for effective cleansing. Avoid mineral astringents using alcohol and organic acids instead. *Tonic for Daily Use.*—Alcohol 30%, glycerin 5, lactic acid (85%) 2, water 63 and perfume mixed with sulphonated castor oil or with talc and allowed to stand until the odor has been taken up by the lotion and then filter. *Astringent Lotion.*—Alcohol 60%, glycerin 3, glacial acetic acid 2, water 35. This should not be used more than once or twice a week. In the use of both of these tonics cold water should be used previously. Cleansing tonics in general should be 2–4% aqueous solutions of sodium cholate or 3% sodium lauryl sulphate or 0.5–1% sulphated triethanolamine soap. Rose-water or orange flower water may be used in place of distilled water, also antiseptic such as *p*-hydroxybenzoic acid esters; purified silicious earth serves as a good filter.—ANON. *Drug and Cosmetic Ind.*, 37 (1935), 459, 464. (H. M. B.)

**Sodium Perborate in Dentifrices.** The use of sodium perborate as part of the treatment of Vincent's infection and related conditions is well known, but the increasing number of injurious burns of the oral mucosæ from the indiscriminate use of sodium perborate has led to serious misgivings concerning unbridled drug exploitation. Sodium perborate flavored with spearmint oil was found on bacteriological examination not to be antiseptic when used as a mouth wash. There is no carefully controlled evidence available that the daily use of sodium perborate in normally healthy mouths is beneficial to the gums, that it bleaches teeth when applied externally, or that its use prevents diseases of the gums. Sodium perborate is considered as a drug, *i. e.*, to be used in the treatment of disease, and not for general oral hygiene use. No tooth powder containing it will be accepted for or retained in "Accepted Dental Remedies" unless evidence is submitted that the potentialities for harm are removed by admixture with other substances and the dentifrice containing it is more efficacious in cleaning the surfaces of the teeth than a closely analogous mixture which does not contain sodium perborate.—ANON. *Pharm. J.*, 135 (1935), 600. (W. B. B.)

**Soap Manufacturer—From the Notebook of the.** Floating and veterinary soaps are discussed.—K. PFAFF. *Riechstoff-Ind. Kosmetik*, (1935), 200–201. (H. M. B.)

**Soap Manufacturer—From the Notebook of the.** Haas' colloid soap, Spanish hardened olive oil, mangrove peel and antiseptic soaps are discussed.—KARL PFAFF. *Reichstoff-Ind. Kosmetik*, 10 (1935), 223–224. (H. M. B.)

**Soap Manufacturer—From the Notebook of the.** Palmoil soaps, filled curd soaps and soaps with crude coconut or palm kernel oils are discussed.—K. PFAFF. *Reichstoff-Ind. Kosmetik*, 10 (1935), 180–181. (H. M. B.)

**Solution of Fluorescein, 2%.** A formula of the Danish Medical Society: *Fluorescein* 0.4 Gm., *Natrii carbonas* 0.7 Gm., *Aqua destillata* 20 Gm.—*Lægeforeningens Medicinfortegnelse* (1935); through *Arch. Pharm. og Chemi*, 42 (1935), 563. (C. S. L.)

**Teeth and Hair—Preparations for.** The following table is offered:

| Item | Purpose | Properties |
|---|---|---|
| Tooth powder | To clean the teeth | Soft powd., white, pleasant taste. Should remove without affecting enamel; contain nothing that scratches teeth |
| Tooth paste | To clean the teeth | Soft paste, pleasantly flavored; should remain soft, not separate; easily expelled; good cleanser |
| Mouth wash | Antiseptic, deodorant for oral cavity | Clear, aromatic liquid colored to suit |
| Brilliantine | Keep hair in place and give it lustre | Solid or liquid oily mixture, perfumed; corrects brittleness of hair |
| Shampoos | Cleanse hair and scalp | Leave hair clean, soft, flexible and lustrous |

| Item | Composition | Formula | I | II | III |
|---|---|---|---|---|---|
| Tooth powder | Mixt. of soft abrasives, with or without soap and other detergents; sometimes bleaching agents used. Flavor must cover soapy and earthy taste of powd. | Precipitated chalk | 55 | 50 | 40 |
| | | Tricalcium phosphate | .. | 30 | .. |
| | | Magnesium carbonate | 40 | .. | 50 |
| | | Sodium bicarbonate | .. | 20 | .. |
| | | Magnesium peroxide | .. | .. | 10 |
| | | Powdered soap | 5 | .. | .. |
| | | Flavor to suit. | | | |
| | | | I | II | III |
| Tooth paste | As above; should contain glycerin or mineral oil to keep soft and an excipient to form a paste | Precipitated chalk | 56.00 | 35.5 | 65.0 |
| | | Neutral soap | 6.00 | 5.6 | 1.0 |
| | | Glycerin | 34.00 | 30.0 | 21.0 |
| | | Tragacanth | ... | 0.6 | 0.5 |
| | | Mineral oil | 1.50 | ... | .. |
| | | Water | 2.50 | 28.3 | 12.5 |
| | | Flavor to suit. | | | |
| | | | I | II | III |
| Mouth wash | Alc. solution of essential oils, antiseptics and a wetting agent to assist penetration | Alcohol | 10.0 | 80.0 | 60.0 |
| | | Water | 76.0 | 11.55 | 30.8 |
| | | Soap | ... | 0.5 | 0.5 |
| | | Glycerin | 10.0 | 5.0 | 7.0 |
| | | Hydrogen peroxide (30%) | 2.2 | ... | .. |
| | | Eucalyptus | 1.0 | ... | 0.6 |
| | | Zinc chloride | 0.7 | ... | .. |
| | | Star anise | ... | ... | 0.1 |
| | | Menthol | 0.1 | 1.5 | .. |
| | | Salol | ... | 1.4 | .. |
| | | Saccharine | ... | 0.05 | .. |
| | | | Liquid | Crystal | Solid |
| Brilliantine | Mineral or vegetable oils; non-drying | Mineral oil | 70 | .. | 60 |
| | | Peanut oil | 30 | .. | .. |
| | | Olive oil | .. | 83 | .. |
| | | Spermaceti | .. | 17 | .. |
| | | Petrolatum | .. | .. | 35 |
| | | Ceresin | .. | .. | 5 |
| | | | I | II | III |
| Shampoos | Detergent mixtures including soaps, sulphonated vegetable oils, and alcohols with an excess of oil to leave hair soft | Olive oil | 30 | .. | .. |
| | | Almond oil | .. | 28 | .. |
| | | Coconut oil | 25 | 27 | .. |
| | | Sulphonated castor oil | .. | .. | 75 |

| | | | |
|---|---|---|---|
| Sulphonated olive oil... | .. | .. | 20 |
| Caustic potash..... | 10 | 11 | .. |
| Caustic soda..... | 2 | 1 | .. |
| Mineral oil..... | .. | .. | 5 |
| Alcohol..... | 8 | 10 | .. |
| Water..... | 25 | 23 | .. |

Perfume.

### Dispensing

**Medicine Dropper to Deliver One Minim (Apothecary's Measure) per Drop.** The practice of physicians in directing drops subjects the dose actually administered to wide variation. In designing a dropper which will deliver one minim per drop, it must be remembered that the size of the drop is dependent on surface tension and specific gravity of the liquid. A dropper which will yield a maximum drop of a minim of hydro-alcoholic mixture at 25° C. as in tincture of digitalis consists of a straight glass tube 8 cm. long and having an internal diameter of 3.8 mm. One end has a rubber bulb and the other has a flange. Modification in dimensions of dropping flange will furnish a dropper suitable for other liquids. For tincture of digitalis the diameter of the dropping surface is 10.7 mm. and the delivery end of the tube is constricted leaving an orifice of 3.8 mm. to prevent leakage and increase accuracy. Figures are given for thirty-five droppers selected at random. The largest volume was 0.995 minim per drop and the least 0.901 minim per drop.—R. A. Konnerth, R. E. Schoetzow and F. W. Nitardy. *J. Am. Pharm. Assoc.*, 24 (1935), 856. (Z. M. C.)

**Nitroglycerin Tablets.** Tablets of Glyceryl Trinitrate were originally made by dissolving the compound in melted oil of theobroma and incorporating chocolate or cocoa powder in the solution. It appears to be essential that absorption of the nitrite should take place in the mouth, and to that end the tablets should always be well masticated.—Anon. *Pharm. J.*, 135 (1935), 610. (W. B. B.)

### Pharmaceutical History

**Cultural Historical Sketch from the History of the Magdeburg Apothecaries of the 17th Century.**—E. Erbrich. *Apoth.-Ztg.*, 50 (1935), 1577–1580. (H. M. B.)

**Dentifrices—A History of.** The literature abounds in advertisement of dentifrices containing substances criticized by medical men. Some of the most dangerous have fallen into disuse. The authors classify early dentifrice ingredients according to mode of action and show how members of the classes varied up to the end of the 19th century. This classification contains much interesting information. Present day use is quite different. Hygienic knowledge has greatly increased frequency of care. Powders and other preparations are intended to maintain dental hygiene without injury to teeth and gums. Solutions are those intended to whiten teeth, and the antiseptic washes. The former are acid and often harmful. Those containing antiseptics have had extensive advertising but it is recognized that they must be very active to affect mouth bacteria. They continue to be popular. Tooth pastes are convenient, palatable and stable. Early ones contained severe abrasive. Chalk or precipitated calcium carbonate has cleansing action without injury to enamel. Magnesia creams are popular and they neutralize acidity without giving high alkalinity. The addition of strong oxidizing agents can hardly be effective in the manner applied. Tooth soaps are now little in evidence. An excellent list of references is appended.—Martha E. Foulk and Elizabeth Pickering. *J. Am. Pharm. Assoc.*, 24 (1935), 975. (Z. M. C.)

**Fenugreek—History of, as a Drug.** This article is a review of the history of fenugreek from 1608 to the present time, including its action, uses and constituents.—P. van der Wielen. *Pharm. Weekblad*, 72 (1935), 1243. (E. H. W.)

**Frederick, The Great and the Silesian Apothekers.** Historical.—E. Glaeser. *Apoth.-Ztg.*, 50 (1935), 1178–1179. (H. M. B.)

**Henshaw, David—From Druggist to Secretary of the Navy.** Though usually put down as a politician he was also a druggist. His parents came from England to Massachusetts in 1653. His father and other relatives were soldiers of the revolution. He was apprenticed at sixteen and when he came of age opened a business for himself and later took into the firm two brothers.

The firm also had a chemical works. Henshaw early became interested in other ventures, banking, insurance, railroads. He was a frequent contributor to the Boston Post. He became active in politics, becoming in turn Collector of the Port of Boston, Democratic "Boss" of Boston, State legislator and Secretary of the Navy under President Tyler. A number of incidents are related which show the character of the man and interesting facts about his life.—GEORGE E. EWE. *J. Am. Pharm. Assoc.*, 24 (1935), 858. (Z. M. C.)

**History of 32 Apothecaries in the Former Principality of Orange, Nassau.**—C. DÄNGES. *Apoth.-Ztg.*, 50 (1935), 1300–1302, 1335–1348, 1378–1379, 1394–1397. (H. M. B.)

**Löwen Apothecaries in Naumburg on the Saale.** Historical.—*Apoth.-Ztg.*, 50 (1935), 1503–1508. (H. M. B.)

**One Hundred Years of Pharmacy in Jarmen.**—SCHLICHT. *Apoth.-Ztg.*, 50 (1935), 1376–1377. (H. M. B.)

### PHARMACEUTICAL EDUCATION

**Pharmacology for Pharmacists.** The 2nd and 3rd of a series of discussions deals with (A) *Hypnotics* (sleep-producing drugs) including (1) chloral hydrate, (2) paraformaldehyde, (3) amylene hydrate, (4) sulphonal, (5) urethane, (6) bromural, (7) adalin, (8) veronal, (9) luminal, (10) phanodorm, (11) noctal and (B) *Sedatives* (Antispasmodics, antispastics) such as (1) valerian (2) hops, (3) bromides, (4) magnesium salts and (5) scapolamine.—H. FÜHNER. *Apoth.-Ztg.*, 50 (1935), 1576–1577, 1648–1649. (H. M. B.)

### PHARMACEUTICAL LEGISLATION

**Poisons—Regulation of, in Denmark.** A discussion of the poison regulations affecting the Danish apothecaries.—T. SPANG-HANSSEN. *Arch. Pharm. og Chemi*, 42 (1935), 633. (C. S. L.)

### MISCELLANEOUS

**Medicine and Pharmacy—International Considerations.** The General Council of the International Medical Association included, in their agenda, three questions in regard to which preliminary inquiries had been carried out among the affiliated national associations. Under the head of "International Medical Charter," it was resolved that freedom of prescription must be maintained or demanded subject to checks on abuses and preference for cheaper medicines when the results are substantially the same. On the question of dispensing doctors the Council considered that the simultaneous exercise of two professions by a doctor was contrary to the dignity of medicine, and that this applied particularly to the simultaneous exercise of medicine and pharmacy. The Council resolved that when for special reasons, geographical or otherwise, a doctor is authorized to supply medicines, he should not keep open shop and should abstain from the sale of any product or article not directly required for the treatment he has prescribed.—ANON. *Pharm. J.*, 135 (1935), 628. (W. B. B.)

## PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

### PHARMACOLOGY

**Absorption from the Human Skin.** An elaboration of studies previously reported. Methyl salicylate (25%), iodine (4%), potassium iodide (25%) and quinine hydrochloride (25%) in ointment form with each of the following bases: petrolatum, lard and hydrous lanolin as well as Tincture of Iodine and Compound Solution of Iodine were applied by inunction on 43 humans for 30 minutes 4 times a day with the exception of the tincture and solution which were applied in single doses of 1.5 cc. by means of a camel's-hair brush. To avoid irritation the sites of application were the inner surfaces of the right and left thighs and of the right and left arms. Urine samples were collected and tested for the presence of the drugs during 72 hours at intervals. Methyl salicylate is absorbed the most rapidly and in greatest quantity; iodine is absorbed more rapidly and effectively as the tincture. The other compounds and forms are not absorbed in amounts to be detected in the urine. Results indicate that the properties and powers of the drugs rather than that of the base is the single major factor in the absorption from the skin. The youngest subjects, females, those with soft and finer skin textures especially blondes and fat in-

dividuals show more prompt and intense positive reactions.—A. R. BLISS, JR. *Drug and Cosmetic Ind.*, 37 (1935), 730–732. (H. M. B.)

**Barbiturates—Effect on the Mammalian Heart.** The action of barbital sodium, phenobarbital sodium, amytal and nembutal has been studied on the isolated heart of the white rat All showed a short period of stimulation followed by depression, the latter being the characteristic effect of these drugs. Barbital sodium produced a greater period of stimulation and a lesser period of depression than any of the others.—GEORGE B. ROTH. *Arch. intern. pharmacodynamie*, 51 (1935), 179–184. (H. R.)

**Barbiturates—Experimental Intoxication by. Effect of Cocaine, Alcohol, Dinitrophenol and Methylene Blue in.** Experiments were carried out on guinea pigs, rats, pigeons, rabbits and dogs. A lethal dose of sodium veronal was determined for each species of animal. In another series of experiments the action of various doses of cocaine, alcohol, dinitrophenol and methylene blue was studied to determine the quantities to be used as antidote in cases of veronal poisoning. Cocaine was used on guinea pigs, dogs and rats; 38% of the guinea pigs were saved, but cocaine exerted no action on dogs and rabbits. On the guinea pigs, the excitant action of cocaine must be stronger than the retarding action of veronal. Alcohol was studied on rabbits, guinea pigs and dogs, and was administered intravenously. Rabbits that were poisoned by gardenal were saved by injection of 30% alcohol, provided the amount of gardenal did not greatly exceed the lethal dose; the alcohol, however, was inefficient on dogs and guinea pigs poisoned with veronal or gardenal. Dinitrophenol exhibited a slight antagonistic action toward veronal in guinea pigs, but not in rats; it produced a greater rise in temperature in the poisoned animals than in the sound rats. Methylene blue exhibited no influence in cases of barbiturate poisoning.—A. ALLECRI. *Boll. Soc. Ital. Biol. Sper.*, 10 (1935), 48–51; through *Chimie et Industrie*, 34 (1935), 1138–1139. (A. P.-C.)

**Bell's Muscle—Action of Drugs on.** Bell's muscle and segments of the ureter, obtained from cats, were employed in a suitable tissue bath and arranged for the recording of contractions. Epinephrine was found to cause an increase in the tonus of Bell's muscle, the trigone and the ureters by relaxation of the fundus of the bladder. Pitocin and pitressin increased the tone of all of these structures. Pitocin had no effect on any of the tissues studied. Acetylcholine and pilocarpine were found to increase the general tonus and activity of Bell's muscle. Atropine acted antagonistically to these drugs. Urea stimulated Bell's muscle and also the ureter. Barium chloride likewise caused an increase in the general tonus in the excised muscle segments.—CHARLES M. GRUBER. *J. Pharmacol.*, 55 (1935), 412. (H. B. H.)

**Biological Standards—International.** At the present time International Biological Standards have been established, and are available for use throughout the world, for twenty-seven substances. The substances are given in the form of a table, along with their date of adoption, international unit in milligrams and the source of their international distribution. The Permanent Commission on Biological Standardization, an international organization, takes the view that, while standards and units should be fixed and stable, and determinations of potency should always be carried out in strict comparison with the standard preparation (or its exact equivalent) and expressed in international units, no attempt should be made to fix or impose any particular method by which these comparative tests should be carried out.—P. HARTLEY. *Pharm. J.*, 135 (1935), 625. (W. B. B.)

**Castor Oil and Some Nutritive Lipids—Comparison of the Acetonemic Action of.** Castor oil, butter fat and olive oil were administered to men, dogs, rabbits and rats in varying quantities and the blood tested for total acetone (acetone + acetoacetic acid) and $\beta$-hydroxybutyric acid. The increase of the total acetone and $\beta$-hydroxybutyric acid was the same after the ingestion of castor oil, butter fat and olive oil and furnished a good proof of the intestinal assimilation and disintegration of castor oil in the organism. It was the same for man and animals. It appears that the activity of castor oil has been attributed to a simple physical action on the alimentary tract but which on the contrary may be produced by a general chemical action of which the process remains to be specified.—RAOUL LECOQ and RENÉ CAREL. *Compt. rend.*, 201 (1935), 1154. (G. W. H.)

**Cinchophen and Tolysin—A Comparison of the Effects of Administration of, in Rats.** Cinchophen and tolysin ($p$-methyl-phenyl cinchoninic acid ethyl ester) were administered by stomach tube to white rats in varying amounts. Contrasted with control litter mates, no differ-

ence could be observed in the growth rate of young rats receiving 1 gram per kilogram tolysin daily for one hundred days. There was no evidence of liver damage. By an improved method, complete absorption of these daily doses was established. Rats show normal growth with doses of cinchophen up to 600 mg. Above this amount there is retardation in growth. One gram given daily usually causes death within a few days or weeks. It was concluded that tolysin is obviously far less toxic to rats than cinchophen, an observation which is in accordance with clinical evidence as to tolysin toxicity. Even employing procedures adopted to increase liver susceptibility, damage of this organ cannot yet be produced at will either with cinchophen or tolysin.—H. G. BARBOUR and A. GILMAN. *J. Pharmacol.*, 55 (1935), 400. (H. B. H.)

**Cyclopropane—Effect of, on Isolated Intestinal Muscle.** Oxygen containing 10 to 25% of cyclopropane caused an increase in tone of the intestinal muscle with a decrease in amplitude of contractions. Higher concentrations caused loss of tone. Conclusion: Less post-operative stasis and distention should occur after the clinical use of cyclopropane than after ether.—S. A. PEOPLES and N. M. PHATAK. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 287. (A. E. M.)

**Digitalis—Use of Rabbits in the Assay of.** The following summary is given: 1. Study has been made of the value of rabbits for the assay of strophanthus, digitalis and squill. 2. The rabbit is less sensitive than the cat to ouabain, strophanthus or squill, but more sensitive than the dog or guinea-pig to the two former. To digitalis it is the most resistant of these four species. 3. The advantages of the use of rabbits lie in the short duration of each experiment, and the ease with which a stock of animals can be obtained: the disadvantage is the fact that to attain the same degree of accuracy more animals must be used for each test. 4. Where comparison has been made, results obtained on rabbits agree with those obtained with the use of cats.—G. N. RAPSON and S. W. F. UNDERHILL. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 409–423. (S. W. G.)

**Dilaudid Hydrochloride and Morphine Sulphate—Action of, upon Segments of Intestine and Uterus.** Morphine and dilaudid were found to be equally effective in increasing the general tonus of excised segments of the intestine (cat, rat, rabbit) and uterus (cat). The rate and force of the rhythmic contractions are equally affected by these two drugs. Both drugs were found to cause relaxation in the guinea pig intestine.—C. M. GRUBER, J. T. BRUNDAGE, A. DENOTE and R. HEILIGMAN. *J. Pharmacol.*, 55 (1935), 430. (H. B. H.)

**Glucosides—The Wash-Out of Cardiac, from the Frog's Ventricle.** As test subjects the isolated ventricles of *Rana esc.* Hung. were employed using the perfusion method described by Clark and White. The ventricles were driven with induction shocks at 17 per minute. Washing out of the ventricles was effected by changing the cannula contents by means of a fine pipette. Infusion of digitalis, *g*-strophanthin, ouabain, digoxin, scillaren, *k*-strophanthin and digitoxin were the drugs used. In the case of all of these drugs, washing out produced recovery even after systolic arrest had been produced. The ease of this reversal varies greatly with different drugs, being most marked with *k*-strophanthin and digitoxin.—G. KINGISEPP. *J. Pharmacol.*, 55 (1935), 377. (H. B. H.)

**Insulin—Survival of Two Depancreatized Dogs Treated with.** Survival for as long as 4.5 years is possible in presence of changes in liver, blood and lenses, provided a diet is given containing meat, sucrose, bone ash and the necessary vitamins. The addition of lecithin or choline was not necessary.—I. L. CHAIKOFF. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 211. (A. E. M.)

**Liver Extracts—Determination of, Antianemic Activity of.** It has been found that the methemoglobin test of Duesberg and Koll (*Arch. expt. Path. Pharm.*, 162 (1931), 296; *S. A. B.*, 4 (1931), 1373) is no indication either of the presence or absence of the antianemic activity of liver extracts, there being no relation between the two, and that the clinical test remains the one specific method of assay—JOHN F. WILKINSON and WALTER DEUTSCH. *Klin. Woch.*, 14 (1935), 926; through *Squibb Abstract Bull.*, 8 (1935), A-1125.

**Male Hormone. VII. A New Rat Unit.** Whereas the cocks-comb assay is quick and reliable for assay with respect to secondary sex characteristics, the authors preferred a gravimetric method involving the seminal vesicles of castrated rats for effects on primary sex reactions. Because there is a limit to the growth of the seminal vesicles, larger doses extending for a longer period do not show a response proportionate to the activity of the hormone preparation. Smaller doses over a moderate period give more nearly comparable values. The following assay was advocated. Rats were castrated at an age of 30 days, at least 20 days prior to injection. Two

groups, of more than 4 rats each, received 3 successive daily injections of different doses of the hormone. On the 4th day the average weight of the seminal vesicles of each group was compared with the uninjected controls and the dose necessary to increase the growth of vesicles in each group by 50% was calculated. The average of the two groups is 1 rat unit, provided the percentage deviation from the average does not exceed 8 between the two units. A greater deviation is indicative of disproportionality between dose and effect, and the assay is repeated at different levels.—A. OGATA and S. HIRANO. *J. Pharm.. Soc. Jap.*, 54 (1934), 227–232. (R. E. K.)

**Ephedrine Derivatives—*N*-Methyl-diethyl-amino-ethyl. Action on Blood Pressure and Bronchial Resistance in Comparison to the Corresponding Ephedrine.** Six ephedrine derivatives have been investigated for their action on blood pressure: 1-*N*-diethyl amino ethyl-ephedrine, 2-*N*-methyl-diethyl amino ethyl-ephedrine-Isalon, 3-*N*-methyl-dipropylamino ethyl-ephedrine, 4-*N*-methyl-dibutylamino ethyl-ephedrine, 5-*N*-methyl-diethylamino propyl-ephedrine, 6-*N*-methyl benzyl-diethylamino ethyl-ephedrine. Numbers 2 and 4 have also been investigated for their bronchial action. All of the compounds have a lesser blood pressure action than ephedrine. As the molecular weight increases, in particular numbers 4, 5 and 6, the central action increases approaching a strychnine-like reflex increase. Isalon, number 2, on the cat and dog exerts a partial central blood pressure rise and a partial peripheral blood pressure fall. In the dog, the peripheral action dominates while in the cat the central dominates. It has not been determined with certainty that Isalon exerts an action on the heart like ephedrine. In humans subcutaneous injection produces a fall in blood pressure. Isalon produces a dilator effect on dog and guinea pig lung in contrast to ephedrine.—H. HANDOVSKY. *Arch. intern. pharmacodynamie*, 51 (1935), 301–334. (H. R.)

**Nicotine Poisoning—Spinal Reflexes in.** Using a technique similar to the Claude Bernard experiment with curare, the authors found that the spinal reflexes could be obtained in half of a series of frogs in which peripheral paralysis had been produced by nicotine, while it was obtained in all of the dogs studied. The loss of spinal reflexes involving skeletal muscle after nicotine is due chiefly to a peripheral rather than a central effect.—F. E. FRANKE and M. HELEN DENVIR. *J. Pharmacol.*, 55 (1935), 390. (H. B. H.)

**Pharmacology of the Vegetative Nervous System. III. Action of Veronal on the Vegetative Endings of the Intestine.** Experiments were carried out on a rabbit intestine which was treated with sodium veronal and then with stimulants such as pilocarpine, arecoline, acetylcholine, etc. The depression of phasic and tonic activity produced by sodium veronal was maintained, and in spite of this the veronal-treated intestine reacted as strongly as an untreated intestine. Veronal does not reduce the effect of yohimbine and gynergen, but on the contrary it intensifies the excitation of the sympathetic endings. The activity of veronal on the vegetative endings of the intestine is attributed to amphotropy, which accounts for its influence on the vagal and sympathetic endings.—B. DE BIASIO. *Boll. soc. Ital. Biol. Sper.*, 10 (1935), 81–83; through *Chimie et Industrie*, 34 (1935), 1139. (A. P.-C.)

**Pituitary Hormone, Posterior—Action of, upon Blood Sugar of the Rabbit.** The oxytocic substances and the postlobin-V were administered to rabbits intravenously, and it was concluded that neither of these in physiological amounts was of any significance in determining the blood sugar level in rabbits.—H. C. ELLSWORTH. *J. Pharmacol.*, 55 (1935), 435. (H. B. H.)

**Procaine—The Fate of, in the Dog.** These investigations consisted of experiments upon normal healthy dogs, or nephrectomized dogs, and on dehepatized dogs; preparations suitable for heart-lung perfusions, heart-lung-limbs perfusions and heart-lung-liver perfusions were also employed. Procaine was injected intravenously. The author concludes that in the normal healthy dog procaine is rapidly converted into non-toxic end products, the procaine as such disappearing from the circulating blood. The end products are eliminated by the kidneys slowly and in the nephrectomized animals may be found in the blood for as long as the animals survive. Blood alone has no effect on procaine. The liver is not essential in the detoxication of procaine, as other tissues are also able to convert it into end products. The liver, however, detoxicates procaine much more rapidly and efficiently than do other tissues. On theoretical grounds it appears that the clinical use of procaine in large amounts might be contra-indicated in persons suffering with a severe hepatic damage.—JOHN G. DUNLOP. *J. Pharmacol.*, 55 (1935), 464. (H. B. H.)

**Rauvolfine of Koepfli—A New True Sympathicolytic.** Rauvolfine recently extracted

from *Tapernæmontana ventricosa*, Apocynaceæ, was shown to be a true sympathicolytic by its ability to antagonize the hypertensive and renal vaso-constrictor actions of adrenaline when injected into a dog.—RAYMOND HAMET. *Compt. rend.*, 201 (1935), 1050. (G. W. H.)

**Salicylates—Action of.** Salicylates when administered orally or intravenously produce a marked rise in temperature and enhance the blood pressure action of epinephrine due to some sensitization or stimulation of the sympathetics. Of the salicylates most widely used, salicylic acid, aspirin, sodium salicylate and sodium acetyl salicylate decrease in toxicity in the order named. The toxicity of salicylates is reduced by sodium bicarbonate or salts that yield sodium bicarbonate. The analgesic action seems to be due to the action which raises temperature and aids the pressor action of epinephrine.—H. A. MCGUIGAN and J. A. HIGGINS. *Arch. intern. pharmacodynamie*, 51 (1935), 398–415. (H. R.)

**Sodium Fluoride—Effect of, upon Experimental Thyroid Poisoning.** The hypothesis that sodium fluoride causes an inactivation of thyroxine *in vivo* could not be confirmed. The therapeutic use of fluoride in hyperthyroidism is not necessarily condemned by these findings, as an inhibiting action on the thyroid gland itself is still possible.—M. H. SEEVERS and H. A. BRAUN. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 228. (A. E. M.)

**Synergy—Quantitative Study of the Phenomena of, Potentialization of Hypnotic Action with the Mouse.** Varying quantities of alcohol and ethyl, butyl-barbituric acid were injected intravenously into mice. The coefficient of potentialization is defined as the quotient of the duration of sleep produced by the association, divided by the sum of the durations of sleep produced by each of the hypnotics employed alone. The results showed that an association of inactive doses of hypnotics can produce a sleep varying from 2 to 78 minutes, according to the proportions used; that the association of active doses of hypnotics produces a sleep whose duration can be distinctly superior to that of the sum of the durations produced by each substance used alone: that the coefficient of potentialization is most frequently greater when the doses of hypnotics used are weakest.—LAIA OLSZYCKA. *Compt. rend.*, 201 (1935), 796. (G. W. H.)

**Urea Derivatives in the Terpene Series—Study of Some.** Menthyl and bornyl ureas were prepared by the interaction of nitrourea with the terpenylamines. The chloral addition product and the acetyl, bromoacetyl, cinnamoyl, *p*-nitrobenzoyl and *p*-aminobenzoyl derivatives of these terpenylureas were also prepared. Melting points and crystalline structure is given. Preliminary physiological tests on the narcotic effects of some of these ureas were carried out. These indicated that menthylurea was the most promising. It acted rapidly without evident after-effects.—ROBERT L. BATEMAN and ALLAN R. DAY. *J. Am. Chem. Soc.*, 57 (1935), 2496. (E. B. S.)

**Vitamin A Requirements of Growing Puppies.** The minimum dose which effects increase in body weight was 20 U. S. P. units per 100 Gm. body weight, given as carotene. This is higher than the need of the rat for vitamin A.—W. O. FROHRING. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 280. (A. E. M.)

## TOXICOLOGY

**Emetine Hydrochloride—Cumulative Toxicity of, in Guinea Pigs.** The toxicity of emetine hydrochloride administered subcutaneously to guinea pigs is approximately the same whether the alkaloid is given in a single large dose or in repeated doses of 1/20 the acute MLD over a period of 40 days. Caution is indicated in the use of repeated doses in humans.—ELI A. ROSEN, R. R. MARTIN and NORMAN A. DAVID. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 289. (A. E. M.)

**Mercury Poisoning.** A lecture describing the history of mercurial toxicology and the recent work of Stock on chronic poisoning, which resulted from his own accidental poisoning in the laboratory. The symptomology, toxic concentration in the air, recovery, possibility of poisoning from amalgam fillings, are discussed. A case of chronic poisoning arising from the dipping of a fever thermometer routinely into a hospital sublimate solution is described. The methods of determination of traces of mercury in the urine are then discussed. The colorimetric determination as the red iodide gives a sensitivity of about 0.1 mg. per liter with macroscopic determination. Stock has bettered this by distilling the mercury into a capillary tube and forming the iodide in the capillary from the vapor from a crystal of iodine. The sensitivity reaches about 0.001 mg. per liter. Stock finally improved upon this by dissolving the mercury in chlorine water, distilling off the chlorine and developing a violet color with phenylcarbazone. One drop of the carbazone solution gives a distinct violet color with 0.000002 mg. mercury per 2 cc. of 15

dentists, 8 had in the urine mercury in quantities between 2 mg. and 0.005 mg. per liter. The necessity of caution in handling the metal and its salts is stressed.—E. KARLING. *Farm. Revy*, 34 (1935), 781. (C. S. L.)

**Myosalvarsan—Toxic Reaction after.** The day after intramuscular injection of myosalvarsan there occurred on the right gluteus a bright red pigmented area the size of a child's head, which on magnification revealed small white areas surrounded by dilated vessels. Rapid healing with pigmentation.—MAY. *Chemnitzer Hautarzte meeting*, 6/10/35; through *Dermatol. Wochschr.*, 101 (1935), 830; through *Squibb Abstract Bull.*, 8 (1935), A-1128.

**Poisons and First Aid in Cases of Poisoning.** A Review.—M. GRUNEWALD. *Pharm. Post.*, 68 (1935), 550–552. (H. M. B.)

**Red Squill Investigations.** Red squill is an ideal and specific raticide. The nature of the rat-killing principle is unknown. A simplified method of biological assay using white rat is described. In general, sun-dried squills are less toxic than dehydrated. Rats, recovered from a sublethal dose of squill, will not eat the powder again, but will repeatedly consume sublethal feedings of baits containing alcohol or glycerol extracts of squill.—M. G. O'CONNOR, R. E. BUCK and C. R. FELLERS. *Ind. Eng. Chem.*, 27 (1935), 1377. (E. G. V.)

**Red Squill Investigations.** Toxic extracts can be prepared from red squill powder, with methyl and ethyl alcohols the most efficient solvents tried. Extracts prepared with the Soxhlet extraction apparatus are more toxic than those prepared by shaking or stirring. Wheat bran is a suitable and inexpensive carrier for the dried extracts. Short extraction periods remove more toxic material from coarsely ground powder than from finely ground. Toxic extracts can be prepared on a large scale by a percolation method.—R. E. BUCK and C. R. FELLERS. *Ind. Eng. Chem.*, 27 (1935), 1496. (E. G. V.)

## • THERAPEUTICS

**Acetylenes—Chemistry of. II. Pharmacological Properties of the Acetylenic Linkage.** A number of dialkyl amino alkyl esters of octanoic, $\alpha$-octenoic and $\alpha$-octynoic acids are reported along with their physical properties and anesthetic activities. The author concludes that anæsthetic activity is directly proportional to the molecular weight of the amino alcohol part of the molecule, and inversely proportional to the degree of unsaturation of the acid.—G. BRYANT BUCHMAN. *J. Am. Chem. Soc.*, 57 (1935), 2167. (E. B. S.)

**Argolaval—Use of, in Dermatology.** Argolaval, a double salt of silver nitrate and methenamine with cyclic amine, is useful in producing granulation of wounds and restoration of epithelium. It is used as an ointment, solution or powder.—*Deut. Med. Wochschr.*, 61 (1935), 1234–1235. (H. R.)

**Burn Therapy—A Review of.** Burns are classified according to degree and their treatment discussed. The following formula is offered: Lanolin anhydrous 30, oil vegetable 33, spermaceti 10, propyl-para-amino-benzoate, 2, water 25. Melt the fatty ingredients on a water-bath and dissolve the benzoate. Add the water, warmed to the temperature of the bath, in divided portions with thorough agitation.—L. STAMBOVSKY. *Drug and Cosmetic Ind.*, 37 (1935), 743–744. (H. M. B.)

**Deriphyllin—Use of, in Heart Lesions.** Deriphyllin, a compound of theophyllin and oxyamine, is very useful in angina pectoris and as a diuretic. Combined with strophanthin it is recommended for all heart decompensations.—HERMANN V. TORNE. *Deut. Med. Wochschr.*, 61 (1935), 1297–1598. (H. R.)

**Genomorphin—Addiction and Practical Use of, as a Narcotic.** Genomorphin has a weaker and none too certain analgesic effect as compared to morphine. Addiction can be produced in man by continued use of this drug.—GUNTHER ANTON, WILHELM THEISS and HEINRICH WEISSIG. *Deut. Med. Wochschr.*, 61 (1935), 1195–1196. (H. R.)

**"Karkade" (Hibiscus Sabdariffa L.)—Therapeutic and Dietetic Properties of.** The product contains two coloring matters, hibiscine and gossypetine; it is used, in conjunction with a natural base, for coloring syrups and liqueurs. It contains no active principle and can be used as a substitute for tea and coffee for persons who are sensitive to excitants. The therapeutic properties of karkade are due to its citric acid content and to the presence of a large amount of an emollient and sedative mucilage. Its effects on the organism are: abundant diuresis accompanied by slightly diaphoretic action, activation and neutralization of hepatic secretion; activation of gastric

secretion and intestinal contractions which permit of rapid digestion; decrease in hyperviscosity of the blood and in arterial pressure, whence its efficiency in arteriosclerosis; its soporific action has a favorable effect on the functions of the stomach; it possesses a high intestinal antiseptic action and can be used to combat various infectious intestinal diseases; it gives a euphoric impression and acts as a reconstituent in spite of the fact that it possesses weight-reducing properties.—P. ROVESTI. *Farmacista Ital.*, 3 (1935), No. 1, 13–16; through *Chimie et Industrie*, 34 (1935), 1138. (A. P.-C.)

**Psoriasis.** This skin disorder and suggested remedies are discussed.—A. R. BLISS, JR. *Drug Cosmetic Ind.*, 38 (1936), 39–40. (H. M. B.)

**Scillaren—Use of, in Heart Lesions.** Scillaren is effective either orally, rectally or hypodermically. It exerts a digitalis-like action on the heart and besides has a marked diuretic action. In many cases where digitalis has failed to be of value, scillaren has been used and good results were obtained. It does not have the cumulative action of digitalis.—F. BACH and A. BERR. *Deut. Med. Wochschr.*, 61 (1935), 1591–1594. (H. R.)

**Strophanthin Preparations—Therapeutic Use of.** The administration of a single dose to get a complete action with strophanthin is permissible only in exceptional cases, *e. g.*, acute failure of the left heart. In all chronic cases of decompensation, small doses frequently repeated, act much better and are more readily tolerated than a single large dose. Depending on the sensitivity of the heart, the initial dose should be 0.1–0.15 mg. the daily dose 0.2–0.3 mg. This treatment with inferior doses shortens the period of treatment in certain instances and markedly reduces the total strophanthin dose. *g*- and *k*-Strophanthin are equally valuable for cardiac cases, as was determined by comparing 2 samples of the latter and one of the former. It is advised that ampuls of strophanthin containing 0.2 or 0.25 mg. should be marketed. The former practice of selling 0.5-mg. ampuls is wasteful since the dose is too high.—TIEMANN. *Klin. Wochschr.*, 14 (1935), 913; through *Squibb Abstract Bull.*, 8 (1935), A-1139.

**Tetramethylammonium Camphosulphonate—A New Alkylammonium Salt.** Tetramethylammonium iodide is treated with moist silver oxide and the resulting base is combined with camphosulphonic acid. Another method of preparation consists in bringing together the silver salt of camphosulphonic acid and tetramethylammonium iodide. The resultant product is quite definite, can be obtained very pure in crystal form, does not decompose even at 120° C., is highly hygroscopic, is soluble in water and neutral in reaction. It is on account of this last-mentioned property that it can be injected hypodermically. It is well tolerated by the organism and combines the therapeutic properties of camphor and of tetramethylammonium. It exerts a tonic action. Contrary to other salts of the same nature, even in small quantity it exerts a cardiac action due to the presence of the camphosulphonic group which acts directly on the heart muscles and which completes the cardiotonic action of tetramethylammonium. Biological investigations showed that it is two and a half times less toxic than the formate.—P. SILLANI and L. CURTI. *Boll. Chim. Farm.*, 74 (1935), 77–81; through *Chimie et Industrie*, 34 (1935), 1140–1141. (A. P.-C.)

## NEW REMEDIES

### SYNTHETICS

**Anticoman.** A specialty on the Swedish market, submitted for official registration, refused and requesting reconsideration, is described as not identical with *Synthalin* (decamethylenediguanidine dihydrochloride) but is rather decamethylenediguanidine bitartrate. In the preparation of the former substance it is stated to be difficult to free the product from the toxic by-product, methyl sulphide, for it is made from thioguanidine hydrochloride and decamethylene diamine, whereas the *Anticoman* is readily freed from the only by-product, ammonia. *Synthalin* melts at 197–199° C. *Anticoman* melts at 150° C.—ANON. *Farm. Revy*, 34 (1935), 773. (C. S. L.)

### SPECIALTIES

**Adaren** (Interpharma G. m. b. H., Prague) consists of diemethylaminophenyldimethylpyrazolon-*N*-methylol-benzamid and diethylmalonylcarbamidaminomethanol and is used in the form of tablets, injections, drops and suppositories as an analgesic.—*Pharm. Monatshefte*, 16 (1935), 242. (H. M. B.)

**Adigan Solution** (Chem. Fabr. G. Richter, A. G., Budapest) contains a liquid extract of

*Digitalis lanata* leaves so that 1 cc. is equivalent to 0.10-Gm. standard *Digitalis lanata* leaves; sold in packages of 15 Gm.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Adigan Tablets** (Chem. Fabr. G. Richter, A. G., Budapest) each tablet contains extract of *Digitalis lanata* leaves equivalent to 0.10 Gm. of standard *Digitalis lanata* leaves; sold in packages of 20 tablets.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Bivatol** (Anglo-French Drug Co., London) contains basic bismuth-alpha-carboxyethyl-beta-methylnonoate; a limpid oily solution containing 0.035 Gm. per cc. used as an antisyphilitic.—*Drug and Cosmetic Ind.*, 38 (1936), 121. (H. M. B.)

**Bylonon Tablets** (Byk-Guldenwerke, Berlin) for the alleviation of pain contains 0.25 Gm. diamidopyrin, 0.2 Gm. lactylphenetidin and 0.08 Gm. monobromdiethylacetylurea; suppositories contain 0.35 Gm., 0.25 Gm. and 0.08 Gm., respectively.—*Pharm. Monatshefte*, 16 (1935), 242. (H. M. B.)

**Curcumin Dragees** (Temmler Werke, Berlin) contain 0.10 Gm. curcumin-sodium, potassium cholate; marketed in packages of 30 dragees.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Depulmol Ampuls** (Chem. Pharm. Werke des Landes Steiermark, Graz) contain 15% oil eucalyptus, oil of peppermint, camphor and 3% of quinine base in sesame oil; marketed in packages of 3 ampuls of 1 cc.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Dextrovagin Sticks** (Deutsche Maizena-Werke A. G., Hamburg) contain dextrose in stick form; marketed in packages of 10–8 Gm. and 6–15 Gm. sticks.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Dormaphen** (Calco Chemical Co.) contains in each capsule magnesium phenobarbital 0.7 gr. and phenacetin 2.5 gr. and is used wherever hypnosis and analgesia are required.—*Drug and Cosmetic Ind.*, 38 (1936), 121. (H. M. B.)

**Drisdol** (Winthrop Chemical Co.) is crystalline vitamin D free from the impurities of crude irradiated ergosterol in chemically pure propylene glycol, soluble in milk and fruit juices, etc.—*Drug and Cosmetic Ind.*, 38 (1936), 121. (H. M. B.)

**Epithedol Ointment** (Wyleys, Ltd., Coventry) contains 2% scarlet red with oxyquinoline sulphate and chlorbutol. It is recommended for wounds, abrasions, burns, etc.—*Drug and Cosmetic Ind.*, 38 (1936), 121. (H. M. B.)

**Iodan Salve 6%** (Apothke "Zur hl. Dreifaltigkeit," Poysdorf) contains 6% of resublimed iodine in an indifferent base; packages of 20 Gm.—*Pharm. Presse*, 40 (1935), 533. (M. F. W. D.)

**Isorptol with Mercuric Iodide** (Chem. Fabr. Schürholz, Cologne am Rhein) contains 8% of iodine, red mercuric iodide and soft soap; sold in packages of 30, 100 and 500 Gm.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Itrid Ampuls for Veterinary Use** (Chem. Pharm. A. G., Bad Homburg) contain a complex compound of iodine trichloride; put up in packages of 5 ampuls of 2 cc. and 5 ampuls of 5 cc.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Levurinetten Tablets** (Chem. Fabr. I. Blaes & Co., München) is a stable yeast preparation put up in packages of 190 tablets.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Levurinose Powder** (Chem. Fabr. I. Blaes & Co., München) is a dried yeast preparation.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Medobis Ampuls** (Fa. Sanabo-Chinoin G. m. b. H., Vienna) in 0.5 cc. consist of 0.045 Gm. bismuth in the form of the heptadiencarbonate is a stable oil solution.—*Pharm. Post*, 68 (1935), 580. (H. M. B.)

**Mercupurin** (Campbell Products, Inc., New York) is the sodium salt of a compound formed by the union of an organic mercurial and theophyllin, a white crystalline powder supplied in the form of a 13.5% aqueous solution representing 3.5% bound theophyllin to which 1.5% free theophyllin is added. It contains 39.2% mercury and is used to remove excess fluid in edema of the congestive heart, cirrhosis of the liver, ascites and nephrosis.—*Drug and Cosmetic Ind.*, 38 (1936), 119. (H. M. B.)

**Murnil** (Behringwerke, I. G. Farben A. G., Leverkusen) in 100 Gm. packages consists of 10 units of Vitamin H with additional substances to 1 Gm.—*Pharm. Post*, 68 (1935), 579. (H. M. B.)

**Nican Drops** (Labor. Cantin, Palaiseau, France) contain 1% of codeine, sodium benzoate,

tincture of grindelia, tincture of aconite, cherry laurel water, tincture of belladonna and bromoform, etc.; put up in packages of 30 Gm.—*Pharm. Presse*, 40 (1935), 533. (M. F. W. D.)

**Par-Isalon** (Chem. Fabr. Dr. Joachim Wiernik & Co. A. G., Berlin) contains theobromine, caffeine, phenyldimethylpyrazolon and isalon (a pure substance of the adrenaline series) for bronchial asthma and sequealæ as cardiac and circulatory disturbances, dyspnea, chronic bronchitis.—*Drug and Cosmetic Ind.*, 38 (1936), 121. (H. M. B.)

**Piperazin Kwizda** (Chem. Fabr. F. J. Kwizda, Korneuburg) consists of 3% diethylene diamine, sodium bicarbonate and tartaric acid.—*Pharm. Post*, 68 (1935), 579. (H. M. B.)

**Rhinopharynxoil Capsules** (Dr. Chapelle, Paris) contain santalol, camphor and aromatic plant oils; packages of 6 capsules.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Solopin Salve** (Apotheke "Zur Universitat," Innsbruk) contains epedrine hydrochloride, menthol, sodium sozoiodol, boric acid, Haller brine, adrenalin, etc.; marketed in 10-Gm. tubes.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

**Thioalbin Tablets** (Gimborn and Zifferer A. G., Vienna, 10th dist.) contain thioalbin, coumarin, citric acid, etc.; marketed in packages of 60 tablets.—*Pharm. Presse*, 40 (1935), 534. (M. F. W. D.)

## BACTERIOLOGY

**Antiparasitic Agent.** Hydrocyanic acid is absorbed in finely divided cellulosic materials, to which may be mixed fibrous materials.—DEUTSCHE GOLD UND SILBER SCHEIDEANSTALT VORMALS ROESSLER. Belg. pat. 407,618, Feb. 28, 1935. (A. P.-C.)

**Antiseptic Action of Physical and Physico-Chemical Factors.** A brief review of work published in 1934 and 1935.—STERCKX. *Ann. Zymologie* [2], 2 (1935), 132–140. (A. P.-C.)

**Bacillus Typhosus—Studies on, in Shanghai.** Thirty-three strains of *B. Typhosus* obtained by blood culture from typical cases of typhoid fever among Chinese patients indicated that highly virulent cultures of *B. Typhosus* found to be practically inagglutinable with O serum were used as vaccines for the vaccination of mice giving marked protection. The serum so produced gave some degree of passive immunization.—R. C. ROBERTSON. *J. Path.* (British), 42 (1936), 53. (A. H. B.)

**Cholera Vibrio—The Q. Proteins and Non-Specific O-Antigens of the.** Vibrios heated at 100° C. in saline suspension agglutinate often to a high titre with the antisera of the Q. proteins of the cholera vibrio. These substances and their antibodies are important contributors to the "non-specific O agglutination."—P. BRUCE WHITE. *J. Hygiene* (British), 35 (1935), 498. (A. H. B.)

**Diphtheria Toxoid-Reaction—The Moloney Test: Its Applications and Significance.** Toxoid sensitivity is probably an allergic condition which is due to previous contact with the products of the *C. diphtheriæ* without reference to age. Schick-negativeness and Moloney-positiveness are closely associated.—E. A. UNDERWOOD. *J. Hygiene* (British), 35 (1935), 449. (A. H. B.)

**Disinfectants—Criteria for.** It is the author's opinion that no disinfectant has so far been discovered which will conform to all of the desired specifications. Mercuric chloride is now discredited, for whereas formerly it was given a R.-W. coefficient of about 13.0, more accurate methods of testing show it to be well below 1.0. Hypochlorites are useless in the presence of much organic matter, and permanganate is extremely variable under these conditions. Coal-tar disinfectants still maintain the premier place as industrial disinfectants. The introduction of the standard Rideal-Walker test has been welcomed by manufacturers. The Chick-Martin test is largely discredited, as it fails to give concordant results, and cannot be claimed to represent the conditions of practical usage. A table is given which shows the effect of the presence of organic matter on the coefficient of disinfectants.—J. GIBSON. *Pharm. J.*, 135 (1935), 598. (W. B. B.)

**Encephalomyelitis (X-Disease)—Australian Epidemic of.** The Australian epidemic might have been caused by the virus of "louping-ill" because the same species of animals have been found to be susceptible to the two diseases. The Australian X-Disease studied by Cleland and Campbell was caused by a virus with characteristics so closely resembling those of the virus of "louping-ill" that differentiation between them on the evidence now available is well-nigh impossible, though not necessarily the same virus causes them.—J. R. PERDRAU. *J. Path. Bact.* (British), 42 (1936), 59. (A. H. B.)

**Essential Oils—Evaluation of the Bactericidal Power of, by Determination of Their Phenol Coefficients.** A description of the technique of the determination of phenol coefficient, more particularly by the Hygienic Laboratory and by the U. S. Food & Drug Administration methods (the latter being considered the better of the two), with a discussion of its application to essential oils.—Y. R. NAVES. *Parfums France*, 13 (1935), 273–284 (in French and English). (A. P.-C.)

**Pneumococcus Toxins—A Study of.** Toxic filtrates were obtained from aerobic cultures on agar and broth and from anaerobic cultures in broth. The toxicity of the different filtrates was at first widely different. The first filtrates were usually obtained after 48 hours' growth. A toxic product of pneumococcus when injected into human beings induces an immunity to its action; this immunity is shown to be due to the development of neutralizing antibodies. Immunity to the pneumococcus toxin is established relatively quickly in some children, sometimes after a single injection. A high percentage of pneumonia convalescents (over 95) show negative skin reactions to toxic filtrate of the pneumococcus. The cutaneous reaction in four apparently toxin-immune children was as marked as in the susceptible children. Immunization with toxin partly detoxified with formalin toxoid to detoxify the pneumococcus toxin while preserving its antigenicity is still open to question.—ARTHUR F. COCA. *J. Immun.*, 30 (1936), 1. (A. H. B.)

**Pseudo-Schick Reaction and the Intradermal Toxoid Test of Moloney—Relationship and Significance of.** Schick-positive reactors from 212 people were immunized with formol toxoid and post-Schick and Moloney tests were performed it showed that the intradermal toxoid test of Moloney or Zoeller corresponds exactly with the pseudo response in the Schick test and that the pseudo response is as efficient as the Moloney for detecting possible reactors to immunizing doses of toxoid, and is a more accurate control of the Schick test.—MAURICE MITMAN. *J. Hygiene* (British), 35 (1935), 512. (A. H. B.)

**Staphylococcus Toxoid—Assay of Antigens, with Special Reference to.** Staphylococcus toxoid and toxoid-antitoxin floccules injected into guinea pigs or rabbits cause the production of antitoxin rendering the animals immune to toxin injected parenterally. Rabbits frequently produce measurable amounts of antitoxin after one injection and guinea pigs rarely after injections.—MARGARET L. SMITH. *J. Path. Bact.* (British), 42 (1936), 227. (A. H. B.)

**Sterile Solutions—Preparation of.** The discontinuous heating during sterilization by Tyndallization is claimed to be unnecessary; since those preparations which were found to be sterile after the third heating had all been found to be sterile after the first heating to 80° C. If preparations are made with precautions as to sterility, the present Tyndallization process is unnecessary and should be modified and renamed. Fourteen out of 37 injections containing various medicinal agents and contaminated with living organisms of *Staph. aureus* were found to possess sufficient germicidal power to kill within 24 hours, 18 within 48 hours and 27 within a week. Merthiolate was found to be the most powerful germicide of those tested, a solution 1:100,000 killing *Staph. aureus* within 30 minutes. Nipasol sodium (0.6%) and saturated solutions of nipagin M and nipasol M had little germicidal effect on *Staph. aureus*. Chlorbutol in 1:200 solution failed to kill in 24 hours. Para-chloro-meta-cresol in 0.05% solution was approximately equivalent in germicidal power to 0.5% phenol and 0.3% trikresol.—H. DAVIS. *J. Pharm. Pharmacol.*, 8 (1935), 361–369. (S. W. G.)

**Streptococci from Pasteurized Milk—The Cultivation of.** The presence of organisms of the *Streptococcus Thermophilus* group is an important cause of difficulties in the bacteriological examination of pasteurized milk. They grow best in the presence of sucrose.—HEDLEY D. WRIGHT. *J. Path. Bact.* (British), 42 (1936), 31. (A. H. B.)

**Tropical Typhus.** Rickettsia have been demonstrated in the vascular lesions of the brain in five of the seven cases. They appear as rounded, ovoid or lanceolate bodies, usually clearly diplococcal in arrangement. The average size of the paired organism may be given as 1–1.5 microns in length and 0.2–0.3 microns in breadth. By staining they appear a deep blue color and appear purple with light staining.—R. LEWTHWAITE. *J. Path. Bact.* (British), 42 (1936), 23. (A. H. B.)

**Tumors—Process for the Preparation of Therapeutic and Diagnostic Means for Combatting.** The starting point consists of cultures of staphylococci, which are cultivated on animal or human tumors, and form, on the medium, small, round, greyish yellow, brilliant colonies.—J. AMAN. Belg. pat. 406,986, Jan. 31, 1935. (A. P.-C.)

## BOTANY

**Angelica Root.** The Swedish drug is *A. archangelica beta norwegica*. The German drug is from a *sativa* subspecies. The aromatic properties are identical.—ANON. *Farm. Revy*, 34 (1935), 733. (C. S. L.)

**Belladonna—Alkaloidal Content of Cultivated.** An attempt to cultivate *Atropa belladonna* at Valperge, at an altitude of 460 m., gave very good results. The leaves of 2-yr. old plants had a content of active principles exceeding 0.62%, the minimum required by the various pharmacopœias.—E. BERTONASCO. *Boll. Chim. Farm.*, 74 (1935), 41–42; through *Chimie et Industrie*, 34 (1935), 1140. (A. P.-C.)

## CHEMISTRY

### GENERAL AND PHYSICAL

**Barbitol and Luminal—An Optical Crystallographic Study of Some Derivatives of.** Ten new benzyl or phenacyl derivatives of barbitol and eight derivatives of phenobarbitol are described. The crystallographic data include optical characteristics, sign of elongation, refractive indices, rhombic dispersions and extinction angles.—M. E. HULTQUIST and C. E. POE. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 398. (E. G. V.)

### ORGANIC

#### *Alkaloids*

**Alkaloids, Secondary and Tertiary Amines—Some Cupric Tetrachlorides and Tetrabromides of.** The cupric tetrachlorides and tetrabromides of nicotine, quinine and strychnine as well as those of dimethylamine, triethylamine, monomethylaniline, monoethylaniline, dimethylaniline and diethylaniline were prepared and described.—JEAN AMIEL. *Compt. rend.*, 201 (1935), 1383. (G. W. H.)

**Coffee—Note on Origin of Decaffeinated.**—A. GUILLAUME and C. LEFRANC. *Bull. sci. pharmacol.*, 42 (1935), 346. (C. T. I.)

**Cytisus Caucasicus—Alkaloids of.** The dried leaves of the plant, collected in the summer of 1934, contained 0.4% alkaloid, extractable in part with ether and in part with chloroform. The ether-soluble bases could be distilled in vacuum without decomposition and, from them, there was isolated in the form of perchlorate an alkaloid identical with lupanine. The mother liquors from the perchlorate yielded a crystalline picrate, $C_{15}H_{26}N_2 . C_6H_2(OH)(NO_2)_3$, m. p., 204–205° C., identical with pachycarpine picrate. The chloroform extractable bases yielded a crystalline substance, m. p., 120–122° C. which was not identified.—A. ORECHOFF and S. NORKINA. *Arch. Pharm.*, 273 (1935), 370. (L. L. M.)

**Ergobasine—A New Water-Soluble Alkaloid of Ergot.** The alkaloid may be obtained by an aqueous extraction of the total alkaloids previously obtained and then exhausting the aqueous solution with chloroform from which ergobasine crystallizes after concentration. Ergobasine may be obtained also by fractional crystallization of a chloroform solution of the total crude alkaloids. The alkaloid is obtained in the pure state by repeated crystallizations from benzene or trichlorethylene. Ergobasine is soluble in water (1:200–300), very soluble in methyl and ethyl alcohols and slightly soluble in chloroform; $[\alpha]_D^{20} = +90°$ in 0.25% aqueous solution. The formula given for it is $C_{19}H_{23}O_2N_2$. Photomicrographs of the free base and its hydrochloride, sulphate, picrate and tartrate are included.—A. STOLL and E. BURCKHARDT. *Bull. sci. pharmacol.*, 42 (1935), 257. (C. T. I.)

**Ergometrine—Spectrographic Absorption of, in Relation to the British Pharmacopœia Color Test.** The following summary is given: Samples of ergometrine have been examined by the *p*-dimethylaminobenzaldehyde color test and the results compared with the coefficients of extinction at 316 mμ. The purest specimen of ergometrine obtained, exhibiting an E value of 185 and melting at 164° C. gave a color by the chemical test equivalent to that produced by 1.78 times its weight of ergotoxine base. Ergometrine in aqueous tartaric acid solution shows an absorption band in the ultraviolet region with a maximum at 316 mμ. The same band is exhibited by solutions of ergotoxine. The color produced when ergometrine is submitted to the *p*-dimethylaminobenzaldehyde test is spectroscopically identical with that produced by the ergotoxine under the

same conditions.—N. L. ALLPORT and S. K. CREWS. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 447–452. (S. W. G.)

**Ergot Alkaloids—Process for the Separation and Preparation of, in a Pure State.** The solutions of ergot alkaloids are subjected several times to a chromatographic adsorption in inert solvents such as benzene and its homologues.—FABRIQUES DE PRODUITS CHIMIQUES CI-DEVANT SANDOZ. Belg. pat. 407,274, Feb. 28, 1935. (A. P.-C.)

**Ergot and the Ergot Alkaloids.** A concise review of the literature concerning the alkaloids of ergot, especially the recent work on ergometrine, ergostetrine and ergotocin.—ANON. *Merck Report*, 44 (1935), 16–18. (S. W. G.)

**Heliotropium Lasiocarpum—Alkaloids of.** The author is concerned with the analysis of heliotrine in converting it to a saturated base heliotridane ($C_8H_{15}N$). Heliotridane is a tertiary base and contains no methyl-imid groups, so that it is evident that it must have a two-cyclic ring system in which the nitrogen is located at the point of intersection of the two rings. For such a substance as this, it is evident that we can expect many cyclic combinations such as two five-ring compounds, or a five-ring and six-ring compound, or finally a compound with two six-ring combination. The following experiment was conducted in order to prove the nature of the compound. Theoretically heliotridane ($C_8H_{15}N$) should split either one of the two rings, that is the double bond hydrated and the so-called dehydro-N-methyl-heliotridane obtained. It is known that N-substituted pyrrolidin-derivatives, are very easily dehydrated. After dehydrating the compound, the nature of either ring could be easily examined. The analysis of heliotridane runs only in one direction, so that it was possible to obtain as a reaction product, a homogeneous base of the methyl group, whose picrate melted at 118.5–120°. On standing a cloudy yellowish oily-like substance separated out. The ethereal extractions were also cloudy. This inclination of the methyl base to polymerize is restricted to the crude impure material only, because of the fact, that the picrate of the pure substance remains clear even after months of standing; the boiling point remained constant also. The hydration of N-methyl-heliotridane takes place easily, in which a molecule of the base takes up two molecules of water, consequently forming a saturated base $C_9H_{19}N$. This compound dihydro-N-methyl-heliotridane was dehydrated at a temperature of 270–275°. The compound obtained was colorless, but changed to a reddish color on standing and had the formula $C_9H_{15}N$. It had basic properties and gave positive reaction of a pyrrole. This concludes then that the rings of heliotridane contain a pyrrolidine ring.—G. MENSCHIKOFF. *Ber.*, 68 (1935), 1555. (G. B.)

**Lycorice Alkaloids. Lycorine (II).** The first paper was revised and extended. $CH_3I$, reacting under pressure with lycorine formed 2 crystalline products in the ratio 3:2, separable by different solubilities in ethanol: the true methiodide (I), dec. 247°, convertible only into the basic methyl-licori-methine and a neutral compound. $C_{16}H_{16}NO_3Cl$, dec. 301°; and the $\psi$-methiodide (II), dec. 281°. In II, the I atom has wandered to some adjacent C-atom. It is converted into the lycorine-$\psi$-methyl-hydroxide (basic, dec. 219°; crystalline-HCl salt, dec. 300°, base regenerated by $Na_2CO_3$ solution), and subsequently into neutral iso-methine. Both methines yield the same methyl-anhydrolycorine-methiodide. The general course of these reactions was diagrammed. Lycorine does not contain an $NCH_3$ group.—H. KONDO and H. KATSURA.

**Lycorenine (II).** Revision of former work showed that lycorenine (I), $[\alpha]_D^{25}$ +125° in ethanol, contains 3 $CH_3O$-groups, one alcoholic OH group and a secondary N-atom; Pd-charcoal and H gave dihydro-lycorenine $C_{18}H_{23(25)}NO_4$, m. p. 166°. I yielded by Hoffmann's Abbau an $\alpha$-methine (II): sol. in ether; $[\alpha]$ ±0°; methiodide, m. p. 223°; and a $\beta$-methine (III): $\alpha$, levo; methiodide, m. p. 121–122°. The methiodides of II and III both yield $(CH_3)_3N$ by further Hoffmann reaction and the same N-free product $C_{18}H_{16}O_4$ (IV): m. p. 116°; $[\alpha]$ ±0°; contains 3 $CH_3O$-groups (Zeisel) and 1-OH (acetyl). $(CH_3)_2SO_4$ converted I into the methyl-I-metho-sulphate (V). KI converted V into the methiodide. It also yielded methines II and III, and these again the compound IV. $KMnO_4$, oxidation of IV yielded a substance m. p. 250°. Ozonization of II yielded 2 reducing substances, one water-soluble, the other insoluble. The latter analyzed $C_{11}H_{10}O_5$, contained only 1 $CH_3O$-group and formed a mono-semicarbazone, m. p. 236°. Of the 9 described lycorice alkaloides, lycorenine is the only one containing a secondary N. Also it has the most $CH_3O$-groups, and the fewest OH. The ease of dissection by Hoffmann's reaction indicates a tetrahydroiso-quinoline ring. As yet ozonization of the $\alpha$-methine has not yielded any amino-aldehyde. Consequently it has been inferred that the structure of lycorenine is very differ-

ent from that of coclaurine or bis-coclaurine.—H. KONDO and K. MITSUHASHI. *J. Pharm. Soc. Japan.*, 54 (1934), 194–198. (R. E. K.)

**d-Nornicotine—An Alkaloid of Duboisia Hopwoodii.** The plant *Duboisia Hopwoodii* belongs to the family Solanaceæ. The leaves and twigs of this plant contain an alkaloid piturine different in action from duboisine. Previous statements made in regard to the presence of piturine were found to be contradictory. Leaves of the plant were collected, macerated and then extracted with 90% alcohol. A crude alkaloidal mixture was obtained and purified through fractional distillation. This purified substance was examined under the ultraviolet absorption spectrum and was found to have a maximum of $\lambda = 2600$ Å, log. $\epsilon = 3.15$ (for nicotine the maximum is $\lambda = 2604$ Å, log. $\epsilon = 3.37$); $[\alpha]_{D\,24} = +38.3°$. This alkaloidal base is consequently dextrorotatory and does not correspond with the properties of the piturine base. In composition and ultraviolet absorption spectrum, it corresponds with nornicotin. Using $KMnO_4$ as an oxidizing agent nicotinic acid was obtained. Methylating this base with 22% formic acid at 90°, a nicotine derivative was obtained which was identified as a di-picrate. A portion of the picrate of the methylated base was mixed with 5% solution of HCl; to this mixture alcohol was added; the solution was made alkaline and steam distilled. On examining the distillate it was found to be nicotine. The optical rotation of this product was much lower when the distillation was rendered in the absence of $CO_2$, in comparison to previous nicotine obtained as *d*-nicotine. In contrast to this, a comparison was made of the specific rotation of *l*-nicotine in a solution of the same concentration and caustic potash. According to the results obtained, it is assumed that in methylating process of the crude mixed alkaloid base, two products were obtained *d*-nicotine 62% and *d, l*-nicotine 38%. The relation of the presence of *d*, and *d, l*-nornicotine in the sample is the same as that of *d*, and *d, l*-nicotine, *e. g.*, 62% of *d*,- and 38% of *d, l*-nornicotine. The specific rotation of *d*-nornicotine is $[\alpha]_D = +61.7\%$. The di-iodo-methylene compound, a product of the methylation process, was found to be a mixture of *d*, and *d, l*-nicotine-di-iodo-methylene. *l*-Nicotine-di-iodo-methylene is fully racemized at a temperature of 90–100° in about ten minutes. The melting point of trinitro-*m*-kresolene of the base is the same as that of *l* and *d, l*-nicotine (204–205°). The picronolate of the methylated product melts at a temperature of 238–239°, the melting point of *d, l*-nicotine picronolate is the same. A mixture of *l*, and *d, l*-nicotine picronolate has a melting point of 233–235°. *d*-Nornicotine was not obtained either as a natural or a synthetic product.—E. SPÄTH, C. STANTON HICKS and E. ZAJIC. *Ber.*, 68 (1935), 1388; through *Chem. Zentralb.*, 106 (1935), 1891. (G. B.)

**Hexargen D. A. K.** The Danish Apothecaries Society describes a formula for a solution of silver nitrate with methenamine, called Hexargen, D. A. K. This contains 1% silver nitrate, and consists of *Solutio Argenti Nitratis* 10%, 11 Gm., and *Solutio Hexamethylenetetramini filtrata* 40%, 98 Gm. It is intended to replace an expensive foreign specialty, *Argolaval*. The chemical identity of the two preparations is proved by electrometric titrations which are cited. The silver-ion concentration of the preparation is very low, $10^{-6.5}$, for the methenamine binds silver ions. Assay of the mixture for silver nitrate content is described (volumetric determination with ammonium thiocyanate).—J. K. GJALDBAEK. *Arch. Pharm. og Chemi*, 42 (1935), 615. (C. S. L.)

*Essential Oils and Related Products*

**Argumen Oils—Artificial.** The artificial bergamot, lemon, orange (Portugal), mandarin and neroli oils are discussed.—A. M. BURGER. *Riechstoff-Ind. Kosmetik.* 10 (1935), 195–196. (H. M. B.)

**Cinnamon Bark Oil of the Seychelles.** In the Seychelles the chief consideration is the leaves; the stems of the smaller plants, from which the main harvest of leaves is obtained, have been, until a year or so ago, allowed to rot on the site of the leaf collection. The method of skinning of these small stems in which the entire epidermis is whittled off with a knife was introduced in 1930. Pruning is performed, at intervals, at the same time as harvesting, it is carried out by cutting down the plant to within 6 to 12 inches of the ground. The drying of the bark is important in the preparation of the bark for distilling. The drying is carried out by spreading the material in thin layers in the shade or drying sheds. The writer was able to conduct a fairly large distillation of Seychelles cinnamon bark prepared on the Cascade Estate, Mahe. This bark yielded 0.8%, or 8 liters per ton, the oil having an absorption in sodium bisulphite solution of over 67%

and a specific gravity heavier than that of water.—W. HOLDSWORTH-HAINES. *Perfumery Essent. Oil Record*, 27 (1936), 6. (A. C. DeD.)

**Methyl Anthranilate and Methyl Methylanthranilate in Essential Oils.** A review of the occurrence of methyl anthranilate and methyl methylanthranilate in essential oils, their properties and determination, with 40 references.—R. B. *Parfums France*, 13 (1935), 244–252. (A. P.-C.)

**Oil of Bitter Almonds—Distinction of, from Benzaldehyde.** *Ætheroleum amygdal. amar. verum* may be distinguished from synthetic benzaldehyde by the presence in the latter of traces of chlor-compounds. Distilling the sample with concentrated sulphuric and nitric acids, the distillate is received in silver nitrate solution. Bitter almond oil free from hydrocyanic acid also has a refractive index of 1.540–1.545 (at 20° C.) while that of benzaldehyde is 1.554–1.556. Benzaldehyde has a higher acid number than the almond oil. Five Gm. dissolved in neutral spirit may take 4.1 cc. of half normal alcoholic potash (phenolphthalein indicator) whereas the oil will take only 1.6 cc. of the alkali.—ANON. *Farm. Revy*, 34 (1935), 733. (C. S. L.)

**Oil of Cinnamon—Distinction of, from Oil of Cassia.**

| | Cassia | Cinnamon |
|---|---|---|
| Specific gravity | 1.055–1.070 | 1.023–1.040 |
| Optical rot. | −1° to −6° | −5° to −1° |
| Refract. index | 1.602–1.606 | 1.581–1.590 |
| Aldehyde content | Not below 80% | 65–76% |

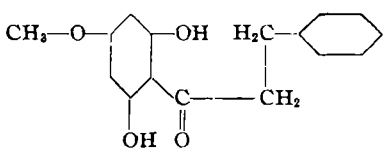
Characteristic crystals, distinguishable under the microscope, are obtainable with 30% potassium hydroxide.—ANON. *Farm. Revy*, 34 (1935), 733. (C. S. L.)

**Oil of Parsley.** The method of cultivation, gathering and distilling of parsley oil is discussed and a review of the literature regarding its composition. Parsley seed oil had the following constants: specific gravity (15° C.) 0.979–1.002, optical rotation −4°50′ to −5°0′, refractive index at 20° C. 1.5150–1.5155, acid value 2.3–7.9, ester value after acetylization 26.1–50.4, soluble without turbidity in 0.5–1 volume of 90% alcohol. Oil distilled from suprannuated seeds was similar to that from fresh seeds. Oil of parsley leaf had the following constants: specific gravity (15° C.) 0.911, optical rotation +6°0′, refractive index 1.5029, acid value 1.4, ester value 8.9, ester value after acetylation 44.8, soluble in 95% alcohol with opalescence, insoluble in 90% alcohol.—ERNEST S. GUENTHER. *Am. Perfumer*, 31 (1935), 73–74. (G. W. F.)

**Oil of Tennessee Red Cedar.** The history and production of cedar oil are described. The physical constants for the oil follow: $d_{15} = 0.943$ to 0.961; $[\alpha]_D^{20} = -25°$ to −42°; $n_D^{20} = 1.504$; acid valuc up to 1; ester value up to 6.5; the solubility is 1 volume of oil to 6.5 volumes of 95% alcohol. The principle uses of the oil are in the soap and perfume industries, and as an insecticide in dusting compounds, moth repellents and sprays.—H. B. HUDDLE. *Ind. Eng. Chem.*, 28 (1936), 18. (E. G. V.)

**Perfumes—New Procedures in the Chemistry of.** A review dealing with ketones.—A. LEWINSON. *Riechstoff-Ind. Kosmetik*, 10 (1935), 201–205. (H. M. B.)

**Populus Balsamifera—2′-6′-Dihydroxy-4′-methoxy-β-phenylpropiophenone Extracted from the Oil of.** A new substance $C^{10}H^{16}O^4$, has been extracted from the oil from the buds of *Populus balsamifera*. After recrystallization from 75% alcohol it presents fine yellow anhydrous needles, m. p. 168°, soluble in ether, alcohol, methyl alcohol, acetone and chloroform, slightly soluble in water and giving a yellow solution in concentrated sulphuric acid or dilute NaOH. In methyl alcohol solution it gives a red-violet coloration with diluted ferric chloride which disappears upon addition of sodium carbonate. It is resistant to alkaline saponification but with concentrated HCl yields one molecule of hydrocinnamic acid and one of mono-methoxyphloroglucinol. The following structural formula is proposed:



It is proposed to confirm this by synthesis.—ALBERT GORIS and HENRI CANAL. *Compt. rend.*, 201 (1935), 1435. (G. W. H.)

**Populus Balsamifera—Synthesis of 2′-6′-Dihydroxy-4′-methoxy-β-phenyl-propiophenone Extracted from the Oil of.** This substance, previously described (*Compt. rend.*, 201 (1935), 1435), was synthesized and the structural formula originally proposed thus confirmed. Phenyl-propionic amide was obtained by dehydration of the ammonium salt and the nitrile obtained by warming with phosphorus oxychloride. The nitrile was condensed with phloroglucinol in anhydrous ether with HCl gas and zinc chloride. The resulting ketone-imide hydrochloride was hydrolyzed by boiling with water and the 2′-4′-6′-trihydroxy-β-phenyl-propiophenone obtained, yielded upon methylation with methyl sulphate 2′-6′-dihydroxy-4′-methoxy-β-phenyl-propiophenone which is identical with the natural product.—ALBERT GORIS and HENRI CANAL. *Compt. rend.*, 201 (1935), 1520. (G. W. H.)

**Rose Oil—Distinction of, from Guajak Oil.** If the chilled oil is microscopically examined the stearopsin crystals can readily be distinguished from the long, sharp-pointed crystals with a characteristic central canal, obtained from the guajol in guajak tree oil.—ANON. *Farm. Revy*, 34 (1935), 733. (C. S. L.)

**Sweet Basil Oil—Chemical Composition of, from Virginia.** The composition of oil produced in Virginia is similar to that from Europe and Algiers. The following characteristics were obtained: specific gravity 20/20° 0.9133, $[\alpha]_D^{25°}$ −9.750, $n_D^{20°}$ 1.4875, ester° (as linalyl acetate) 1.51%, alcohols (as linalol) 65.3%, methoxyl 8.05%, equivalent to methyl chavicol 38.15%. Smaller amounts of cineol, eugenol and sesquiterpenes were present; a very small amount of dextrorotatory terpene may be present.—E. K. NELSON. *Am. Perfumer*, 31 (1935), 69–70. (G. W. F.)

**Volatile Oils—Little Known. III. The Oil and Extract of Tagetes Pumila.** Steam distillation of the fresh plant yielded an orange-red oil (0.25%) with a characteristic odor, $d_{15}$ = 0.899, $[\alpha]_D$ = +3°. The plant extracted with low boiling petroleum ether yielded an orange-brown concrete (0.7%) incompletely soluble in alcohol. The oil appears to be of value in making lavender perfumes and cologne waters.—ALFONS M. BURGER. *Riechstoff-Ind. Kosmetik*, 10 (1935), 218. (H. M. B.)

*Fixed Oils, Fats and Waxes*

**Beeswax—African.** Two samples from the Gambia were of normal composition and had the usual physical and chemical characteristics of African beeswax. One sample from Tanganyika was of normal composition and had the usual physical and chemical characteristics of African beeswax, except for a somewhat higher iodine value and lower clouding temperature (Salamon and Seaber test), but no great significance attaches to these exceptions. One sample from Kenya had analytical characteristics in agreement with those previously recorded for East African beeswax, with the exception of the specific gravity (0.9707 as compared with 0.9489–0.9650), acid value (13.1 as compared with 17.3–21.6), ester value (87.1 as compared with 66.2–80.8) and ratio number (6.6 as compared with 3.6–4.2). Comparison of a sample of crude and a sample of refined wax from the same source showed that the departures from generally accepted characteristics are due to the composition of the crude wax, and not a change in composition on refining.—ANON. *Bull. Imp. Inst.*, 33 (1935), 294–303. (A. P.-C.)

**Olive Oil—Alcoholysis of.** Olive oil was heated 8 hours on a water-bath with absolute methyl alcohol containing 2% of dry HCl gas. The mixture on cooling separated into two layers. The upper one containing a mixture of methyl esters was separated, freed from alcohol and fractionated under 1-mm. pressure. The methyl esters of the following fatty acids were separated and identified: palmitic, oleic, linoleic and a very small amount of arachidic. From the examination of samples of oil obtained from various sources, it was concluded that arachidic acid is a normal constituent of olive oil being present in quantities of 0.19% in olive oil from the first expression, 0.21% in oil from the second expression and 0.23% in oil from olive husks.—YVES VOLMAR and BJÖRGE HANSEN. *Compt. rend.*, 201 (1935), 968. (G. W. H.)

**Rancidity—Retarding.** Blue and invisible ultraviolet light materially accelerates the development of rancidity in such materials as butter, candies, nuts and soaps, whereas other visible light has little effect. Consequently rancidity-retarding wrappers may be of any color except blue.—W. L. MORGAN. *Ind. Eng. Chem.*, 27 (1935), 1287. (E. G. V.)

*Glycosides, Ferments and Carbohydrates*

**Amygdalin—Biochemistry of.** This research involving the physical, chemical and physiological study of amygdalin has brought to light the following interesting and new results: 1. Commercial amygdalin was found to contain two (2) molecules of water of crystallization—in contrast to three molecules, as reported in the literature. 2. The hydrolytic conversion of amygdalin has been confirmed. Enzyme (emulsin) and dilute acid convert it to hydrocyanic acid; benzaldehyde and glucose. Alkalies cause its decomposition into amygdalinic acid and ammonia. Concentrated acid (hydrochloric), forming amygdalinic acid and ammonia as intermediary products, hydrolyzes amygdalin finally to *l*-mandelic acid, ammonia and glucose. 3. The purity and quantity of the amygdalinic acid produced during the alkaline hydrolysis may be indirectly measured by the amount of ammonia liberated. 4. Amygdalinic acid may be isolated by decomposing its barium salt with an excess of sulphuric acid, neutralizing with basic lead carbonate, and then decomposing the soluble lead amygdalinate to free the amygdalinic acid. 5. Amygdalin exerts its action obviously only to the extent, in amount and speed, as it is hydrolyzed to hydrocyanic acid and benzaldehyde. This effect, previously observed in higher animals (vertebrates) and particularly in plant eaters, has now been demonstrated also for the crustacean daphnia. 6. The laxative, cramp, narcotic and fatal action of hydrocyanic acid on daphnia was readily observed in a 2% culture water solution of amygdalin, hydrolyzed by the addition of emulsin. 7. Benzaldehyde appears only comparatively harmless, as reported in some references of the literature, when quickly oxidized in the body to benzoic acid. Otherwise, obviously through partial solution of cell lipoids, it will cause toxic effects of narcosis, spasmic and depressed breathing and death of rats, upon oral administration of 3.5 cc. per kg. and subcutaneous (peritoneal) injection of 3 cc per kg. of body weight. 8. Amygdalinic acid, showing no marked toxicity to daphnia submerged in a 0.3% solution for several hours, caused paralysis and death in 2% concentration within thirty to fifty minutes. 9. Ammonia, in amounts of the lethal oral dose reported for cats (0.25 Gm. per kg.) also proved fatal to a rat, with the progressive symptoms of (1) increased secretion of saliva, (2) tetanic spasms or convulsions, followed by (3) coma and (4) death—within one-half hour. 10. *l*-Mandelic Acid, while causing only temporary narcosis, depression of the respiration and twitching of the body of rats, upon subcutaneous (peritoneal) administration of 1 Gm. per kg. showed definite physiological effects in somewhat higher concentrations upon daphnia, placed in such solutions.—ARNO VIEHOEVER and HARRY MACK. *Am. J. Pharm.*, 107 (1935), 397. (R. R. F.)

**Calcium Gluconate from Juice of Cull and Surplus Apples.** Cider was fermented by gluconic-acid-forming organisms, best yields having been obtained with *P. citrinum.* No fermentation was obtained from fructose with the above organism.—C. FROST and J. L. ST. JOHN and H. W. GERRITZ. *Ind. Eng. Chem.*, 28 (1936), 75. (E. G. V.)

**Carbohydrates—Changes in Composition of Dilute Buffered Solutions of, Produced by Boiling.** Boiling of glucose or mannose solutions buffered at a $p_H$ close to 7, caused the formation of fructose. Aldoses were formed from fructose under corresponding conditions. Fructose was also formed from glucose at $p_H$ 6. A partial destruction of sugar occurs in alkaline solution, essentially at expense of ketose. The nature of the buffer salt is of no influence.—ROGER S. HUBBARD and HELEN R. GARBUTT. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 274. A. E. MEYER

**Digitalis Leaves—Glucoside-Splitting Enzymes of.** The fresh and dried leaves of *Digitalis, lanata* and *purpurea* contain glucoside splitting enzymes, digilanidase (I) and digipurpidase (II), respectively which split glucose out of digilanids A, B and C, purpurea glucosides A and B (desacetyl-digilanids A and B), desacetyl-digilanid C and scillaren A. I and II are desmo-enzymes which were not extracted from the cells by water, alcohol or acetone and could not be liberated by electrolytes (HCl, $Na_2HPO_4$) or enzymes (diastase, papain). Digitalis glucosides were very readily split, particularly in the presence of the natural leaf substance in aqueous medium. I and II were sensitive to alcohol but their action in aqueous alcohol such as used in the preparation of tinctures was sufficient to decompose the glucosides during extraction. High temperatures inactivated the enzymes; II was inactivated by heating an aqueous suspension for 20 minutes at 98°. The enzyme material is amphoteric and the opt. action of the enzymes occurs close to the natural $p_H$ range of the enzyme material. The opt. $p_H$ for I was 7.5 and for II close to 7. Activity was rapidly completely inhibited in definite alkaline medium and less markedly inhibited in acid medium. Each enzyme was more active toward the glucosides of its respective plant. The

decreasing order in which the glucosides were split was digilanids and desacetyldigilanids A, B and C; this was attributed to decreasing solubility rather than inherent chemical differences. I and II were little effective in splitting glucose from digilanidobiose (digitoxose-glucose).—A. STOLL, A. HOFMANN and W. KREIS. *Z. Physiological Chemistry*, 235, No. 5/6 (1935), 249; through *Squibb Abstract Bull.*, 8 (1935), A-1507.

**Glucosides and Some Organic Compounds—Hydrolysis of, by Ultraviolet Rays.** A number of glucosides and organic compounds susceptible to hydrolysis were subjected to the action of ultraviolet rays and the percentage of decomposition determined at intervals. The glucosides examined at 3-hour intervals showed the following percentage decomposition in 12 hours: helicin, 84.8; gentiopicrin, 50; coniferin, 47; amygdalin, 30; salicin, 26.4; picein, 19.8; arbutin, 11.4; methyl-arbutin, 6.9. The alcoholic glucosides were more resistant and showed the following decomposition after 24 hours: floridozide, 5.4; alpha-methylglucoside, 3.6; beta-methylglucoside, 5. Sugars in 12 hours: saccharose, 4.75; maltose and trehalose, 1.2; lactose practically nil. Esters in 12 hours: ethyl acetate, 1.2; acetylsalicylic acid, 21.6; monobutyrate of glycerine, 29; and 61 in 24 hours. Amides: urea was unattacked; asparigine, 2 in 12 hours. Polypeptides and proteins: glycyl-glycine, alanyl-glycine, glycyl-tyrosine and ovalbumin were unattacked in 12 hours.—A. GUILLAUME and G. TANRET. *Compt. rend.*, 201 (1935), 1057.

(G. W. H.)

### *Other Plant Principles*

**"Sen-Kyu"—Chemical Constituents of.** Previous workers had shown the presence of "cnidium lactone," a substance closely related to sedanolide, in the volatile oil from the drug "Sen-Kyu." The author found that the relationships between the two chemicals are best revealed by a study of their reduction products. An examination of the oil yielded further information on its composition. Steam distillation of roots of *Cnidium officinale* Makino, from Hokkaido yielded 0.7 to 0.95% of dark brown oil with a characteristic odor: $d_4^{26}$ 1.0449, $n_D^{15}$ 1.5201, $[\alpha]_D^{20}$ −44.75°, acid no. 27, sap. no. 276, sap. no. after acetylation 328. The free acids were extracted with soda solution, converted into their Me-esters and fractionated at 3 mm. There were present: palmitic acid (m. p. 62–63°; anilide, m. p. 90.5°), oleic acid (dioxystearic acid, m. p. 131°) and α-linolic acid (tetrabromide, m. p. 114°; tetraoxystearic acid, m. p. 162°). It is very doubtful that Sakai's cnidic acid was present. After a final treatment with 5% KOH the neutral oil was fractionated at 5 mm. into: frac. I, 5 Gm. b. p. below 130°; frac. II, 143 Gm. b. p. 130–157°; frac. III, residue. After saponification III was shown to contain: a sterol, m. p. 116°, precipitable with digitonin; oleic acid; and β-linolic acid (tetraoxystearic, m. p. 174°). Saponification of II yielded an uncombined oil containing a bicyclic sesquiterpene, apparently not identical with selinene: b. p. 94° at 2.5 mm., $d_4^{16}$ 0.9138, $n_D^{15}$ 1.50490, M. R. 66.24, $[\alpha]_D^{15}$+6.72°. The part of II which combined with alkali was resolved by distillation into a series of fractions containing cnidium lactone and sedanonic acid, which were separated by soda solution. Cnidium lactone: $C_{12}H_{18}O_2$; colorless oil, b. p. 148–50°; $d_4^{15}$ 1.0467; $n_D^{15}$ 1.50545, M. R. 55.06; $[\alpha]_D^{15}$ −71.88° in $CHCl_3$; sap. no. 288. Sodium in alcohol reduced the lactone to α-dihydrosedanolic acid: silky needles ex. ethyl acetate: m. p. 126–27°; $[\alpha]_D^{18}$ −61.5° in alcohol. Acetylation converted the acid to its lactone, α-dihydrosedanolide, a reaction reversible by alkali: m. p. 30°; $[\alpha]_D^{17}$ −49.5°; $n_D^{15}$ 1.47393; $d_D^{15}$ 1.0084; M. R. 54.66. Hydrogenation with PtO catalyst reduced cnidium lactone to a mixture of crystalline dihydro-lactone (A) and an oil (B). A showed: m. p. 51° ex. 80% acetic acid; $[\alpha]_D^{17}$ −16.14°; stable to $KMnO_4$; saponification yielded β-dihydro-sedanolic acid, m. p. 91°, $[\alpha]$ −26.24°. Constants of B were: b. p. 131–33°, $d_4^{15}$ 1.0302, $n_D^{15}$ 1.49274, M. R. 55.3, $[\alpha]_D^{20}$ −19.30; sap. yielded α-dihydrosedanolic acid, m. p. 126–127°, and β-isomer, m. p. 91°. For oxidation, 10 Gm. cnidium-lactone were first saponified with KOH in ethanol. After removal of ethanol, the residue was taken up in 100 cc. $H_2O$ and 50 cc. KOH solution, cooled with ice and oxidized by 1620 cc. 2% $KMnO_4$. The identified products were: α-oxy-*n*-amylbenzoic acid (m. p. 71–72°), *n*-butylphthalide (b. p. 129–131°), phthalic acid, *n*-valeric acid (anilide, m. p. 63°) succinic acid (m. p. 184°), glutaric acid (anhydride, m. p. 56–57°) and oxalic acid. Sedanonic acid: m. p. 110°, no depression with acid from celery oil; $[\alpha]_D$ ±0°; α-dihydro-sedanolide by reduction with PtO + H, m. p. 40°, sap. to α-dihydrosedanolic acid, m. p. 97–98°. Sedanolide and appropriate derivatives for comparison specimens were prepared from Schimmel & Co.'s celery oil. A graph showing the absorption

spectra of cnidium-lactone, sedanolide and sedanonic acid is given. It was concluded that cnidium lactone is an isomer of sedanolide, differing in the position of the double bond. The relationships are shown by means of a diagram.—T. NOGUCHI. *J. Pharm. Soc. Japan*, 54 (1934), 171–179. (R. E. K.)

**Torreya Nucifera—Histologic, Chemical and Pharmacodynamic Study of the Grains of.** The tegument of the seeds is composed of a layer of 10–12 rows of entirely sclerified cells; the most external layer having particularly thick walls, a very small lumen and numerous communicating canaliculi. The kernel is comprised of 6–8 layers of more or less flattened cells containing a brown substance, an endosperm formed of polygonal cells rich in starch and fatty matter and an embryo of about 1 mm. length. It contains neither inulin, mucilage nor tannin. The active ingredient of the seed is a fixed oil whose physical and chemical constants are reported and whose physiologic action is that of a nerve poison. The drug enjoys a reputation for being an efficacious anthelmintic.—J. LOBSTEIN and R. TRENSZ. *Bull. sci. pharmacol.*, 42 (1935), 343. (C. T. I.)

**Valeriana Officinale—An Acid-Ester Contained in the Root of.** By fractionation of the residue from the ether extract of valerian root, an acid liquid boiling at 120–122° under 0.6 mm. was isolated. It was a colorless oily substance with a non-disagreeable odor and was not fixed with bromine. Upon hydrolysis two acids were obtained; isovaleric acid and another which was finally identified as $\alpha$-hydroxy-isovaleric acid. From this and the empirical formula of $C_{10}H_{18}O_4$, the new substance was concluded to be an acid-ester of the following formula: $(CH_3)_2$-CH-CH—O—CO—$CH_2$—CH—$(CH_3)_2$COOH.—EMIL CIONGA. *Compt. rend.*, 201 (1935), 1152. (G. W. H.)

*Unclassified*

**Sulphurated Oil from the Bituminous Limestone of the Jura.** An historical consideration of the subject of ichthyols with especial emphasis on a discussion of comparative chemical analyses of the constituents of commercial preparations. Bibliography.—F. PANCIER. *Bull. sci. pharmacol.*, 42 (1935), 391. (C. T. I.)

**Wine—Volatile Acids of.** Many volatile acids were reported by early workers but their presence is not confirmed by more recent investigations. It was found that sound wines contained acetic with traces of formic acid. Little or no lactic acid was found. Older wines seem to contain acetic and traces of propionic acid. Young wines appear to contain nearly all acetic acid.—M. M. MORRIS. *Ind. Eng. Chem.*, 27 (1935), 1250. (E. G. V.)

BIOCHEMISTRY

**Albumin in Urine—Use of Buffer in Heat Test for.** Sorensen's acetate-acetic acid buffer should be used in the heat test for albumin to hold the $p_H$ at the right value for the minimum solubility of the albumin. This consists of sodium acetate 118 Gm., concentrated acetic acid 56.5 cc., distilled water to 1000 cc. One cc. of this reagent is added to 10 cc. of urine and the mixture boiled one-half minute.—ANON. *Farm. Revy*, 52 (1935), 836. (C. S. L.)

**Ascorbic Acid and Adrenaline.** Very dilute, oxidized solutions of adrenaline are progressively reduced on addition of ascorbic acid (reduced Vitamin C), and if the ascorbic acid is at a concentration of 1% decolorization is instantaneous. Dehydrogenzation of ascorbic acid is more rapid in oxidized adrenaline solution in the presence of air or diffused light than in their absence. It would therefore seem that ascorbic acid exerts a reducing action on adrenaline, which would explain Vial's phenomenon. Adrenaline solutions can be oxidized by prolonged exposure to air, by means of hydrogen peroxide (the excess being eliminated by catalase), by treatment with copper acetate (the excess of which is eliminated by salicylaldoxime), by iodine in chloroform solution or by oxidation with sodium bicarbonate in decidedly alkaline solution in presence of light. Oxidized adrenaline when treated with ascorbic acid remains biologically inactive. It is known that only the levo form of adrenaline is active (?). It can therefore be supposed that the levo form of oxidized adrenaline does not reform after treatment with ascorbic acid, but gives an inactive form consisting of the racemic, the dextro or a mixture of the two. It would therefore seem that ascorbic acid acts as a reducer and not as an activator.—A. BONSIGNORE and F. PINOTTI. *Boll. soc. Ital. Biol. Sper.*, 10 (1935), 55–58; through *Chimie et Industrie*, 34 (1935), 1139. (A. P.-C.)

**Body Function—Artificial and Natural Regulation of.** A discourse on the trend of events

during the present century, more especially in regard to conceptions of body functions. Topics discussed include the endocrine organs, the thyroid and the pituitary, endocrine imbalance, and hormones and the mental state.—I. DE B. DALY. *Pharm. J.*, 135 (1935), 593. (W. B. B.)

**Hormones.** A brief review of the progress during the past year in the field of hormones is given in the article. The materials reviewed are: the pineal gland; the anterior, median and posterior lobes of the pituitary; the eyes, cartilages, bones, the blood, the thyroid, the parathyroids, the thymus, the liver, the spleen, the stomach, substances active on circulation, the suprarenals, the pancreas and the reproductive organs. The article is concluded with a review of the general methods employed in isolating hormones.—C. A. ROTHENHEIM. *Schweiz. Apoth.-Ztg.*, 74 (1936), 3, 13, 25, 37. (M. F. W. D.)

**Lachesis Venom—Action of.** The viper, Bothrops (Yararâ), and its habits are described. The venom is odorless, slightly greenish and opalescent; it is of acid reaction and has a specific gravity between 1.03 and 1.05. It is stable and of low toxicity if taken by mouth. The toxicity is destroyed at 65°, also by light if it is in solution. The dried product is not influenced by light. The fresh venom contains 65–80% water, proteins, fat and chlorides and phosphates of calcium, ammonium and magnesium. A 2% solution dissolves many bacteria. The symptoms of poisoning, as described, involve almost the whole organism. It is used therapeutically in dilutions from the sixth decimal up, 30 drops daily. Indications are cancer and appendicitis.—GUSTAVO ESCOBAR. *Semana méd.* (Buenos Aires), 42 (1935), 1479. (A. E. M.)

**Œstrogenic Activity of the Urine of Cows during Pregnancy.** The following summary is given: 1. The amount of œstrin excreted in the urine of cows during pregnancy is less than 50 international units per liter during the first twenty-one weeks of gestation. 2. Œstrin can be readily detected in the urine at the 23rd week, when the concentration is about 100 units per liter. 3. At the 30th week 700 units were obtained, at the 32nd about 9000 units, at the 34th, 4000 units and at the 37th, 17,000 units per liter. 4. The variations in the amount present in the last weeks of pregnancy are probably due to variations in the concentration of the urine.—M. M. O. BARRIE, J. B. E. PATTERSON and S. W. F. UNDERHILL. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 424–428. (S. W. G.)

**Sex Hormone—A New, Crystalline, from Boar Testes.** (Dated Oct. 20, 1934.) Prior to this report, Butenandt had obtained a crystalline hormone from male urine, and Frattini and Maino had obtained a crystalline preparation of relatively low potency from horse testes. Continuing their studies on material derived from boar testes, the authors directed their attention to resolving the active fraction, obtained by previously described procedures, into its components. By various treatments with neutral solvents inert substances, both crystalline and oily, were removed, until the active fraction was finally brought to crystallization by the spontaneous evaporation of its solution in 50% alcohol. Only about 10 mg. of crude crystalline hormone were obtained from 80 kg. of testes. Repeated recrystallization from dilute alcohol reduced the yield to about 2 mg.: m. p. 129–30° C.; insoluble in dilute acid and alkali; soluble in methanol, ethyl acetate, ethyl ether, benzene, chloroform and acetone; stable to KOH in alcohol; nitrogen-free. This hormone is obviously different from that obtained from male urine (Butenandt), m. p. 178°. The physiological reactions of the new hormone appeared to be very similar to those of androsterone. Crystalline preparations required a longer period than impure oils to develop characteristic reactions, but were far more potent and more lasting; 3 daily injections of 330 micrograms each in castrated rats produced a 135% increase in growth rate of seminal vesicles over control animals. For tabulations of manipulations, bio-assays and for photomicrographs of crystalline hormone, the original brief should be consulted.—A. OGATA and S. HIRANO. *J. Pharm. Soc. Jap.*, 54 (1934), 199–209. (R. E. K.)

**Sex Hormones. III. Male Sex Hormones.** A review of the work done in isolating, identifying and synthesizing the hormones.—C. R. ADDINALL. *Merck's Report*, 44 (1935), 7–10. (S. W. G.)

**Still—A Molecular.** A small pyrex still, for high vacuum work, is described. The apparatus is useful for the purification of products of biological origin.—W. H. STRAIN and W. M. ALLEN. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 443. (E. G. V.)

**Vitaminizing Foods—Process for.** Esters of 2-keto-*l*-gulonic acid are mixed with foodstuffs.—PRODUITS, ROCHE, SOC. ANON. Belg. pat. 408,549, April 30, 1935. (A. P.-C.)

**Vitamins.** An address discussing very briefly the importance of vitamins in the foodstuffs

industry, problems in relation thereto and progress accomplished in 20 years in the study of vitamins.—VAN LAER. *Ann. Zymologie* [2], 2 (1935), 101–107. (A. P.-C.)

**Vitamins—Recent Progress in the Study of.** A review.—P. KARRER. *Chimie et Industrie*, 34 (1935), 1027–1035. (A. P.-C.)

**Vitamins A and D in Common Foods.** Cabbage when boiled does not lose any of its vitamin A-content; Jersey milk contains nearly twice as much vitamin A as ordinary London milk; calf liver contains no vitamin D. Data are given which shows the vitamin A potency per Gm., in terms of the international standard, of certain foods examined. It is apparent that the boiling of vegetables in a normal household manner did not destroy any vitamin A, neither did the addition of sodium bicarbonate during the boiling of cabbages. The vitamin A values of some other samples of common foods are compared in a table given. Values found for vitamin D in some common foods are also given.—ANON. *Pharm. J.*, 135 (1935), 600. (W. B. B.)

## ANALYTICAL

**Acidimetric and Alkalimetric Titrations in Alcohol-Water Solutions. III. Alkaloids and Alkaloid salts.** Measurements of $p_H$ in aqueous-alcoholic media and studies of indicators in such mixtures have previously been reported by the authors (Cf. *Dansk Tids. Farm.*, 7 (1933), 164–225). The titration of alkaloids in alcohol-water mixtures of 50% and 75% alcohol by weight is now described. The $p_H$ of the media containing 0.1*N* and 0.01*N* acid and base is measured with the hydrogen electrode. For 50% alcohol: 0.1*N* HCl, $p_H$ 1.32; 0.01*N* HCl, $p_H$ 2.30; 0.1*N* NaOH, $p_H$ 13.85; 0.01*N* NaOH, $p_H$ 13.07. For 75% alcohol: 0.1*N* HCl, $p_H$ 1.38; 0.01*N* HCl, $p_H$ 2.34; 0.1*N* NaOH, $p_H$ 14.380; 0.01*N* NaOH, $p_H$ 13.70. The highest and lowest $p_H$ values obtainable in dilute solution at 1*N* are, for 50% alcohol 0.3 and 15, for 75% alcohol are 0.3 and 15.7. The acidity constants of the alkaloids in 50% and 75% alcohol were determined partly by colorimetric, partly by electrometric measurements. The colorimetric values are referred against figures which are cited for the buffers described in the earlier papers and mixtures of solutions of codeine and of codeine hydrochloride, determined electrically. The value $p_K'$ is calculated from:

$$p_K' = p_H - \log \frac{\text{C alkaloid base}}{\text{C alkaloid salt}}.$$

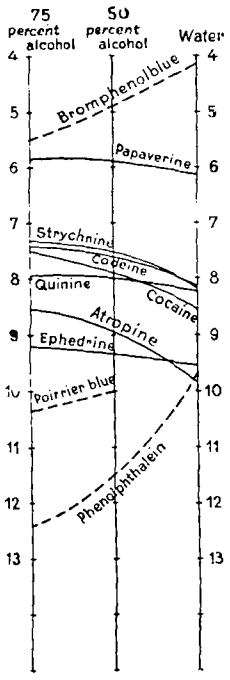
This constant is obtained for various alkaloids, morphine, narcotine, papaverine, quinine, chinchonine, strychnine, brucine, atropine, procaine, emetine and ephedrine. The results are cited in Tables 6–18 (captioned in English), and are summarized in the table given below:

VALUES OF $p_K$, OF THE ALKALOIDS (AT CA. 23°)

| | $p_K'$ in 50% w/w Alcohol | | $p_{K_1}'$ in 75% w/w Alcohol | | $p_{K_1}'$ Average | | $p_{K_2}'$ Colorimet. | | $p_K$ in Water (ca. 15°) J. M. Kolthoff | |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkaloid | Colorimet. | Electrom. | Colorimet. | Electrom. | In 50% w/w Alcohol | In 75% w/w Alcohol | In 50% w/w Alcohol | In 75% w/w Alcohol | $p_{K_1}$ | $p_{K_2}$ |
| Codeine | 7,70 | 7,50 | 7,61 | 7,30 | 7,60 | 7,45 | | | 8,15 | |
| Morphine | 7,45 | 7,51 | 7,30 | 7,36 | 7,50 | 7,35 | | | 8,05 | |
| Narcotine | 5,70 | 5,79 | 5,90 | 5,70 | 5,75 | 5,80 | | | 6,35 | |
| Papaverine | 6,00 | 5,80 | 6,05 | 5,68 | 5,90 | 5,85 | | | 6,15 | |
| Quinine | 8,05 | 7,98 | 8,00 | 7,85 | 8,00 | 7,95 | 3,95 | 3,45 | 8,25 | 4,5 |
| Cinchonine | 8,65 | 8,62 | 8,55 | 8,51 | 8,65 | 8,55 | 3,70 | 3,95 | 8,35 | 4,3 |
| Strychnine | 7,45 | 7,51 | 7,25 | 7,35 | 7,50 | 7,30 | 2,50 | 2,65 | 8,20 | 2,5 |
| Brucine | 7,60 | 7,61 | 7,45 | 7,46 | 7,60 | 7,45 | 2,10 | 2,35 | 8,15 | 2,5 |
| Atropine | 9,00 | 8,89 | 8,65 | 8,66 | 8,95 | 8,65 | | | 9,85 | |
| Procaine | 8,05 | 8,11 | 7,70 | 7,80 | 8,10 | 7,75 | — | — | 9,05 | |
| Emetine | 8,25 | | 8,20 | | 8,25 | 8,20 | 7,20 | 6,95 | 8,45 | 7,55 |
| Ephedrine | 9,40 | 9,29 | 9,20 | 9,16 | 9,35 | 9,20 | | | 9,55* | |
| Cocaine | | 7,81 | | 7,51 | 7,80 | 7,50 | | | 8,60 | |

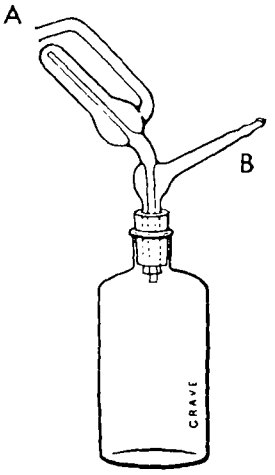
* H. Baggesgaard Rasmussen og F. Abildgaard, D. T. F., 4 (1930), 30.

A figure reproduced below graphically represents the variation of the acidity constants of some of the commoner alkaloids as one passes from 75% alcohol to pure water, and in comparison with the variation of this constant for the indicators. The indicators behave like uncharged acids, the alkaloids like uncharged bases. The titration accuracy is studied. It is concluded that most alkaloid bases lie just at the boundary between those bases which can be titrated with satisfactory accuracy and those which cannot be titrated in 50% alcohol. Accuracy decreases with increasing alcohol concentration. (Indicator most used: bromphenol blue.) It is proposed that frequently titration in alcohol can advantageously be made with methyl red as indicator. The change occurs too soon and the mixture can then be diluted with water to a point below 15% alcohol and the titration finished in a more aqueous solution. Thus advantage is taken of the solvent qualities of the alcohol for the alkaloid base and after most of the base is neutralized, the more dilute solution can retain the alkaloid salt in solution and permits an accurate end-point. On the other hand if alkaloid salts are to be titrated with a base, accuracy increases with increasing alcohol content. The cations of salts of bases may be titrated accurately in 75% alcoholic solution using Porrier blue of phenolphthalein as indicator. The information assembled in this work has already been applied in improvement of alkaloid assay, for example in the League of Nations method for morphine.—H. BAGGESGAARD-RASMUSSEN and F. REIMERS. *Dansk Tids. Farm.*, 9 (1935), 253. (C. S. L.)



Acidity Constants of Alkaloids

**Colorimetric Determination of the Acidity and Alkalinity of Colored Liquids.** A method used to overcome the difficulty of obtaining the precise moment in which the liquid changesi n the presence of the indicator is given. The block comparator of Walpole with 4 vertical holes (small water holes) is used. The total acidity of a wine is determined in the following way: In a first trial 5 cc. exactly of wine, 5 drops of tincture of heliotrope and one drop of water are placed in one of the two rear holes, A; in the other, B, 5 cc. of wine and 6 drops of water. In the hole behind A, pure water (A'); and the one behind B, 5 cc. of water, 5 drops of tincture of heliotrope and one drop of $N/10$ alkali (B'). From a burette $N/10$ alkaline solution is dropped into A, shaking well after each addition, it is observed, guarding the block against light in the direction of a horizontal small window, that the coloration of A approaches that of B. In a second trial, 5 cc. of wine, 5 drops of indicator and n cc. of $N/10$ alkali are placed in A; in B and B' besides the liquid of the first trial, n cc. of water are added. A casual error of estimating the coloration of A and B is thus avoided, due in the first trial to the various concentrations of the substance influencing the coloration. If in the second trial the identity of the coloration of A and B is not perfect, the quantity n of cc. of alkali is modified opportunely. This method of procedure serves in the titration of other colored liquid acids, for example, vinegar, urine.—EMILIO DANIELE. *Giorn. farm. chim.*, 84 (1935), 155. (A. C. DeD.)



Alkali Container

**Alkali—Protection of Normal.** An inexpensive glass trap is described for the closure of bottle of normal alkali to prevent entry of $CO_2$. Ten per cent alkali solution is filled to a mark in the trap and as the standard solution is flowed from the exit tube, the entering air is washed through this alkali. If tilted properly in pouring no contamination of the standard solution occurs. A convenient technique for the preparation of a carbonate-free 50% alkali solution for adjustment to normal solution strength is described. It is filtered through a Jena sinter-glass filter.—S. ANDERSSON. *Farm. Revy*, 34 (1935), 725. (C. S. L.)

**Alkaloids—Two New Exact Methods for the Estimation**

of. Both a macro and micro method are given. For the macro estimation the author follows Maricq's procedure for precipitation of the alkaloid using the iodo-mercuric reagent. The excess iodo-mercurate is determined by: (1) argentimetry. To 10 cc. of iodo-mercurate filtrate in 50-cc. Erlenmeyer, are added 10 cc. 0.02*N* $HgNO_3$, 5 cc. $HNO_3$ (conc.) and 3 cc. of a saturated iron alum solution and the mixture is titrated to a persistent rose tint with ammonium sulphocyanate; and (2) by iodimetry as follows: To 10 cc. of filtrate in a 100-cc. Erlenmeyer add 2 cc. *N* $H_2SO_4$, 5 cc. $CHCl_3$ and 2 cc. of 0.5% $KIO_3$ drop by drop shaking vigorously so as to allow the $CHCl_3$ to take up the iodine. Wait several seconds and add 0.5 Gm. powdered $NaHCO_3$ in small portions to avoid violent effervescence, then add several crystals KI (iodine free). Determine the excess iodine with 0.02*N* $As_2O_3$. The above method was applied successfully in estimating quinine, strychnine, cocaine, atropine, sparteine, morphine, codeine, pilocarpine, novocaine, stovaine and emitine. Coniine, mescaline and hordenine could not be estimated since they formed insignificant amounts of precipitate because these alkaloids of relatively strong dissociating power yield the most soluble alkaloidal iodo-mercurates. The method is applicable to the alkaloidal estimation of the galenicals such as those of cinchona, nux vomica and belladonna but a previous extraction is necessary (ether used in these extractions must be free of peroxides). The micro method consists of the mineralization of the alkaloids by the Kjeldahl-Pregl micro technique and then estimating the $NH_3$ collected in double distilled water with 0.01428*N* $H_2SO_4$ using sodium alizarin sulphonate as indicator. As a catalyst the author uses 0.3 Gm. Boivin's mixture (0.1 Gm. each of $K_2SO_4$, $CuSO_4$ and HgO) per 1 cc. $H_2SO_4$ which works for hordenine, mescaline, novocaine and stovaine, while for the more difficultly mineralizable alkaloids, as atropine, cocaine, codeine, emetine, morphine, pilocarpine, quinine, sparteine and strychnine, the amount of $K_2SO_4$ was increased from 0.1 Gm. to 1.0 Gm.—F. GALLAIS. *Bull. sci. pharmacol.*, 42 (1935), 278, 408. (C. T. I.)

**Amino Acids and Their Compounds—Microscopy of. 1.** ***Phosphotungstates and Phosphomolybdates.***—Phosphotungstates of the following amino acids were prepared successfully: alanine, glycine, arginine, histidine, lysine, cystine, proline, hydroxy-proline, isoserine and serine. The method consisted in first preparing the reagent by mixing on a microscope slide a small drop of concentrated sulphuric acid with a large drop of saturated phosphotungstic acid solution, then diluting with 4–5 drops of water. To this was added either a crystal of solid amino acid or a drop of a solution of the amino acid being studied. The mixture was brought to near boiling and then allowed to cool. Phosphomolybdates of the same amino acids were prepared by the same general procedure. Photomicrographs are shown and the crystalline features described.—B. BULLOCK and P. L. KIRK. *Mikrochem.*, 18 (1935), 129. (L. L. M.)

**Ammonium Salts—Simplified Method for the Determination of.** Dissolve about 0.5–0.7 Gm. of $(NH_4)_2SO_4$ in a small vol. of water and add an excess of 0.5*N* NaOH in the presence of phenolphthalein. Boil to remove $NH_3$ and titrate back the remaining NaOH after cooling: $(NH_4)_2SO_4 + 2NaOH = Na_2SO_4 + 2H_2O + 2NH_3$. In the determination of $NH_4$ salts in "oropone" extract the substance a few times with hot water, filter and extract through sawdust and husks and use together with the filtrate in the above determination. The results are satisfactory for plant conditions and the time required for the determination is only 40–45 minutes as compared with 1.5–2 hours for the old method.—KOZHEVENNO OBUVNAYA. *Prom. U. S. S. R.*, 12 (1933), 495; through *Chem. Abstracts*, 29 (1935), 2475.

**Artemisias—Observations on Some Persian. In Particular on the Santonin Content.** Botanic characteristics alone do not affirm the value of the artemisias but a chemical evaluation of the drug indicates accurately its worth.—M. JANOT and J. GAUTIER. *Bull. sci. pharmacol.*, 42 (1935), 404. (C. T. I.)

**Barium Fluosilicate—Determination of, in Insecticidal Powders.** Calculation of the barium fluosilicate from the determination of fluorine generally gives highly erroneous results. The following method has been found satisfactory. Fuse 0.5 Gm. of sample with 8 Gm. of a 1:1 sodium carbonate-potassium carbonate mixture, take up in boiling water, filter and wash the residue *R;* digest the alkaline filtrate at gentle heat for several hours after addition of 4 to 5 Gm. of ammonium carbonate, filter off the flocculent silica precipitate (*S'*). To the filtrate add a few tenths of a Gm. of zinc oxide dissolved in ammonia, evaporate nearly to dryness on the water-bath, take up in hot water, filter, dissolve the residue in hydrochloric acid, evaporate to dryness, take up in dilute hydrochloric acid, filter and wash the second silica precipitate (*S''*);

to the filtrate from the ammonium zincate treatment add one drop of helianthine, make just acid with dilute hydrochloric acid and then faintly alkaline with 1–2 cc. of 10% sodium carbonate, heat to boiling, add sufficient calcium chloride to precipitate fluorine and the excess sodium carbonate, boil till the precipitate is granular, filter, wash, transfer to an evaporating dish, digest for a few minutes on the water-bath with a few cc. of 10% acetic acid, filter, wash, dry, ignite and weigh; calculate barium fluosilicate from the weight of calcium fluoride. As a check on the results dissolve the residue *R* in dilute hydrochloric acid, evaporate to dryness on the water-bath, treat for a few minutes in the cold with concentrated hydrochloric acid, dilute with boiling water, filter, wash, ignite and weigh, giving a third silica precipitate (*S'''*); total silica = *S'* + *S''* + *S'''*. If the original product was free from silicates (other than the barium fluosilicate), the result should correspond to the fluorine determined as above. If other silica-containing materials (talc, clay, kieselguhr, etc.) are present, in the filtrate from *S'''* precipitate barium by addition of 10% sulphuric acid to the boiling solution, filter, wash, ignite and weigh. The barium thus determined should correspond to the fluorine determination.—A. BONIS. *Ann. fals.*, 28 (1935), 461–463. (A. P.-C.)

**Bismuth Tribromophenolate—Adulteration of.** The composition of bismuth tribromophenolate should be that of an equimolecular mixture of ($C_6H_2Br_3O$) Bi(OH) and $Bi_2O_3$. The tribromophenol content should be 51.6%. On testing for the organic component by the method of Hager's Handbuch, two commercial preparations on the Swedish market were found to contain only 20%.—ANON. *Farm. Revy*, 52 (1935), 837. (C. S. L.)

**Chloral Formamide—Melting Point of.** Twenty-six samples of chloral formamide were tested and the melting points ranged from 114° C. to 125° C. Samples were prepared by the authors and commercial samples were recrystallized and all the products were tested. The B. P. C. 1934 gives the melting point as between 114° C. and 115° C. This melting point was found to be incorrect, and a melting point of 124–126° C. is recommended. Limits for pharmaceutical purposes between 122° C. and 126° C. are suggested.—C. T. BENNETT and N. R. CAMPBELL. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 398–400. (S. W. G.)

**Chlorine—Step-Photometric-Determination of, in Chlorinated Water.** *o*-Toluidine reagent (2 Gm. per 1000 cc.) is prepared from commercial toluidine, recrystallized two times from alcohol. The required amount of *o*-toluidine is mixed well with 10 cc. of hydrochloric acid (1:4) in a beaker, and then dissolved by the addition of 150–200 cc. of distilled water. The solution is transferred to a 1000-cc. volumetric flask, distilled water is added to half fill the flask and this is followed by 490 cc. of hydrochloric acid (1:4), and finally by distilled water to the mark. The reagent is stable in the dark for some time. *Procedure.*—One hundred cc. of the water to be investigated are placed in a flask graduated to 100 and 110 cc. Five cc. of the toluidine reagent are mixed with this solution, 2 cc. of sulfuric acid (1:4) are added and then enough water to make 110 cc. The solution is now examined photometrically, using a S 43 filter in conjunction with a 30–50 mm. layer of solution. A table is given for the conversion of the instrument readings to mg. of chlorine per liter. The color developed is stable in the dark for at least 20 minutes.—L. GOLDENBERG. *Mikrochem.*, 18 (1935), 235. (L. L. M.)

**Commercial Peptones—Nutritive Value of.** Separation of dextrin in presence of peptone: dissolve 2 Gm. of sample in 10 cc. of distilled water, add 5 cc. of lead subacetate solution, filter, add sodium phosphate solution, filter, add calcium chloride, filter, concentrate the filter, add absolute alcohol while observing formation of the precipitate which easily adheres to the glass, decant the liquid, dissolve the precipitate in distilled water and evaporate on the water-bath to obtain the dextrin. Determination of the nutritive value of peptone leads to erroneous results when the product is adulterated with dextrin, because in the Denayer test the dextrin precipitates with the peptone. In such cases a commercial peptone can show a higher nutritive value than standard peptone, even though the commercial product contains no peptone at all. Qualitatively the presence of dextrin can be detected by the deep red coloration which it gives with iodine, due to the presence of erythrodextrin. Commercial dextrins obtained by hydrolysis of starch and containing but little erythrodextrin give a violet to red color.—M. MARTINEZ CASTILLA. *Bol. Farm. Militar*, 13 (1935), No. 147, 65–67; through *Chimie et Industrie*, 34 (1935), 887. (A. P.-C.)

**Derris Root—Evaluation of, and Stability of Rotenone in Commercial Preparations.** Rotenone containing preparations, prepared with carbon tetrachloride, ether and chloroform, showed a slight decrease in rotenone content during an observation period of four months. The

calculation of rotenone content requires determinations of optical activity and the residue left upon drying. The method is as follows: About 5 Gm. ($a$) of extract are dried in an oven at 100° C. for one hour with at least twice this amount of sea sand, both the extract and the sand being accurately weighed in a nickel dish. To prevent resinification, longer heating should be avoided. The residue is cooled in a desiccator and weighed (dried extract + sand = $b$). About 5 Gm. ($c$) of the dried residue, accurately weighed, are pulverized in a mortar and agitated for twenty minutes with 30 cc. of benzene in a mechanical shaker. The optical activity of the clear brown filtrate is determined in a one dcm. tube. If the filtrate is strongly colored it is treated with 0.5 Gm. of animal charcoal before polarization. Representing the observed optical activity by $\alpha$,

$$\% \text{ rotenone} = \frac{b \times \alpha \times 12.875}{ac}.$$

P. W. DANCKWORTT. *Arch. Pharm.*, 273 (1935), 385. (L. L. M.)

**Electrical Heating Apparatus, Simple.** A hot plate and two types of apparatus for heating round-bottom flasks and for use in an oil-bath are described.—*Riechstoff-Ind. Kosmetik*, 10 (1935), 225–226. (H. M. B.)

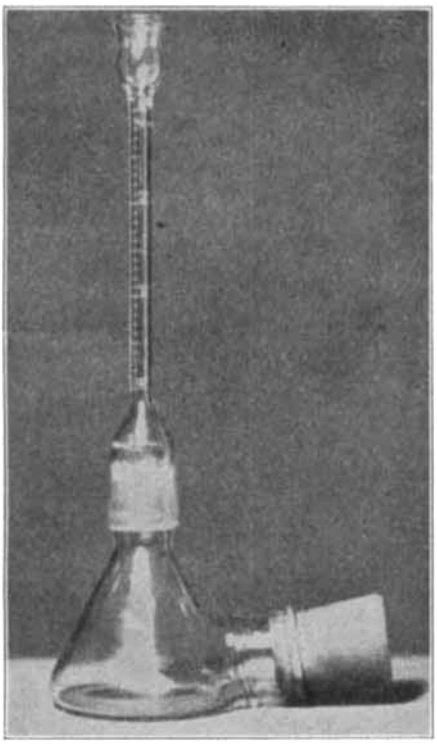
**Equisetum—Pharmaceutical Preparations of. Determination of Silica in.** A general review of the work done within the last century, by various authors who determined the mineral and organic components of equisetum is discussed. The following method for the determination of silica in pharmaceutical preparations of equisetum is given: The vegetable substance coarsely powdered is placed in a 500-cc. beaker, and is treated with the following mixture (for 5 or 10 Gm. of substance) fuming nitric acid (d. 1.49) 20 cc., perchloric acid (d. 1.61) 30 cc. When the reaction begins to cool, heat, being careful that the foam is not produced very abundantly. This first phase of oxidation takes place easily, during which nitrous vapors are formed. As soon as the nitric acid reaction is finished, continue heating in order to remove the excess nitric acid, the elimination of the last portion is signalized by the formation of more rare and irregular bubbles of the liquid. At this point the perchloric acid causes oxidation of the escaped substance of the nitric acid oxidation. This second phase begins during the elimination of the last portion of the nitric acid, bubbles form, continuing spontaneously to increase, in such intensity that it is well to suspend the heating. The reaction calms after a minute, the oxidation is practically ended and heat can be again applied, the fumes of the perchloric acid appear quickly, cover with a glass to avoid too rapid evaporation and heat for 30 minutes. The silica is insoluble, it is allowed to cool, 100 to 150 cc. of distilled water are added and the mixture boiled. Filter on ashless filter and wash with boiling distilled water, dry at 100°, calcine and weigh. The silica thus obtained is perfectly white and does not leave an appreciable residue when treated with hydrofluoric acid. This method has the advantage of being rapid and easy. Various experiments using the dried and fresh plant of *Equisetum Maximum* or *Telmateja* are described. From four aqueous extracts prepared with the dried plant three were void of silica, the other gave 1.4% of silica. With hydroalcoholic fluidextracts prepared with 70%, 50% and 30% alcohol, the amount of silica was inversely proportional to the alcoholic concentration. Fluidextract prepared with 70% alcohol contained a slight trace of silica; with 50—1.8% silica; 30—2.36% silica. Infusions and decoctions prepared with 10% of the plant: the infusion gave in silica 2.04%, the decoction 4.21%. The juice obtained by pressing the plant as soon as it was collected and added to 10% of alcohol contained saline residue and 2.12% of silica. Infusions and decoctions prepared with 20% of the fresh plant gave 1.5% of silica.—CRISTOFORO MASINO. *Giorn. farm. chim.*, 84 (1935), 142. (A. C. DeD.)

**Essential Oil Content of Drugs—An Improved Method for the Estimation of the.** An illustration, drawn according to a scale, of a simplified form of the apparatus previously described by the authors is given and its manipulation explained. The oil is collected in a tube which is graduated and is large enough to hold the oil as it separates in the distillate. The volume of oil may be read directly; thus eliminating the necessity of removing oil adhering to the glass. The effect of powdering on the yields of oil obtained is shown for a number of drugs; the yields of oil from buchu leaves, rosemary leaves and flowers and anthemis were higher from the whole drug, while the powdered forms of the others gave higher yields. Details of conditions of distillation are tabulated for a number of drugs and spices. A table showing the results of examination of a num-

ber of samples of drugs and spices is given.—T. T. COCKING and G. MIDDLETON. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 435–442. (S. W. G.)

**Essential Oils—Accurate Determination of Their Rotatory Power.** A discussion of the chief sources of error in the accurate determination of the rotatory power of essential oils, and of the precautions required to eliminate or minimize them.—Y. R. NAVES and M. G. I. *Parfums France*, 13 (1935), 253–258. (A. P.-C.)

**Essential Oils—Determination of in Drugs. Oil Content of Peppermint, Sage, Fennel and Caraway.** A method is described by which essential oils may be determined volumetrically in a steam distillate of the drug. The distillate is collected in a special 60-cc. flask charged with 20 Gm. of sodium chloride. See diagram. At the end of the distillation, a tube graduated in 0.01 cc. is attached to the neck of the flask. The opening at the base of the tube is closed by a rubber stopper which serves also to force the liquid into the calibrated tube. The determination may be completed in one hour, and not more than 60 cc. of distillate are required. Contrary to statements appearing in the literature, certain drugs, *e. g.*, peppermint and sage were found to yield more oil in the form of whole drug than as powder. Peppermint and sage satisfied D. A. B. VI requirements; the values for fennel and for caraway were low. The oil contents of commercial samples of the foregoing four drugs were in most instances low or the oil was almost completely absent.—L. KOFLER and G. v. HERRENSSCHWAND. *Arch. Pharm.*, 273 (1935), 388. (L. L. M.)



Receiving Flask

**Gas—Analysis of Small Volumes of, by Means of the Usual Microanalytical Apparatus.** An advantage claimed for the method described is its applicability to the analysis of carbon- or hydrogen-containing gases other than those which are readily absorbed by the usual reagents of gas analysis.—W. F. BRUCE. *Mikrochem.*, 18 (1935), 261. (L. L. M.)

**Gases or Vapors—New Device for the Rapid Determination of Certain, in the Atmosphere.** This is an improvement on the previously described portable apparatus (*Compt. Rend. Acad. Sciences*, 168 (1919), 1019; 199 (1934), 237), which is suitable for the determination of $CO_2$ and halogen derivatives either in the atmosphere or in viscera. The air is drawn through a solution of barium hydroxide (absorbing $CO_2$) which can be determined if required) through a 25-cm. quartz tube of 5–7 mm. bore heated electrically to 850° to 900° C., and through a second barium hydroxide washer which absorbs the products of combustion. $CO_2$ is most conveniently determined on each of the washers by adding 2 drops of a mixture of 1% phenolphthalein and 1% helianthine in alcohol, and titrating with $N/8$ nitric acid; the first end-point (red to light yellow) indicates neutralization of the excess barium hydroxide, and the second end-point (yellow to pink) indicates decomposition of the barium carbonate. Halogens and hydrocyanic acid are determined in the usual way in the titrated solution. When relatively high-boiling alkyl halides are suspected, the first washer should preferably be maintained at 60° to 70° C.—KOHN-ABREST. *Ann. fals.*, 28 (1935), 457–461. (A. P.-C.)

**Glyceryl Trinitrate Tablets—Assay of.** The following method is recommended: For tablets of Brit. Phar. strength, weigh accurately the equivalent of 1 mg. of glyceryl trinitrate, in the form of powdered tablets, into a stoppered cylinder containing exactly 5 cc. of glacial acetic acid. Shake continuously for 1 hour, filter and transfer 1 cc. to a small porcelain dish. To this

promptly add about 2 cc. of phenoldisulphonic acid, stir well and allow to stand for 15 minutes. Dilute with about 8 cc. of water, make alkaline cautiously with ammonia and transfer to a 25-cc. stoppered vessel. When cool adjust the volume to 20 cc. and the temperature to 20° C. and filter. Compare the color in suitable glass containers with that produced as follows: (1) Dilute 1 cc. of solution of glyceryl trinitrate of exactly 1% strength with 50 cc. of glacial acetic acid, mix thoroughly, transfer 1 cc. to a porcelain dish, add phenoldisulphonic acid and proceed as above. (2) Transfer 1 cc. of a 0.225% aqueous solution of silver nitrate B. P. to a porcelain dish, evaporate gently to dryness, add phenoldisulphonic acid and proceed as above. The color produced in all three cases should be equal to 7.0 Lovibond yellow units when viewed through a glass cell of 1 inch internal width. Potassium nitrate was unsatisfactory for control purposes, the figures tending to be too high. The temperature of the liquid when the color is taken should be as near to 20° C. as possible. Results of tests of keeping qualities of tablets prepared with different bases are tabulated.—H. O. MEEK. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 375–377. (S. W. G.)

**Glyceryl Trinitrate Tablets—Assay of.** Various methods are critically reviewed. The following procedure is recommended: Place five tablets in a 500-cc. Kjeldahl flask, add 25 cc. of saturated sodium sulphate solution, 75 cc. of water and sufficient sulphuric acid to make just acid to litmus paper (usually 0.3 cc. *N* sulphuric acid required). Distil just to dryness, using a still head, into a flask containing 10 cc. of *N*/10 sodium hydroxide, keeping the outlet tube below the surface of the alkali. Wash down the condenser and outlet tube and evaporate the sodium hydroxide solution to dryness. Add 2 cc. of water, 0.3 Gm. (±0.01 Gm.) of reduced iron and 2 cc. of 50% v/v sulphuric acid, allow to stand for 10 minutes and boil for 2 minutes. Transfer the acid solution to a steam distillation apparatus, make alkaline with 4 cc. of saturated sodium hydroxide solution and distil the liberated ammonia into a flask containing 10 cc. of *N*/10 sulphuric acid until the distillate measures 500 cc. Take 100 cc. of the distillate, add 2 cc. of Nessler's reagent and compare the color produced with that produced by adding the same amounts of reagent to 100 cc. of a solution containing ammonium chloride equivalent to 0.1 mg. of nitrogen. In the case of the control which must be run, the 500 cc. of distillate should be concentrated to 100 cc. Factor, nitrogen to glyceryl trinitrate 5.4.—WILFRED SMITH. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 370–374. (S. W. G.)

**Heavy Metals—Method for the Determination of Traces of, in Mineral Waters.** A method was devised, utilizing the concentration of extractive method of H. Fischer and the polarigraphic method of J. Heyrovsky, which permits the quantitative determination of approximately 10 micrograms of copper, bismuth, lead, cadmium, zinc, nickel and cobalt in the presence of other salts occurring in the Karlsbad hot springs waters. The limit of error after quantitative separation and determination of calcium, magnesium, iron, sodium, manganese, strontium, chlorine, phosphate and arsenate, or of sodium, potassium, lithium, ammonium, chlorine, sulfate, metaborate, bromine and iodine is 20%. Those interested should consult the original.—K. HELLER, G. KUHLA and F. MACHEK. *Mikrochem.*, 18 (1935), 193. (L. L. M.)

**Indicators—Several New, for Bromometric Determinations.** The determination of arsenites by potassium bromate in the presence of methyl orange should be carried out in acid medium with the smallest amount of indicator possible; the color change being difficult to observe, the author studied other indicators. The following indicators are recommended: (*a*) For *N*/10 solutions:

| Indicators | In Acid Solution | Colorations After Action of Bromate |
|---|---|---|
| Safranine | Blue | Rose |
| Azur II | Blue | Colorless |
| Bordeaux B | Rose | Colorless |
| Crisoidine | Orange | Pale yellow, colorless |
| Ponceau R. R. R. | Rose | Colorless |
| Methylene Blue | Green | Blue |

(*b*) For *N*/10 solutions Bordeaux B, Ponceau R. R. R., methylene blue should be used.—TITO SOTGIA-ROVELLI. *Boll. Chim. Farm.*, No. 8 (1935), 265; through *J. pharm. Belg.*, 17 (1935), 763. (S. W. G.)

**Invertase Activity—New Method for Determining.** The method for the determination of yeast invertase has as a basis the determination of the number of enzyme units, termed "invertons," per Gm. of preparation. The "inverton" is that amount of yeast invertase which will hydrolyze sucrose at the rate of 5 mg. per minute at zero time, under the specified experimental conditions. Careful measurements of initial rates of inversion were carried out to establish the validity of the inverton. To determine the inverton concentration of a given sample without resort to rate measurements, it is necessary to establish a relation between, say, the milligrams of sucrose, S, inverted after 0.5 hour at 25° and I, the number of invertons present. Then by substituting in the equation

$$\log I = 1.0667 \log S - 2.3368,$$

I can be calculated.—W. R. JOHNSON, S. REDFERN and G. E. MILLER. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 82. (E. G. V.)

**Iron—Colorimetric Determination of, by Means of Ferric Thiocyanate.** The usual method has been modified with a view to eliminating the errors due to differences in color resulting from differences in the concentration of alkali thiocyanate and in the nature and concentration of the acid used for dissolving ferric hydroxide. Dissolve the separated ferric hydroxide (containing not more than 0.04 Gm. of iron) in 30 cc. of 50% hydrochloric acid, add 5 cc. of a mixture of 2 parts of 36° Baumé nitric acid, 2 parts of 3% hydrogen peroxide and 1 part of water, dilute to 500 cc. with distilled or iron-free tap water, and 25 cc. of ammonium thiocyanate solution (exactly 175 Gm. per l.), and dilute to 900 cc. In each of two other flasks add 30 cc. of 50% hydrochloric acid and 5 cc. of the nitric acid-hydrogen peroxide-water mixture, dilute to 500 cc., add 25 cc. of ammonium thiocyanate, dilute to 900 cc. To one of the flasks add a 0.1 Gm. per l. solution of ferric chloride till the color is just slightly less than that of the sample, and in the other sufficient of the solution to give a slightly deeper color, and such that the difference in the amounts added to the standards does not exceed 0.0001 Gm. ferric chloride.—M. BERTIAUX. *Documentation Scientifique*, 4 (1935), No. 32, 49–52; through *Chimie et Industrie*, 34 (1935), 1058–1059. (A. P.-C.)

**Lead—The Determination of, in Its Official Compounds and Preparations.** *Strong Solution of Lead Subacetate.*—About 1 Gm. of the solution, accurately weighed, is placed in a 250-cc. volumetric flask, diluted with 50 cc. of recently boiled, distilled water and 50 cc. of $N/10$ oxalic acid added. Agitate thoroughly for 5 minutes, fill to the mark with distilled water and shake. Filter through a dry filter paper into a dry flask, rejecting the first 20 cc. of filtrate. (*a*) Add 25 cc. of dilute sulphuric acid to 100 cc. of the filtrate, warm to 60° C. and titrate the residual oxalic acid with $N/10$ permanganate. (*b*) Titrate another 100 cc. aliquot with $N/10$ sodium hydroxide (carbonate free) using 4 drops of 0.2% phenolphthalein as indicator. From (*a*) the total is obtained since each cc. of $N/10$ oxalic acid corresponds to 0.01036 Gm. of total lead; and from (*b*) the alkalinity is obtained since each cc. of $N/10$ oxalic acid is equivalent to 0.01116 Gm. of PbO. *Lead Acetate.*—About 0.5 Gm. of lead acetate, accurately weighed, is placed in a 200-cc. volumetric flask and dissolved in 50 cc. of recently boiled and cooled distilled water, 50 cc. of $N/10$ oxalic acid is added and the procedure given above through (*a*) is followed. Each cc. of $N/10$ oxalic acid corresponds to 0.01897 Gm. of $Pb(C_2H_3O_2)_2.3H_2O$. *Lead Monoxide.*—The U. S. P. X process is recommended in preference to that of the B. P. 1932. *Suppository of Lead with Opium.*—Boil gently for 5 minutes about 1 Gm., accurately weighed, in 10 cc. of glacial acetic acid and 25 cc. of water; cool, and dilute with 25 cc. of water. Decant the acid solution on to a moistened filter paper, filter and wash the melted fat with hot water until the filtrate measures 150 cc. Heat to boiling and add, with stirring, 25 cc. of a 10% solution of potassium dichromate. Set aside for 15 minutes and filter while hot through a weighed Gooch crucible, and wash the precipitate with hot water until the washings are free of any trace of yellow color. Wash with alcohol, and finally with hot benzene; dry at 110° C. Each Gm. of lead chromate is equivalent to 1.1736 Gm. of $Pb(C_2H_3O_2)_2.3H_2O$. *Lead Plaster.*—Boil gently until a clear oily layer is obtained about 1 Gm. of sample, accurately weighed, with 40 cc. of acetic acid. Cool, dilute with an equal volume of water and decant on to a moistened filter paper. Wash the oily residue and filter with 25 cc. of dilute acetic acid, followed by hot water until the filtrate measures about 150 cc., then proceed as under suppository of lead with opium.—S. WETHERELL. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 453–463. (S. W. G.)

**Manganese—Step Photometric Determination of, in Drinking and Commercial Waters.**

The method described is useful in the absence of nitrites and halogens. To 100 cc. of the water (neutralized, if necessary) in a 150-cc. stoppered flask are added 2 cc. of 3*N* hydrochloric acid. A current of air, free from carbon dioxide, is passed through the liquid for five minutes to expel any free carbon dioxide liberated by the acid. Three cc. of 3*N* sodium hydroxide are added and the passage of the gas continued for five minutes longer to oxidize the bivalent manganese to the tetravalent state. There are then added and mixed in the following order: 2 cc. of 0.1% neutral citrate solution, 3 drops of 2% dimethyl-*p*-phenylenediamine-sulphate and 3 cc. of 10% citric acid solution. The resulting mixture is studied photometrically, using a 150 mm. layer in conjunction with a S 53 filter. A standard solution treated in a similar manner is studied at the same time.—R. BARIL. *Mikrochem.*, 18 (1935), 250. (L. L. M.)

**Menthone—Estimation of, in Volatile Oil of Peppermint by Hydroxylamine.** The method used is as follows: To a carefully weighed 2–3 Gm. sample of the volatile oil placed in a 50-cc. Erlenmeyer flask are added 2 drops of alcoholic methyl orange and 15–20 cc. of hydroxylamine solution (50% of hydroxylamine hydrochloride in neutral 95% alcohol). The solution is neutralized to a slight acid point with 0.5*N* KOH and kept thus since the reaction best takes place in the acid range. This process is repeated until the reaction goes to completion.—G. PARRAUD. *Bull. sci. pharmacol.*, 42 (1935), 337. (C. T. I.)

**Mercurochrome—Determination of the Mercury Content of.** The following conclusions are given by the authors: 1. Assuming that the B. P. C. method of assay for the mercury content of mercurochrome is accurate, and adopting the limits laid down in the particular monograph, not one manufacturer's sample examined conformed to the required standard. 2. The results obtained by the B. P. C. method of assay show an appreciable experimental variation. 3. The alkaline-permanganate oxidation method for the assay of mercury appears to give more reliable and consistent results than the B. P. C. method.—R. F. CORRAN and F. E. RYMILL. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 340–343. (S. W. G.)

**Methylanthranilate—Rapid Identification of.** Heat 4 drops of methylanthranilate and 12 drops of a 1:2 acetic anhydride-pyridine mixture in a test tube for 5 minutes in a boiling water-bath, add a few cc. of water, heat a few minutes longer, cool; on rubbing with a glass rod, a crystalline mass of *N*-acetylmethyl-anthranilate separates out which, after recrystallization from aqueous alcohol, melts at 99° to 100° C. For the determination of methylanthranilate in neroli, the generally used Hesse and Zeitschel method (*Ber.*, 34 (1901), 296) based on the quantitative separation of the sulphate from an ether solution of the oil, is rather long and requires a large sample; the Zeisel method gives equally accurate results (in absence of ethyl alcohol) on a 0.5 to 2 Gm. sample.—SÉBASTIEN SABETAY. *Ann. fals.*, 28 (1935), 478–479. (A. P.-C.)

**Moisture—Determination of, in Small Amounts of Material.** An illustration with specifications is given for a small apparatus for use in the determination of moisture by the xylene method. A flask, in which the material and the xylene are placed, and having a volume of about 40 cc., is connected with a condenser in the upright position. The distillate is collected in a special centrifuge tube the base of which is constricted and graduated to 0.02 cc. Corrections should be determined and applied for the measuring tube and the meniscus, and for loss of moisture.—J. ERDOS. *Mikrochem.*, 18 (1935), 256. (L. L. M.)

**Oil of Geranium. Volatile.** A proposal for assay is given with a type protocol sheet stating the physical and chemical constants.—C. LAGNEAU. *Bull. sci. pharmacol.*, 42 (1935), 274. (C. T. I.)

**Oil of Santal—Estimation of Alcohols in Volatile.** A critical discussion of the various methods used in estimating the alcohols of santal oil. The method of acetylating in pyridine medium estimates solely the alcohols. The acetylating procedure used was that of Virley with the exception that acetyl chloride was not used but the following mixture was: 1 part acetic anhydride (B. P. 135–140°) and 2 parts pyridine (B. P. 115–116° and dried over $P_2O_5$) by weight, respectively. The proportion of the alcohols expressed as santalols is 79–80% of the oil. The method of the Codex gives results about 10% too high since this method determines besides the santalols, santalenes and non-santalol constituents which are esterified in the course of the acetylation.—R. DELABY and Y. BREUGNOT. *Bull. sci. pharmacol.*, 42 (1935), 385. (C. T. I.)

**Ointments—Analysis of Some Complex, of the British Pharmaceutical Codex.** *Compound Benzoic Acid Ointment.* Weigh out 3 to 4 Gm. of the ointment and transfer it to a separator by means of ether. Add 2% potassium hydroxide solution, using some of this to wash

out the beaker, and then add about 50 cc. of petroleum benzin (b. p. 40–60° C.). Shake and separate. Repeat three times, allowing any slight emulsion to pass through into the aqueous layers. Wash the mixed aqueous layers with ether and add the washings to the main bulk of organic solvents. Evaporate the solvents, add absolute alcohol to remove moisture and finally dry the fat in a water oven. Determine the ester value and unsaponifiable matter of the fat. Add excess of hydrochloric acid to the aqueous layer and remove the total acids with four extractions of ether. Either titrate the ethereal solution or, preferably, adopt the following procedure. Dry the ethereal solution with 10 Gm. of anhydrous sodium sulfate and pour off through a cotton wool pledget into an evaporating flask. Wash the residue with ether two or three times and carefully evaporate the solvent nearly to dryness on a boiling water-bath. Remove the flask and evaporate the residual solvent by a gentle current of air and dry the residue in a desiccator. After weighing the total acids, dissolve the benzoic and salicylic acids by adding 25-cc. quantities of water, warming to 50° C. and filtering through a wet filter paper. Wash back into the flask the insoluble liquid acids of the coconut oil with alcohol and ether and weigh after evaporating and drying. The difference in weight between these and the total acids gives the weight of mixed benzoic and salicylic acids. Determine the acid value of the insoluble acids by solution in alcohol and titration with $N/10$ alkali. Calculate to the original weight taken and add the value obtained to the ester value of the mixed fats to give the saponification value due to the coconut oil. For the determination of the salicylic acid mix an aliquot portion of the aqueous solution of the mixed acids containing approximately 0.03 to 0.035 Gm. of salicylic acid with 25 cc. of $N/10$ potassium bromate solution (containing 15 Gm. of potassium bromide per liter) and 5 cc. of concentrated hydrochloric acid and allow to react for 1–2 hours; add excess of potassium iodide and titrate with $N/10$ thiosulphate. 1 cc. of $N/10$ bromate = 0.0023 Gm. of salicylic acid. Benzoic acid is obtained by difference. *Methyl Salicylate Ointments.*—The loss by evaporation less the moisture found by xylene distillation (*Ind. Eng. Chem.*, 12 (1920), 486) is a measure of the methyl salicylate in the simple ointments. For other ointments the previously described method for benzoic acid ointment, but with transfer of the ointment to the separator by means of chloroform and extraction with 5% potassium hydroxide. If any emulsion forms in the first extraction add it to the aqueous layer, shake the whole vigorously and re-shake the upper layer with alkali. Boil for one hour, cool, make up to a suitable quantity and extract or titrate the salicylic acid as before. Another method for the determination of methyl salicylate is given in addition to statements regarding *total loss by evaporation, fats* and *other volatile matter. Resorcin Ointment.*—For the estimation of the resorcin and fats, weigh out 3–4 Gm. of the well-stirred ointment into a wide-mouthed flask, extract with warm water three times, chilling the mixture and filtering off the aqueous layer through cotton. Dissolve any fat on the cotton in ether, after washing the cotton with absolute alcohol, and add to the main bulk of fat. Add absolute alcohol to the fats and evaporate by a current of air on a boiling water-bath. Repeat with alcohol until the fat is free from moisture and finally dry in a water oven. Weigh the fat and determine its saponification value (2 hours). Make the aqueous extract up to 200 cc. Determine the resorcin in 25 cc. by the bromate titration method described for salicylic acid using 50 cc. of reagent. The reaction mixture need only stand for a few minutes. 1 cc. of $N/10$ bromate = 0.001833 Gm. of resorcin. Remove the resorcin from another 50-cc. portion by acidification with hydrochloric acid and extraction with ether, dry the ether with anhydrous sodium sulphate, observing the precautions necessary for salicylic acid as the resorcin is somewhat steam-volatile. A tentative method for the estimation of the glycerin is offered. *Compound Resorcin Ointment.*—For general analysis divide the ointment into two parts by extraction in a Soxhlet thimble, first with acetone and then with petroleum benzin. Remove the solvent and without further heating extract the resorcin with water as described under resorcin ointment, but in the present case filtering through a wet filter paper. The resorcin solution will be rather cloudy but this does not interfere with the estimation which is carried out as above with $N/10$ bromate on an aliquot portion. Dry the fat as usual, weigh and determine the two-hour saponification value. Small discrepancies will occur owing to the presence of birch tar oil which is partly volatile. Dry and weigh the insoluble matter from the solvent extractions. Determine the zinc and bismuth by any of the usual methods. Results of analyses are tabulated.—D. C. GARRATT. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 472–478. (S. W. G.)