PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

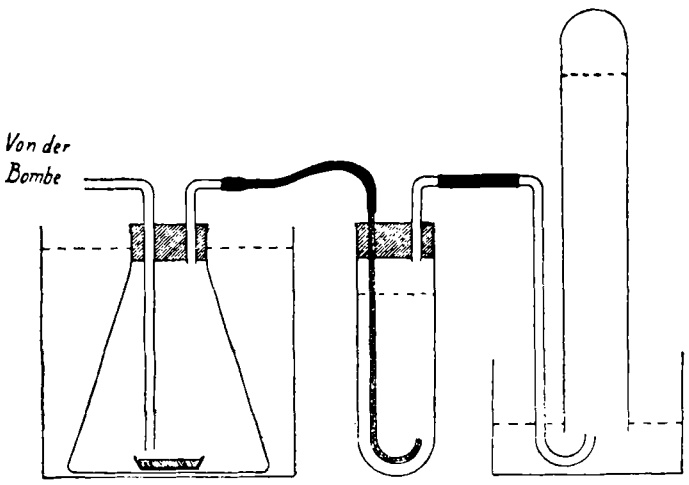
CONTENTS

ANALYTICAL (*Continued*)

Ointments and Ointment Bases, II. In this paper the authors attempt an explanation of the low water-absorbing capacity of vaselines and the wide variation in this value for different brands. When water is taken up in vaseline, it forms a pseudoemulsion as the authors have shown in an earlier paper (*Pharm. Acta Helv.*, 10 (1935), 163). A sample of vaseline was refluxed for one hour with methyl alcohol, the alcohol layer separated, the alcohol removed by distillation and the oily residue gave a negative test for sterols. This excluded the possibility of traces of sterols being responsible for the water-absorbing capacity. Another sample of 100 Gm. of vaseline was heated for two hours with 200 Gm. of dilute sulphuric acid and the aqueous layer gave a negative carbohydrate reaction, excluding the possibility of the presence of traces of mucilages. It was found that the increase of W. No. (Water Number) with viscosity was a curve rather than a straight line. The effect of the kind and amount of hydrocarbons composing the mixture on the W. No. will be investigated in the next paper.—P. CASPARIS and E. W. MEYER. *Pharm. Acta Helv.*, 11 (1936), 1. (M. F. W. D.)

Phenols—Identification of, with 2,4-Dinitrochlorobenzene. The following method is recommended as a satisfactory method of identifying phenols: 0.01 mole of the phenol is added to 0.01 mole of sodium hydroxide in 5 cc. of water. This solution is added to 0.01 mole of 2,4-dinitrochlorobenzene dissolved in 30 cc. of 95% alcohol, or a sufficient amount to keep the substance in solution. The solution will be highly colored. The solution is heated under reflux on a steam-bath until the color is discharged and a copious precipitate of salt appears. The reaction mixture is diluted with an equal part of water whereupon the ether is precipitated, then filtered, washed with water and recrystallized from alcohol. The color, crystal form and melting points of the dinitrophenyl ethers of twenty-eight phenols are given.—R. W. BOST and FRANK NICHOLSON. *J. Am. Chem. Soc.*, 57 (1935), 2368. (E. B. S.)

Phosphorus and Phosphine—Detection of Small Quantities of. The passage of a stream of phosphine through ammoniacal silver nitrate solution results in the formation of a precipitate if the test is conducted for large quantities of phosphorus. The aim of the author was to devise an apparatus by means of which this precipitate could be made to separate on a very small surface under such conditions that the site where separation occurred would remain continually moist. The apparatus devised by him consisted of a 0.5–1.2-mm. glass tube suspended in a wide-mouthed test-tube filled with 1% silver nitrate solution. The surface of the liquid should be at least 50 mm. above the immersed end of the capillary. A trap is placed between the capillary and the source of gas to collect any liquid which might be drawn back by suction. The gas is passed intermittently through the trap into the silver nitrate solution so that the solution rises and falls alternately in the capillary tube. One γ of phosphorus or 0.5γ of phosphine causes a clearly perceptible browning of the walls of the capillary. Arsine may be detected in an analogous manner. *Apparatus for Detection of Phosphorus.*—Phosphorus vapor was generated in the following manner: A 30-mm. porcelain dish filled with phosphorus was placed in a Phillip's flask as shown in the diagram. The phosphorus was first fused under an atmosphere of nitrogen, and after solidifying, a current of pure nitrogen was passed at a constant rate through the apparatus. The time required to produce a distinct blackening of the tube was



Apparatus for Phosphorus Determination

noted. At the same velocity, nitrogen was again passed through the apparatus during some multiple of the time determined in the preliminary trial, the silver nitrate solution in the test-tube being replaced with concentrated nitric acid. The phosphorus should be retained quantitatively in the nitric acid and the escaping nitrogen gas should be phosphorus free. As a control, the gas was collected in a eudiometer tube and the volume of the gas and the absence of phosphorus verified.—L. WOLF, W. DÜSING and A. MARTOS. *Mikrochem.*, 18 (1935), 185. (L. L. M.)

Pyrryl-α-Methyl Ketone, Active Principle of Valerian—Estimation of, as the 2-4-Dinitrophenylhydrazone. Satisfactory results are obtained in estimating the ketone as the dinitrophenylhydrazone even when quantities as small as a centigram or milligram are being estimated.—M. JANOT and E. CIONGA. *Bull. sci. pharmacol.*, 42 (1935), 349. (C. T. I.)

Quinine—Assay of, in Iron and Quinine Citrate and Quinine Salts. Results of determinations of quinine in iron and quinine citrate by weight differs from those obtained by titration. This difference is due, in part, to the loss of basicity in the quinine which is effected during the manufacture of the scales. Loss of basicity in quinine may be brought about in the process of assay unless the following precautions are observed. The dehydration can be effected within two hours at 100° C. and without decomposition if the conditions are right. Heating beyond two hours involves decomposition, with a consequent loss of basicity although the weight is not altered. Free exposure in the hot oven accentuates decomposition. Ether and chloroform are not interchangeable in the assay process, if the final result is to be the weight of the dried residue following simple evaporation of the solvent. If, in the evaluation of iron and quinine citrate, standardization by weight is to be adopted, then it is important to see that the body weighed shall be weighed in an unvarying condition. The authors do not agree that ether extraction furnishes the exact truth, although it is much nearer the truth than when chloroform is used alone. They suggest that quinine residues, whether from ether or chloroform, should be treated with 2–3 cc. of absolute alcohol when the last traces of the solvent remain in the flask and then evaporated to dryness. The time of drying should be restricted to not more than two hours at 100° C. The suggestion is made that the standard might be modified to "not more than 15.5% as determined by weight and not less than 14.5% as determined by titration."—J. S. TOAL and A. J. JONES. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 401–405. (S. W. G.)

Quinine and Cinchonine—Quantitative Spectrographic Determination of, in Mixtures of the Two Alkaloids. Continuing a previous article in which the extinction curves for solutions of pure quinine and cinchonine were determined, the authors have plotted curves for 14 mixtures of varying amounts of quinine and cinchonine in $N/10$ H_2SO_4. These curves are plotted as previously described (*Scientia Pharm.*, 6 (1935), 113) and by means of equations are converted to per cent of quinine and cinchonine in the mixture. The mean of the concentrations determined at the four extinction points of the curves checks very well with the theoretical except where the proportion of one alkaloid greatly exceeds that of the other (9.555 mg. quinine and 0.20 mg. cinchonine/100 cc. $N/10$ H_2SO_4). If curves are plotted of per cent extinction (K%) against per cent composition at each of the 4 wave-lengths representing extinction points using known mixtures, the per cent composition of both ingredients in unknown mixtures may readily be obtained by reading off the curve. Here again the average of the percentages found on each of the four curves gives a value checking very well with the theoretical. The same type of curves may be constructed for per cent molecular extinction (K mol %) against per cent composition and may be used to determine composition. The authors claim a high degree of accuracy for the method and claim to avoid the difficulties stated by van Arkel and van der Wielen in a recent article. The method is rapid and simple after the curves have been constructed and requires only a few mg. of sample.—L. FUCHS and A. KAMPITSCH. *Scientia Pharm.*, 6 (1935), 125. (M. F. W. D.)

Reduced Iron—Determination of, by the Sublimate Method. Several pharmacopœias include the sublimate method for the determination of reduced iron. The results obtained on the same sample vary with the procedure followed, the methods differing in the amounts of mercuric chloride used. The author established that the low results obtained when 10 Gm. of mercuric chloride are used to 1 Gm. of reduced iron were due to the occlusion of the iron particles by the mercurous chloride formed in the oxidation, preventing complete solution of the iron. If only 5 Gm. of mercuric chloride are used, metallic mercury is precipitated which does not interfere with

the solution of the iron. One minute of boiling is sufficient for the reaction.—H. MITREA. *Schweiz. Apoth.-Ztg.*, 73 (1935), 573. (M. F. W. D.)

Rhus Toxicodendron—Identification of Homeopathic Preparations of. Six dilutions of a preparation of this drug are studied and in a table the capillary luminescence pictures are described for the dilutions when they are treated with aluminum sulphate solution, heated with diluted hydrochloric acid, treated with ferric chloride and with ammonia solution, respectively.—H. NEUGEBAUER. *Apoth.-Ztg.*, 50 (1935), 1112–1114. (H. M. B.)

Sabadilla—Determination of Alkaloids of. Various authors have recommended for titer of sabadilla alkaloids indicators such as hematoxylin, iodeosin or methyl red. By electrometric titrations both of veratrine, and of the sabadilla alkaloid mixture it is now shown that methyl red is a good indicator for the purpose. Both titration curves have inflection points within the range of methyl red (p_H 4.2–6.3). On standing, the sabadilla acetate prepared by the Dan. Phar. method deposits a slight precipitate, but the alkaloid content is not affected, and this is still found constant after two years' aging of the preparation.—A. JACOBSEN. *Dansk Tids. Farm.*, 9 (1935), 302. (C. S. L.)

Saffron. *Stigma croci* is often adulterated by weighting with organic substances such as sucrose, glucose or glycerin, and sometimes, in addition, with inorganic salts to raise the ash value. A nitrogen determination is instructive (good drug has 2.2–2.4% N.) as is also a determination of the aqueous extractive.—ANON. *Farm. Revy*, 34 (1935), 734. (C. S. L.)

Salicylic Acid—Photoelectric Determination of. The colorimetric determination of salicylic acid may conveniently be conducted by photoelectric cell measurement. (Cf. *Farm. Tidende* (1933), 446.) A standard light source variable by a resistance in the circuit, a filter, a specimen cell, a "Tungsram" photoelement and matched galvanometer are used. The photoelement registers 0.1 microamp. per Hefnerlux and is most sensitive to radiation around 500 mμ. The galvanometer of 470 ohm resistance reads in 100 divisions, each corresponding to 2.06 microamps. Yellow filters were tested and discarded. The apparatus is calibrated with the aid of a set of standard solutions of salicylic acid (aliquots of a gram per liter solution), pipetted into a volumetric flask (50 cc.). Then 4 cc. alcohol and 4 cc. of 0.01 molar ferric ammonium sulphate solution are added and the flask filled to the mark with distilled water. By adjusting the light source, the apparatus is arranged to show 100 unit deflection with water in the cell. Then the reading is taken for the standard or the unknown solution. The salicylic acid content of the unknown may be read from a standard curve for the apparatus used. To determine free salicylic acid in acetylsalicylic acid, extraction is conducted with 10 cc. of 1:1 ether-petrol ether mixture. Five cc. of this solution are evaporated in a flask on the water-bath, the residue dissolved in 4 cc. of spirit and transferred quantitatively to the volumetric flask for color development with the iron solution.—P. FOENSS BECH. *Dansk Tids. Farm.*, 9 (1935), 289. (C. S. L.)

Silicates—Contribution to Analysis of. I. About 7–14 mg. of the silicate, powdered in an agate mortar, are treated in a small platinum crucible with 2 drops of diluted sulphuric acid and 20 drops of purest hydrofluoric acid, and the mixture is evaporated carefully over an inverted porcelain dish with a small flame. The treatment with the two acids is repeated and then followed in the same manner with 3 drops of concentrated nitric acid and finally with 3 drops of diluted sulphuric acid until white fumes are no longer emitted. The platinum crucible and contents are weighed, 0.18–0.13 Gm. of sodium metaphosphate are added, the crucible is again weighed and incinerated (700–800°) for about one hour. It is allowed to cool for four minutes on a copper block in a desiccator and for one minute in the balance case. It is then weighed, heated for 10 minutes, cooled, weighed again and, if necessary, the entire procedure repeated. The difference between the last weighing and the weight of the empty crucible is equal to the sum of the oxides plus the sodium metaphosphate. Deducting the weight of sodium metaphosphate from this value gives the sum of the oxides, and the last calculated value subtracted from the original weight of the silicates, the uncorrected silicon dioxide value. The correction is found by referring to a graph showing the loss in weight by volatilization caused by heating the sodium metaphosphate. A similar correction is applied for loss by volatilization of silicate. The method was not applied in the presence of fluorine, boron and sulphur.—K. SCHLOKLITSCH. *Mikrochem.*, 18 (1935), 144. (L. L. M.)

Soaps—Determination of, in Pharmaceutical Preparations. S. proposes the following method for the determination of fatty acids: Acidify a soap solution with sulphuric or hydrochloric

acid whereby the fatty acids collect as solid or semi-solid particles on the surface; add a small weighed amount of oleic acid, the specific gravity of which is known or a similar liquid (liquid petrolatum) whereby the fatty acids are dissolved and a liquid layer is formed. Introduce the acid-olein mixture into a flask provided with a neck graduated to 0.1 cc. so that the volume of the mixture may be read. The calculation is made with soaps prepared from known fats or oils (linseed oil, lard, etc.). Volume read × sp. gr. = wt. of the fatty acid. Specific gravity of the chief fatty acids at 20° are: lauric 0.883; myristic 0.906; palmitic 0.916; stearic 0.926; oleic 0.888; linolic (mixture) 0.920; ricinoleic 0.936. Later experiments showed that the addition of warm saturated solution of sodium chloride in the flask and then cooling gave more accurate results. The volume is read when the flask is placed in a bath at 20° C. Detailed procedures are given for the following: (1) *Sapo kalinus* (41.67% fatty acids), (2) *Sapo glycerinatus liquidus*, (3) *Spiritus Saponia kalini*, (4) *Liquor Cresolis Saponatus* (cresol content 49.96%; fatty acids 25.1%), (5) *Spiritus saponatus* (9.32% fatty acids) (6) *Spiritus saponato-camphoratus* (86.90% fatty acids), (7) *Sapo medicatus* (86.90% fatty acids), (8) *Sapo jalapinus* (42.44–43.87% fatty acids), (9) *Linimentum saponato-camphoratum* (6.79% fatty acids), (10) *Linimentum saponato-ammoniatum*, (11) *Liquor Formaldehydi saponatus*, (12) water content of *Sapo medicatus*.—W. STÜWE. *Apoth.-Ztg.*, 50 (1935), 1545–1548. (H. M. B.)

Starch—Estimation of. The large variety of methods which exist for starch estimation bring out the fact that few of them are reliable even in limited cases. Neither acids nor diastatic enzymes are sufficiently specific for accurate results. The development of highly purified and specific enzymes may solve the problem. Methods based on other chemical and physical properties of starch, such as its solubility in salts and acids, and its insolubility in iodine and salt solutions, deserve closer study and no doubt many contributions will be made in the future along such lines.—J. T. SULLIVAN. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 311. (E. G. V.)

Starches and Starch Products—Determination of the Alkali-Labile Value of. Starch and starch products contain some material which is very quickly attacked by hot aqueous alkali (alkali-labile), and a part which is relatively slowly attacked by the reagent (alkali-stable). The procedure for determining the alkali-labile value follows: A 50-mg. sample is weighed into a 20 x 2.5 cm. test-tube and 10.0 cc. of 0.1*M* sodium hydroxide solution is added. The tube is floated in boiling water for 1 hour. After digestion it is cooled for 30 seconds under running cold water and then 10 cc. of 0.1*M* hydrochloric acid are added, shaking. The contents are transferred to a 250-cc. Erlenmeyer flask, together with two washings of 10 cc. each of distilled water (2 hours may elapse). The solution is neutralized with 0.1*M* NaOH, using nitrazine yellow as indicator, adding 5 cc. alkali in excess and adding immediately 5 cc. of 0.025*M* standard iodine solution (2 minutes). Set in a dark place at 25° to 30° C. for 45 minutes ± 1 minute. Then add 5 cc. of concentrated hydrochloric acid, shake and titrate immediately with 0.025*M* thiosulphate; starch paste may be added as indicator. The number of milligrams of iodine consumed, divided by the weight of the sample and multiplied by 100, gives the alkali-labile value.—T. C. TAYLOR, H. H. FLETCHER and M. H. ADAMS. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 321. (E. G. V.)

Sterilized Cotton and Muslin Bandages. D. verifies the observations of Tietz (*Apoth.-Ztg.*, 47 (1932), 8–9) with regard to the influence of sterilization on these products. The action of steam at 100° C. and especially at 120° brings about some hydrolysis of the cellulose and the products are oxidized by 0.1% potassium permanganate solution. The higher the temperatures of sterilization and the longer its duration the greater the extent of hydrolysis. The permanganate test for sterilized cotton in the German Pharmacopœia leads to false conclusions.—E. DEUSZEN. *Apoth.-Ztg.*, 50 (1935), 1403–1404. (H. M. B.)

Sulphates—Chromatoiodometric Determination of. Acidify the solution with dilute hydrochloric acid, add 10 cc. of decinormal barium chloride, heat 5 minutes to agglomerate the precipitate, let cool, add 1 drop of phenolphthalein indicator and 10 cc. of decinormal caustic soda to make the solution alkaline, add 10 cc. of decinormal potassium chromate, stir for some time, filter through a moistened fluted filter into a 500-cc. glass-stoppered Erlenmeyer flask, destroy excess chromate with sodium thiosulphate, add 2 Gm. of potassium iodide, acidify with 2 cc. of concentrated hydrochloric acid and titrate the liberated iodine with decinormal sodium thiosulphate, of which 1 cc. = 0.004 Gm. SO_3.—RIVAS S. GODAY and A. CALATAYOD. *Bol. Farm. Militar*, 13 (1935), No. 144, 361–364; through *Chimie et Industrie*, 34 (1935), 792. (A. P.-C.)

Sulphur Ointment—Chemical Study of. A survey of the literature reveals no satisfac-

tory gravimetric method. Oxidation to sulphur trioxide by means of bromine and nitric acid was not satisfactory because of the impossibility of controlling bromine vapors. Several volumetric methods were found. The following gravimetric method gives dependable results: "Treat about 1 Gm. of the well-mixed and accurately weighed ointment with 50 cc. of 10% potassium hydroxide solution, boil gently until the lard is saponified and the sulphur converted to soluble sulphides (usually about one-half hour). Add 50 cc. of solution of hydrogen peroxide and digest slightly below the boiling point for thirty minutes, make slightly acid with hydrochloric acid free of sulphur trioxide, heat to boiling, cool, filter and wash the vessel used in the saponification and the filter paper with distilled water. Determine the sulphur trioxide in the filtrate by barium chloride precipitation in the usual way. Correct the resulting weight of barium sulphate by a blank run on the solutions of hydrogen peroxide and potassium hydroxide and multiply the final weight of barium sulphate by 0.1373 to obtain the equivalent weight of sulphur." The oxidized solution must be heated to bring fatty acids to the surface, then cooled to allow them to solidify before filtration. If fatty acids remain in the filtrate they will form insoluble barium salts and the resulting figures will be too high. It is necessary to conduct a blank to determine trioxide in the alkali and peroxide solutions. Experiments indicated that it is not necessary to include lard in the blank. Accuracy of method was tested on ointments of known strength. Thirteen commercial samples were tested and all but three were low. There seemed to be a tendency on the part of retail pharmacists to substitute petrolatum for benzoinated lard, nearly half of those examined having petrolatum base. If petrolatum or wax is necessary the effect on therapeutic value should be determined. A study of the official ointment with varying amount of petrolatum and wax should be of interest.—LEWIS C. BRITT. *J. Am. Pharm. Assoc.*, 24 (1935), 854. (Z. M. C.)

Sulphur Ointments and Their Assay. The U. S. P. and the N. F. have three ointments containing elemental sulphur in the sublimed form and it seems desirable to have a satisfactory assay. Oxidation methods are tedious and usually give low results. Organic solvents to separate fatty material are not good because sulphur is appreciably soluble in most organic solvents. Several volumetric methods were tried. Castiglioni proposed a method in which sulphur was converted into thiocyanate. Allport modified it. Accuracy and brevity of these methods could not be substantiated nor could Fleck's method which converts sulphur to sodium thiosulphate. Shulek's method for sulphur-bearing drugs which converts the sulphur into thiocyanate and later determines it volumetrically was found to be applicable to sulphur ointments if modified somewhat. The following is the procedure: "Weigh accurately into a small beaker (50 cc. capacity) a sample of ointment equivalent to 0.02–0.04 Gm. of S. Distribute on the sample about 0.2 Gm. KCN, add 8–10 drops of water and 15 cc. acetone and evaporate to dryness at a temperature sufficiently high to melt the ointment. Repeat the process of warming with acetone and follow by subsequent evaporation twice, using each time 5 cc. of acetone (or until all of the sulphur has been converted). Dissolve the residue in water and filter through a small filter. Heat the fatty material remaining in the beaker with 5 cc. of water almost to boiling, cool somewhat and pass the aqueous liquid through the same filter. Repeat this procedure 3–4 times. The combined filtrates are received in a 125-cc. glass-stoppered Erlenmeyer flask, add 1 Gm. of boric acid and boil gently for 10 minutes. (If a clear filtrate is not obtained, add the boric acid first and in some cases 0.5 Gm. coarse pumice may be necessary to accomplish this, boiling 10 minutes, filtering and washing the filter as described above.) Acidify the cooled solution (amounting to 50–60 cc.) with 5 cc. phosphoric acid (20%), add bromine water dropwise until the solution is distinctly yellow; add phenol (5%) until the solution is decolorized. Shake well and set aside for $^1/_4$ hour; add 0.5 Gm. KI and allow to stand in the dark for $^1/_2$ hour, keeping the flask securely stoppered, and then titrate in the usual manner with 0.1*N* $Na_2S_2O_3$ using *fresh* starch solution as an indicator (1 cc. 0.1*N* $Na_2S_2O_3$ = 0.01603 Gm. S.)" A number of ointments were prepared and analyzed by this method with good results. The method is proposed for the assay of the official ointments.—CHARLES E. BRADY and HENRY M. BURLAGE. *J. Am. Pharm. Assoc.*, 24 (1935), 945.

(Z. M. C.)

Tannin-Bearing Drugs—Evaluation of the Medicinally Used. A review of the methods proposed for the qualitative and quantitative examination of these drugs citing 101 references.—O. DAFFERT and M. FLEISCHER. *Pharm. Monatshefte*, 16 (1935), 185–190. (H. M. B.)

Tannin-Bearing Drugs—Contribution to the Estimation of the. The official drugs galla, granatum, hamamelis leaves, Koso flowers, hæmatoxylon, myrtillus fruit, quercus, tormentillæ

root, rhatany, willow and catechu are subjected to the following tests: (A) *Color Reactions.*—1 Gm. of the drug is boiled with 100 cc. water and treated with (1) solutions of iron salts: ferric chloride, iron alum, ferrous sulphate and bromine water, Mitchell's reagent and iron ammonium citrate, (2) sodium sulphite, (3) sodium nitrate, (4) pine shaving reaction, (5) concentrated sulphuric acid, (6) hydrochloric acid, (7) sodium hydroxide, (8) ammonia, (9) alum, (10) lime water, (11) dyeing of cloth strips stained or dipped in solutions of metal salts whereby the drugs are divided into 5 classes; (B) *Precipitation Reactions.*—(1) Formaldehyde-hydrochloric acid, (2) lead acetate, (3) bromine water, (4) copper acetate, (5) gelatin, (6) antipyrin, (7) tartar emetic, (8) potassium dichromate, (9) ammonium sulphide, (10) strychnine hydrochloride and (C) *Capillary Analysis.*—A procedure for the detection of the tannin groups and individual tannins is outlined.—O. DAFFERT and M. FLEISCHER. *Pharm. Monatshefte,* 16 (1935), 221–226. (H. M. B.)

Tannin-Bearing Drugs—Contribution to the Estimation of, Medicinally Used. Quantitative methods are divided into 2 groups: (A) direct methods by which the tannin bodies are separated from their solutions as insoluble compounds and weighed or determined directly and (B) indirect methods whereby from measured volumes of solution the total tannin bodies are separated and from the difference of certain values before and after detanning calculated. (A) includes (1) gravimetric methods with aluminum hydroxide, aluminum oxide and copper acetate, (2) measurement of the volume of the precipitate by allowing to settle or by use of the centrifuge, (3) by hide power, (4) titration with titanium trichloride or copper salt solution and (5) colorimetric method with gelatin-iron paper. (B) includes the shake, filter and Schröder's methods. Biological methods are discussed.—O. DAFFERT and M. FLEISCHER. *Pharm. Monatshefte,* 16 (1935), 233–236. (H. M. B.)

Thyroid Standardization and Dosage. The authors claim that the variation in the total iodine and thyroxine iodine contents of fresh gland and dried defatted glands is so great that there can be no satisfactory correlation between thyroid B. P., 1932 and preparations expressed in terms of fresh gland or unstandardized dried defatted gland. The relative activities of thyroid U. S. P. X and thyroid B. P., 1932 are approximately 74 ± 12:100. The following points are emphasized in the determination of iodine in thyroid. Filtration of the alkaline hydrolyzate should be carried out through a Büchner funnel which has been heated for some time under hot running water, this facilitating the operation so that filtration takes place in about three minutes. Alkaline fusion of the various portions taken for assay is best accomplished by using a Bunsen flame, directing the flame to the side and top of the crucible without continuous contact. Complete fusion usually takes 15–20 minutes. The direct determination of iodine on the acid-insoluble precipitate containing thyroxine has been found to yield uniform results giving a useful check on the B. P. method.—R. F. CORRAN, J. PRITCHARD and F. E. RYMILL. *Quart. J. Pharm. Pharmacol.,* 8 (1935), 331–336. (S. W. G.)

Tinctures—Alcohol Content and Specific Gravities of the, of the B. P. C., 1934. The alcohol content of the majority of these tinctures prepared commercially comes well within the limits allowed by the British Pharmaceutical Codex, and in most cases approaches the higher limit. There are a few cases in which it appears that the lower limit should be raised. In Tinctura Cinnamomi Composita alcohol (60%) is used in preparing the tincture by maceration. The amount of drugs used is 5.75% and since the proportion taken up by the alcohol is not very great, the alcohol content should not fall so low as 55%. The lower limit should therefore be 57%. Similarly the lower figure for the alcohol content of Tinctura Lavandulæ Composita should not be less than 88%, and the higher limit may reach 90%. In Tinctura Ergotæ Ammoniata 10% of solution of ammonia is used in preparing the tincture and 25% of ergot, the alcohol is 60%. The alcohol content of the final preparation is unlikely to be as high as 54%, and may easily fall below 51%, as there is a considerable amount of extractive from the ergot. The limits should be 50 to 52%. The limits for Tinctura Ferri Perchloridi should be 21 to 23%, for Tinctura Podophylli 86 to 88%, Tinctura Kino 46 to 50%. The variation in the amount of moisture present in different samples of drug may cause the finished tincture to have a different alcohol content, although prepared in the same manner and under the same conditions in each case. The specific gravities of the tinctures and the determined and the B. P. C. limits of alcohol content are tabulated.—C. T. BENNETT and F. C. L. BATEMAN. *Quart. J. Pharm. Pharmacol.,* 8 (1935), 406–408. (S. W. G.)

Tragacanth. Neutral gum such as is described by the Swedish Phar. is not seen. The p_H is about 5. The best drug does not macroscopically color blue to tenth normal iodine, although

microscopically one may recognize blued starch grains. The higher the ash content of this drug the higher the viscosity. A viscosity determination is a good control.—ANON. *Farm. Revy*, 34 (1935), 735. (C. S. L.)

Tragacanth—Determination of. W. finds that tragacanth heated to 50° C. for 2 hours yields better mucilages than that heated to 100° C. Investigation shows that good mucilages after two months show little change in viscosity numbers and p_H; with poor mucilages these values change considerably.—H. WILL. *Apoth.-Ztg.*, 50 (1935), 1620. (H. M. B.)

Ultraviolet Capillary Analysis of Drugs. Acetone extracts of the drugs of the Austrian Pharmacopœia are prepared as follows: "Extract 0.2 Gm. of the drug with 25 cc. pure acetone (sp. gr. 0.79 at room temperature) 24 hours with occasional shaking. To 7 cc. of the liquid obtained by decantation add 1.4 cc. *N* ammonium hydroxide; to a 2nd portion add 1.4 cc. water; to a 3rd portion add 1.4 cc. *N* acetic acid, and place in cylindrical tubes with diameters of 2 cm. a sufficient amount of these mixtures to occupy heights of 3.2 cm. Dip in the liquids strips of filter paper ($1^1/_2$ cm. x 28 cm.) to a depth of 2 cm. and allow to stand for 1 hour, remove, dry and examine under the lamp. In a table the capillary pictures of the 3 types of solutions for 141 drugs are described which might serve as a means of determining the identity and purity of these drugs.—P. ERNST and A. STIEBER. *Pharm. Monatshefte*, 16 (1935), 171–176. (H. M. B.)

Ultraviolet Titration—Application of, in the Analysis of Volatile Oils. M. utilizes the change in fluorescence properties of such compounds as quinine, æsculin and umbelliferone and its substitution products when subjected to various H-ion concentrations in the titration. Gray, brown and black organic suspensions are treated with varying amounts of normal hydrochloric acid. The burette employed was a long calibrated tube leading through the window of a box-like apparatus in which is placed the titration flask and exposed to ultraviolet light filtered by means of a nickel oxide filter to yield rays of 3,660 Angstrom units. Introduction of a drop of alkali produces in the acid solution a bright blue cloud which disappears upon stirring until the neutral point is reached. A drop in excess causes the characteristic blue fluorescence (with methyl umbelliferon) of the meniscus and the underlying liquid. Sharp changes are produced with suspensions and colored solutions and the method is applicable for the determination of the saponification, ester and acid numbers of balsams and volatile oils which are highly colored or yield such solutions.—L. S. MALOWAN. *Riechstoff-Ind. Kosmetik*, 10 (1935), 199–200. (H. M. B.)

Valerian root. German valerian is grown on clayey soil. The Russian and Polish plant is grown on mossy bogland. Hence the German drug has a greater content of ash, but the ash determination method of the Swedish Phar. scarcely serves to distinguish this. Examination for admixed sand is suggested.—ANON. *Farm. Revy*, 34 (1935), 734. (C. S. L.)

Vitamin A—Discrepancy between Biological and Other Assay Methods for. Twenty-two oils and concentrates containing 530 to 1,290,000 international units per Gm. were assayed by colorimetric (Lovibond blue values) and spectroscopic means and from these and physicochemical tests the potency of "100%" vitamin A calculated, the characteristics of the rich concentrate described by Carr and Jewell (*Nature*, 131, 92; *S. A. B.*, 6 (1933), 208) being accepted as those of the pure substance. The oils included various cod liver oils, fish liver oils, mammalian liver oils, halibut liver oil, tunney liver oil and various fractions and mixtures of these. The assays so expressed varied from 1.23–3.38 million units per Gm. when calculated from the blue values (mean 1.77) and 1.08–2.9 million units per Gm. when calculated from the spectroscopic estimates (mean 1.73). This variation was greater than could be accounted for by the known errors of the assays and the physicochemical measurements; allowance for these errors left a range of variation from 67–150% of the mean value to be accounted for. Cod liver oils of medicinal grade usually gave the highest values, the highest of these being U. S. P. reference oil. It was evident that the high values obtained were not due to gross underestimation of the blue values or the spectroscopic absorptions. From the recent redefinition of the unit of vitamin A as the activity of 0.6γ of β-carotene, it was calculated that if β-carotene is converted efficiently into vitamin A at the levels of dosage used in assays the potency of pure vitamin A would be 1.56 million units per Gm.; this is of the same order as the mean for the whole series of oils and concentrates examined in the present work. Values lower than this might be accounted for by the presence of biologically inactive material showing selective absorption and chromogenic power; but values significantly higher suggest the existence of a biologically active material without selective absorption or chromogenic power, or with these characteristics much weaker than in the vitamin $C_{20}H_{29}OH$. Complete

tables and graphs illustrate the results.—RONALD S. MORGAN, JOSEPH R. EDISBUR and RICHARD A. MORTON. *Biochem. J.*, 29 (1935), 1645; through *Squibb Abstract Bull.*, 8 (1935), A-1356.

Vitamin D—Evaluation of, in Fatty Oils by Spectrographic Methods. Other authors have shown that vitamin D undergoes a change as the result of contact with oxygen. By a comparison of the curve of pure vitamin D, obtained as described in a previous article, with that of a sample of vitamin D exposed to the air in the dark for 6 months, the authors showed a decrease in absorption representing a loss in activity. The loss was not sufficient to be determined within the limits of error of the biological methods of assay. The authors now turned to a study of olive oil solutions of vitamin D. It was found that the curve obtained from 1.5 Gm. olive oil or the total unsaponifiable matter (0.068 Gm.) from 6.5 Gm. olive oil when dissolved in 50 cc. benzin, differed only slightly from that of 1.064 Gm. olive oil containing 0.778 mg. calciferol in 50 cc. benzin. In order to calculate concentration of vitamin D with accuracy from the curves obtained from olive on solutions, it was found necessary to precipitate the phytosterol from the unsaponifiable residue with an alcoholic digitonin solution. By this modification, it was possible to calculate the concentration of vitamin D in the original olive oil solution and to obtain values checking very well with the theoretical in concentrations as low as 0.25 mg. vitamin D per Gm. oil. The methods of obtaining unsaponifiable residue and of removing phytosterol are given in detail. Attempts to determine vitamin D in sesame oil solutions by the above method were not successful. The procedure for determining vitamin D in sesame oil was modified as follows: the weighed sample of oil was shaken 3 times with an equal volume of 90% acetic acid. The remaining oil was then saponified and the unsaponifiable residue treated with digitonin as under olive oil. Results comparing well with the theoretical were obtained with preparations containing as little as 3 mg. vitamin D/Gm. oil. However, in smaller concentrations there was too much loss of vitamin D during the process and a biological method must be resorted to. If all vitamin D preparations were made in olive oil, they could be more accurately and much more easily controlled in concentrations as low as 0.3 mg./Gm. oil than by the present methods. Since white phosphorus is sometimes given in combination with vitamin D, a solution consisting of 9.5 mg. calciferol in 8.0 Gm. olive oil was added to 2 Gm. *Oleum phosphoratum* (1–200) and the absorption curve of 1 Gm. of the mixture in 50 cc. benzin plotted. Similar curves obtained 3 and 8 weeks later compared very well. Six months after this mixture was made, the vitamin D in 5.0 Gm. of the mixture was determined and a loss of only 12.5% noted. Since this is within the limits of error of the method, the vitamin D had apparently not been affected by the contact with the phosphorus.—L. FUCHS and Z. BECK. *Pharm. Presse*, 40 (1935), 423, 432, 447. (M. F. W. D.)

Volatile Acids—Estimation of, of Esters Contained in the True Volatile Oil of Lavender. The method is based on the steam distillation of the fatty acids. Method: A 2-Gm. sample of volatile oil in an Erlenmeyer flask is treated with 0.5*N* alcoholic KOH in an amount a little in excess of that necessary for saponification. After saponifying add 20 cc. distilled water and remove the alcohol by gentle boiling. Transfer contents to a Pyrex container. Calculate the volume of water necessary to add so as to make the sample approximately 0.05*N* with respect to acetic acid. The residue of the lavender oil is extracted with two 25-cc. portions of petroleum ether at 24-hour intervals. After the extraction 2 drops of alcoholic KOH is added and the aqueous portion of the filtrate is placed in a Ferré apparatus, treated with three drops of H_3PO_4 and distilled. Ten distillates of 10 cc. each are collected and each is titrated with 0.05*N* NaOH. The distillation curve for the experiment is constructed and compared with that obtained from a blank test run with a plain acetic acid solution. Results of assays show that the esters in the oil of lavender are essentially acetates with about 5–8% as esters of fixed acids.—C. LAGNEAU. *Bull. sci. pharmacol.*, 42 (1935), 332. (C. T. I.)

Volatile Oils—Analysis of, from the Standpoint of Unification of Methods. Discussion of the present methods of analysis and accuracy of these methods. A proposal for international methods is set forth embracing the determination of physical and chemical constants.—C. LAGNEAU. *Bull. sci. pharmacol.*, 42 (1935), 321. (C. T. I.)

Volatile Oils—Evaluation of, in Drugs. A previously described modification of the Dafert method (*Pharm. Ztg.*, 79 (1934), 972; *Arch. Pharm.*, 273 (1935), 388) was used. The following examinations are reported: (1) Nine samples of whole cinnamon bark from various commercial sources showed volatile oil contents of 0.54–2.10% by weight; (2) 9 samples of calamus root, 0.51–3.43% by weight; (3) 9 samples of whole fennel, 0.58–5.21% by weight; (4) 10 samples of

cinnamon powder, 0.05–0.59% by weight and (5) 8 samples of calamus powder, 0.48–2.25% by weight. Experiments seem to indicate that the low contents of volatile oil in powdered drugs are not due chiefly to pulverization but to storage of the powders. A modification of the method is necessary for the determination of the volatile oil in calamus.—L. KOFLER. *Pharm. Monatshefte*, 16 (1935), 209–212. (H. M. B.)

Volatile Oils—Further Investigations of the Determination of, in Drugs and Plants. The authors review in detail the various methods for determining the volatile oil content of drugs and plant materials. Some of the disadvantages of the apparatus used are mentioned and a modified apparatus as illustrated, developed. The lower end of the condenser has several openings to prevent the vapors from interfering with the free dripping of the condensate. The bent end of the condenser as well as the bend in the receiving tube tends to lead the liquid down the sides of the tube and prevent the formation of emulsions. The bulb above the measuring tube prevents the oil from being distorted by capillarity as occurs if the oil is collected directly in the measuring tube. The stop-cock at the bottom of the U serves to draw off the water and bring the oil within the graduations. The method is as follows: a weighed quantity of drug varying inversely with the volatile oil content is introduced into the liter flask with an amount of saturated salt solution varying directly with the weight of drug. The mixture is heated to boiling until all the oil is driven over, the flame removed, the particles of drug washed down from the sides of the flask and the mixture distilled for another 10 minutes. The distillate is then allowed to come to an even temperature and the volume of oil read off on the scale divided into 0.01 cc. A complete determination may be run within $1^1/_2$ hours. The entire apparatus must be thoroughly washed out with warm chromsulphuric acid after each determination. The effect of the fineness of the drug on the accuracy of the method is discussed. In cases where the volatile oil has a specific gravity very close to or greater than that of water, 0.2 cc. pinene is pipetted into the flask with the drug. The average of several blanks showed that the condensate of pinene from 0.2-cc. samples run as above measured 0.17 cc. The volume of oil obtained when pinene is added must be corrected by this amount. The apparatus can also be adapted to the preparation of aromatic waters by distillation, the yield being about 250 cc./hr. of a water superior to that prepared by dissolving the oil in the water. Several tables of results accompany the article.—R. WASICKY, F. GRAF and S. BAYER. *Scientia Pharm.*, 6 (1935), 101. (M. F. W. D.)

TOXICOLOGICAL CHEMISTRY

Hydrocyanic Acid—Determination of Traces of, in Tissues. Chelle's method of the determination of minute amounts of prussic acid in tissues (*Yearb. Pharm.* (1920), 123) has been tested by adding known quantities of cyanide to tumor tissue. The method gives low results owing to the destruction of nearly half of the prussic acid in the preliminary distillation, a destruction which takes place also in the absence of tissue. The percentage loss, however, is fairly constant, and an allowance can be made for it, leaving but a small margin of error. The direct removal of the prussic acid by a current of air was found to give higher results, except when less than 0.01 mg. of prussic acid was present.—G. HARKER. *J. Roy. Soc. N. S. W.*, 68 (1935), 192; through *Quart. J. Pharm. Pharmacol.*, 8 (1935), 536. (S. W. G.)

Lead Poisoning—Determination of Lead in the Blood in Industrial. Ordinary physical symptoms are uncertain in diagnosis, particularly of early stages of lead poisoning. The presence of over 0.5 mg. per 100 cc. of lead in the blood is a reliable indication. Two methods of analysis are given.—K. HÖLL. *Pharm. Ztg.*, 80 (1935), 1342. (H. A. M.)

PHARMACOGNOSY

VEGETABLE DRUGS

Cascara Sagrada—Unusual Adulterant in. A case of adulteration of Cascara Sagrada with stones and portions of the wood of *Pseudotsuga Douglasii* is reported.—ANON. *Pharm. J.*, 135 (1935), 652. (W. B. B.)

Ginger—Philippine, in Relation to the United States Food and Drugs Act. Ginger is widely cultivated in small lots throughout the Philippines, but it has never been planted on a large scale. It has been estimated that the yield of ginger roots under Philippine conditions is about 1,000 to 1,700 kilos per hectare. One is known as the Hawaiian variety and the other as the native

variety. The Hawaiian variety has a larger rhizome than the native variety but, when fresh, it is less pungent. Samples of Philippine ginger roots were analyzed to ascertain if this local product conforms to the requirements for ginger imported into the United States. Some samples were found to be satisfactory for export, while others did not exactly meet the standard requirements for starch and total ash. Careful selection of root stock and proper cultivation would very likely yield a grade of ginger entirely satisfactory for export purposes.—JOAQUIN MARANON and ELENA CAGUICLA. *Philippine J. Sci.*, 58 (1935), 171. (P. A. F.)

PHARMACY

GALENICAL

Dihydroxydiaminoarsenobenzene and Its Derivatives—Preparation of Stable Solutions of. Ascorbic acid or its salts are added to the solutions.—PRODUITS ROCHE, SOC. ANON. Belg. pat. 409,832, July 31, 1935. (A. P.-C.)

Drug Extraction. VI. Determination of the Pressure Exerted by a Drug during Percolation. Previous experiments seem to indicate that the proportion of liquid used in moistening drug powders preparatory to packing in a percolator does not produce maximum swelling. It would follow that the pressure that would develop in the percolator might affect the imbibition of the menstruum or its solvent power or result in a slowing up or stopping of percolation. So an apparatus for measuring this pressure was devised. This apparatus is described and also a drawing is shown. Measuremcnts were made on powdered belladonna root, rhubarb, senna and red cinchona. With belladonna it was found that the percentage of swelling increases as the moistening liquid is increased. Free flow was measured. As the proportion of water increases, the pressure decreases. The pressure rises to a maximum and then decreases. The rate of free flow increases rapidly with increasing amounts of moistening liquid. Decrease in pressure during later stages of percolation is probably due to extraction of soluble constituents which decreases the quantity of solid material present. In the case of belladonna root the decrease in pressure does not bring about an increased rate of flow but there is a decreased rate of free flow in the later stages which occurs later than the decrease in pressure. This may be due to swelling of starch grains or other material so as to decrease permeability of the cells. An experiment was performed, using a centrifuge, to determine amount of imbibition, its purpose being to discover whether there was appreciable imbibition between 24 and 48 hours. A tabulation shows the figures. Using official menstrua and official methods for preparation of fluidextracts of rhubarb, red cinchona and Alexandria senna, the rates of free flow were very rapid and the pressure decreased during the percolation. The greatest pressure occurred with red cinchona and the greatest decrease of pressure with senna. Rates of free flow increased during percolation showing that as soluble constituents were removed, a more rapid passage of menstrua was allowed.—WILLIAM J. HUSA and LOUIS MAGID. *J. Am. Pharm. Assoc.*, 25 (1936), 10. (Z. M. C.)

Emulsion Systems—Gelatin as a Stabilizing Colloid for Oil-in-Water. Previous work is very briefly reviewed and some criticisms offered. For the experimental work every type and grade of gelatin was obtained together with data concerning method of manufacture and control reports. Emulsifying devices were investigated: several colloid mills, a laboratory homogenizer. These were all tried and the homogenizer decided upon. The experimental method chosen was the preparation of emulsions of heavy liquid petrolatum containing 50% of oil, the dispersion medium being aqueous gelatin solution in which the type, its concentration and the p_H of the solution varied. Results are tabulated and discussed at some length, especially reasons why a porkskin gelatin at a p_H of 3 gave an excellent emulsion. Porkskin gelatin on the market has a p_H of 4.0–4.6 so the level has to be adjusted before it can be used. Adjustments were made with hydrochloric acid but in ordinary practice tartaric acid is easier to use. So a graph was prepared for this acid. Emulsions made with tartaric acid were more acid to the taste but further experiment determined that a p_H of 3.2 for tartaric acid is satisfactory. Alcohol, sugar and gelatin may be added. Aging showed some creaming and a gradual loss in viscosity. Chilling increased viscosity. Emulsions made with hot gelatin solutions were stable when heated to 45° C.; made with cold gelatin solutions there was a slight separation of oil when heated to 45° C. Heating a 5% solution of gelatin at a p_H of 3° to 100° C. for 3 hours destroyed power of gelation but it retained its power of stabilizing an emulsion containing 50% of mineral oil. Hydrolysis would lessen

viscosity but it would not disrupt the emulsion system. Loss of viscosity is not as undesirable as increase in viscosity. Comparison of relative efficiencies of low and high Bloom gelatins showed that higher ones are preferable. Advantages of gelatin as an emulsifying agent are: excellent stabilizing power; economy in cost and quantity (gelatin for a gallon of emulsion would cost three cents); reduced calorific intake and less disturbance in gastro-intestinal disorders; eliminates presence of undesirable gum and permits highly fluid, acid emulsions. Disadvantages are necessity of homogenizer and gradual loss in viscosity. Some formulæ for emulsions using gelatin as the sole emulsifying agent are submitted. The author summarizes his paper as follows: "I. Gelatin is a very efficient stabilizing colloid for oil-in-water emulsion systems. II. The important factors to be considered in connection with gelatin for this purpose are *first*, the preliminary treatment received by its precursor (which determines its isoelectric point) and *second*, the p_H of the solution to be used. III. Gelatin from acid-treated precursors, having an isoelectric point at p_H 8, requires a p_H of approximately 3 to effectively stabilize an emulsion, whereas gelatin from alkali-treated precursors, having an isoelectric point at p_H 4.7, requires a p_H of approximately 1. IV. The advantages of gelatin for use in emulsions are enumerated. V. The efficiency of several colloid mills as compared with that of a homogenizer in preparing liquid emulsions is reported. VI. Practical formulæ and directions for the use of gelatin in emulsions are presented."—LINWOOD TICE. *J. Am. Pharm. Assoc.*, 25 (1935), 1062. (Z. M. C.)

Extracts—Preparation of, with Dilute Alcohol. Extracts from glucoside drugs, *i. e.*, adonis, digitalis, convallaria and strophanthus, obtained with 40% alcohol, are in part more potent than those obtained with more concentrated alcohol. They are similar in potency to infusions, are free from ballast substances, stable and readily resorbable, and are therefore more rational than infusions, the usual tinctures and powders. Clinical studies on these extracts should be made. It is not advisable to decrease the alcohol concentration of menstrua for extracting alkaloid drugs because the solubility of the alkaloids therein is rapidly decreased. Seven days' maceration is entirely satisfactory for the preparation of tinctures.—M. N. WARLAKOW, F. W. IWANOW, G. A. KLEIBS and W. I. SKOWRZOW. *Sowjet-Pharm.*, 5 (1934), 14; through *Squibb Abstract Bull.*, 8 (1935), A-1713.

Horsetail—Pharmaceutical Preparations of. Hydro-alcoholic extracts of *Equisetum maximum* are prepared with 70%, 50% and 30% alcohol; the silica content varies inversely as the alcoholic strength. The dried plant when treated with boiling water yields infusions containing 0.0204% silica; decoctions contain up to 0.0421%. The juice obtained by pressing the fresh plant contains 4 % to 5% of alkaline residue and 0.0212% silica. Infusion constitutes the best procedure for extracting almost completely the silica content of fresh or dried horsetail.—C. MASINO. *Scienza Farm.*, 3 (1935), 72-78; through *Chimie & Industrie*, 34 (1935), 1375. (A. P.-C.)

Javelle Water—Influence of Time, Light and Temperature on the Conservation of. The authors, after having shown the possibility of determining exactly the chlorate, chlorite and hypochlorite contents of a Javelle water, by comparison of the results obtained in determining a sample according to the methods of Poncius and Bunsen (the latter being used first in an acetic acid medium and then in a hydrochloric acid medium) determined the three compounds in samples kept at 0° and 10°, in diffused light and in the dark. The curves indicated the speed of decomposition of the elements. This work showed that light had a primary rôle in the decomposition of hypochlorite while temperature influenced the decomposition of chlorite and chlorate. The conclusion was that a concentrated solution, 30° chlorometric, deteriorated less rapidly than a diluted solution that, kept in diffused light, possessed no more than a feeble chlorometric value at the end of a month.—R. P. JACQUEMAIN and J. H. DOLL. *Bull. soc. chim., mem.*, 2 (1935), 1669; through *Squibb Abstract Bull.*, 8 (1935), A-1716.

Male Fern Extracts—Constituents and Activity of. Extracts were prepared from green, brown and brownish black rhizomes and also from rhizomes collected at different seasons. Biological tests were carried out on earthworms, and in the table which follows the minimum lethal dose is the weight in Gm. which, when present in 100 cc. of water, will kill the majority of the worms within twelve hours. The resin content is dependent upon the care with which the rhizome is freed from the outer brown scaly layers, and a good fresh extract should not contain more than 6% of resin, larger quantities indicating either insufficient care in the preparation of the drug, or resinification on storage. The fat, wax and ethereal oil are readily oxidized and the increase in

Extract.	Crude Filicin, Per Cent.	Ether-Soluble Fat, Wax and Ethereal Oil, Per Cent.	Ether Insoluble Resin, Per Cent.	Consistency.	Minimum Lethal Dose, Gm.
From Parts of Same Drug					
Green	27.3	65.4	5.98	Thick fatty liquid	0.0005
Brown	43.5	32.9	20.3	Gummy	0.001
Brownish black	50.2	21.2	26.5	Powder	0.003
From Green Drug Collected in					
Spring	28.3	63.2	4.46	Thick liquid	0.00025
Summer	33.2	60.2	5.92	Thick liquid	0.00025
Autumn	29.1	68.3	3.86	Thick liquid	0.00015
Winter	33.8	63.2	2.21	Thick liquid	0.00025

filicin in old samples is at the expense of the former. Since the activity is dependent upon a high fat and low resin content, the extract should be stored in a cool place in small bottles completely filled and protected from light.—J. STAMM. *Farm. Notisbl.*, 44 (1935), 21; through *Quart. J. Pharm. Pharmacol.*, 8 (1935), 575. (S. W. G.)

Medicine Making as Depicted by Dioramas. The Manufacture of Medicines is shown by 38 dioramas. All are labeled and bear descriptive legends. Those shown in this article were contributed to the U. S. National Museum by The Upjohn Company. Most of them are actual scenes in the offices and laboratories.—CHARLES WHITEBEARD. *J. Am. Pharm. Assoc.*, 25 (1936), 40. (Z. M. C.)

Milk of Magnesia Stabilization of, by Citric Acid. If milk of magnesia is stored in ordinary glass at summer temperatures it develops excessive alkalinity and a bitter taste. A harder glass container retards the change and the use of pyrex glass almost prevents it. The increase in alkalinity and the bad taste are due to the reaction with the glass and it is prevented by use of non-soluble glass. The same result can be obtained by the addition of citric acid which, possibly because of its buffering action, extends the period in which the milk of magnesia remains in its original state. Citric acid, in 0.15% prevented increase in alkalinity and bitter taste after exposure for 250 hours, to a 100° C. temperature; 0.1% seems sufficient for practical purposes. A testing procedure was developed. A bottle of milk of magnesia attached to a reflux condenser was immersed to the shoulder in a bath at 100° C. Samples were removed at intervals for tasting and testing alkalinity. A temperature of 100° C. will never be encountered on the market but it accelerated the change. Other stabilizing agents were tried but citric acid was definitely superior. Various amounts and varying lengths of time were tried but 0.1% seems satisfactory. This stabilization method has been accepted by the U. S. Pharmacopœia.—E. C. BILLHEIMER and F. W. NITARDY. *J. Am. Pharm. Assoc.*, 25 (1936), 36. (Z. M. C.)

Pill and Lozenge Making. Pills made by compression have usually a circumferential band about 1.8 mm. broad, but they can be made spherical in a coating pan by coating with starch-talc and syrup or mucilage. While the pill-coater is rotating at about forty-five revolutions per minute, the pills are coated with syrup, and then dried in a current of air; this process is repeated. The pills are now thoroughly moistened with a mixture of: Mucilage 1 part, syrup 5 parts, water 4 parts; then sprinkled with a mixture of equal parts of wheat starch and talc, just as much as can be utilized, a surplus being avoided. Rotation is continued for five to ten minutes until the pills are covered with a plastic mixture. They are dried by means of a current of air. After the last coating has been put on, the pills are dried thoroughly and dusted with the following: Talc-oil-fat mixture 1 to 2 Gm., talc 5 to 10 Gm. These quantities are sufficient for 10,000 pills, and the final rotation should last for thirty minutes. Methods of preparation and coating are given for *Pil. Ext. Valerian* and *Pil. Aperient. Withii.* The preparation of worm cakes (or the iron pastilles which apparently have a demand in Scandinavia) can be done on a tablet machine by using plano-convex dies. Formulas for two of these lozenges, *Trochisci Vermifugi* and *Trochisci Ferri Redact.*, are given.—ANON. *Pharm. J.*, 135 (1935), 680. (W. B. B.)

Saccharomyces Cerevisiæ Siccum. Since dried yeast has been included in the Supplement to the Netherlands Pharmacopœia the author discusses its properties and standards.—R. RUF. *Pharm. Weekblad*, 72 (1935), 1358. (E. H. W.)

Syrup of White Pine Compound, Elixir Phenobarbital, Sapo Mollis—Improvement in Technique in the Preparation of. Syrup of White Pine Compound when prepared by the N. F. formula, when aged, yields oleaginous suspension and then an oily layer. Siphoning or otherwise removing this layer may be resorted to. Oil of Sassafras is present in excess though resin from Balm of Gilead contributes to oily material. If the oil is added to the menstruum, the excess is retained by the drug and saturation should be enough. Otherwise formula may be followed. Elixir Phenobarbital is difficult to filter when cudbear is used as coloring agent. Maximum color effect is not obtained when cudbear is macerated in alcohol and the alcoholic extract results in a product that is not clear and colloidal material makes filtration difficult and is accentuated by glycerin and syrup. Filtration difficulty is avoided by macerating cudbear in alcohol glycerin and water. Filtration is rapid and depth of color is increased and it remains clear. The phenobarbital is dissolved in a small amount of alcohol reserved for the purpose and added to the clear filtrate from the cudbear. Sugar equivalent to syrup is dissolved by agitation. Sapo Mollis U. S. P. IX—(cold process). Since there is demand for potash soap a new procedure was devised. Alkali is dissolved in distilled water (10% of the weight of finished soap), oil is added immediately and stirred. For small amounts, saponification will be complete in several hours. Stirring occasionally is all that is necessary. When working with large amounts it is necessary to increase the water to about 20%. Alkalinity should be checked. Additions of alkali or oil must be made while in concentrated form. An assay of alkali solution may be made but U. S. P. potassium hydroxide will yield a soap of only slight alkalinity. Benzoic acid may be added to reduce alkalinity when neutral or acid liquid soap is desired.—EDWARD D. DAVY. *J. Am. Pharm. Assoc.*, 25 (1935), 1079. (Z. M. C.)

Tinctures—Effect of Aging upon the Composition of, Prepared by Different Processes. Tinctures of twenty-four drugs were prepared by each of the following methods: two-fold maceration, digestion, refluxing for three hours on a water-bath in a reflux condenser, percolation and diacolation. The specific gravity, total non-volatile residue, ash content, alcohol percentage and percentage of active constituents were determined. Then the 144 tinctures were stored for twelve months in hard glass bottles, tightly corked and in a dark place at approximately 15° to 20° C. The aged tinctures were subjected to the same tests and the results recorded along with the percentage increase or decrease. Comparison is made between results obtained by the six different methods. The influence of temperature, sunlight and ultraviolet light in producing sedimentation is discussed. Suggestions are offered for preservation of tinctures. It is strongly urged that potent tinctures be standardized every three months.—S. VON BARI. *Pharm. Ztg.*, 80 (1935), 1265. (H. A. M.)

NON-OFFICIAL FORMULÆ

Depilatory—Stable. A transparent stable depilatory is formed of a transparent gum base, a depilatory agent containing lithium and an inert gas dispersed throughout the mass, all the ingredients being substantially water-soluble so as to be easily and completely removable from the skin after use.—FRANZ KOENIGSBERGER assignor to PARFUMERIE ST. DENIS. U. S. Pat. 2,031,489, Feb. 18, 1936. (A. P.-C.)

Magnesium Sulphate Paste. The author gives the following formula and procedure for the product.

Magnesium sulphate (crystalline)	100 Gm.
Glycerin	33 Gm.

Weigh the glycerin into a tared enameled dish. Heat over gauze to a temperature of 120° C. Add approximately one-fifth of the magnesium sulphate gradually over a period of five minutes, stirring continuously with a thermometer and maintaining the temperature at not less than 110° C. Continue with the other four-fifths of the salt under the same conditions.—H. FINNEMORE. *Australasian J. Pharm.*, 16 (1935), 574. (T. G. W.)

Shampoos—Hydrolysis of. Even the highest grade neutral soaps, when diluted in water, are hydrolyzed with liberation of traces of free alkali which exert an injurious action on the hair and scalp. These drawbacks are eliminated by the use of a special "Crystal Ricinate," which is obtained by sulphonating medicinal castor oil. It yields perfectly clear solutions, even when it contains 30% of free oil, and does not become turbid on dilution, but produces no lather. When

mixed in proportions of 10% or more with ordinary high grade shampoos, it prevents hydrolysis without appreciably affecting the lathering qualities.—R. M. GATTEFOSSÉ. *Parfumerie Moderne*, 29 (1935), 421–423. (A. P.-C.)

DISPENSING

Acriflavine Emulsion. The following formula is given. Acriflavine 1 Gm., Lime water 500 cc., Arachis (or olive) oil 500 cc. Dissolve the acriflavine in the lime water, add the oil and shake thoroughly.—J. W. TOMB. *Australasian J. Pharm.*, 16 (1935), 687. (T. G. W.)

Antipyrine—Note on the Action of Alkalies and Alkali Salts on. A prescription containing antipyrine and potassium citrate in solution separated into two layers, the lower layer gradually becoming crystalline. No explanation could be found. Experiments indicated that the crystals were antipyrine. Antipyrine picrate and nitroso antipyrine were prepared. Percentages of alkali and antipyrine at which the immiscible liquid started to separate were determined. Other alkali salts tried were sodium bicarbonate, sodium acetate, sodium carbonate, sodium thiosulphate, potassium bicarbonate, potassium carbonate, potassium acetate, ammonium acetate and ammonium carbonate. All caused the separation into two immiscible layers. It is believed that the immiscible liquid is an isomeric form of antipyrine which will change to the usual crystalline form on standing.—LOYD E. HARRIS and ERCELL D. TEBOW. *J. Am. Pharm. Assoc.*, 25 (1935), 1069. (Z. M. C.)

Art of Dispensing. The author reviews some errors of technique made by pharmacists.—C. W. GREEN. *Australasian J. Pharm.*, 16 (1935), 675. (T. G. W.)

Silver Proteinate and Procaine Hydrochloride—Incompatibility in a Prescription. An incompatibility occurs when silver proteinate and procaine hydrochloride are in the same prescription. Silver proteinate, owing to its method of preparation, is slightly alkaline, and with the salts of alkaloids or such substances as procaine hydrochloride may cause precipitation of the base. This, of course, occurs when the two preparations are in aqueous solution. To avoid this incompatibility, the water may be replaced by a 2% solution of boric acid.—ANON. *Pharm. J.*, 135 (1935), 689. (W. B. B.)

PHARMACEUTICAL HISTORY

Apothecaries of Maastricht in 1762—Remarkable Rules of. This interesting set of nineteen regulations by the apothecaries' guild (Broederschap der Apothekers en Drogisten) of Maastricht dated in 1792 sheds much light on the pharmacy of that time in Holland. The paper is of historical interest.—E. J. A. VERZIJL. *Pharm. Weekblad*, 72 (1935), 1386. (E. H. W.)

William Withering and the Introduction of Digitalis into Medical Practice. The subject of this sketch was born in Shropshire, England. The oaks of Shropshire are celebrated and *Digitalis purpurea* grew like a weed. When a student of medicine at the University of Edinburgh, Cullen and Monro were teachers there. Withering practiced at Stafford for ten years. Here he had time to study botany and mineralogy. He collected flowers and plants for a woman who was an amateur artist and who later became his wife. He moved to Birmingham, being succeeded at Stafford by Thomas Fowler. He continued his study of botany and mineralogy. He was a musician and was also interested in live stock, being one of the first to introduce Jersey cattle from the Channel islands. His fame rests on the discovery of the use of digitalis in medicine. He relates that he was asked about a family remedy and that he decided that foxglove was the active herb. He began to use it in cases of cardiac dropsy and in 1785 published an account of its uses. He first used a decoction, later an infusion, finally the powdered leaves. He thought it primarily a diuretic but noted that "it has a power over the motion of the heart to a degree yet unobserved in any other medicine." Foxglove appropriately adorns his monument.—LOUIS H. RODDIS. *J. Am. Pharm. Assoc.*, 25 (1936), 38. (Z. M. C.)

PHARMACEUTICAL EDUCATION

Pharmacognosy Course—The Content of a. Considering the original meaning of pharmacognosy, the information which could be included is limited only by our present knowledge of pharmacy, pharmacology, phytochemistry, botany and allied sciences. Since educational authorities say that factual information is not long retained, should the student be required to memorize the 26 points concerning each of over 300 drugs? Important drugs like opium, should receive

different treatment than unimportant ones. The author believes it very important to be entirely familiar with important drugs even at the expense of unimportant ones. A questionnaire was sent to teachers of pharmacognosy. Fifty-four replied and the results are tabulated under the title "Survey of Content of Pharmacognosy Courses—1935." A majority considered the following points important: Latin and English titles, official synonyms, part used, botanical sources, dose, standards of strength, macroscopic description, therapeutic properties, family name, preservation, non-official synonyms, constituents, standard of purity, adulterants and preparations. A majority considered the following unimportant: detection of adulterants, microscopic description, powdered drug descriptions, abbreviation, habitat, marketing, ash, history and plant description. The writer takes exception to the majority as to importance of botanical source and Latin names. Terms used in descriptions of drugs are important and students should recognize abbreviations when they see them.—GEORGE W. FIERO. *J. Am. Pharm. Assoc.*, 25 (1935), 1095. (Z. M. C.)

Professional Pharmacy. Foresight in training for professional pharmacy entails a broad foundation of general knowledge as well as intensified specialization with considerable practical training. Schools and colleges which cannot establish coördinating relationship with health service dispensaries are handicapped. In order to furnish efficient medical service a pharmacist must excel in both theory and practice. A pharmacist has the responsibility of preparing, compounding and dispensing efficiently and quickly. He must assure purity and quality. He must be familiar with modern remedies, which include synthetic chemicals and biological products. He must be able to standardize medicinal substances and must know how to store them to retain stability. He is the final distributor and must have professional integrity. The hospital pharmacist must not only be a competent pharmacist but be a scientific information bureau to the medical staff and the nurses. Facilities for training in compounding and dispensing are not available to all schools and special courses should then be developed. Some schools maintain model stores primarily for development of commercial phases. The elevation of standards of professional education in the past twenty years has been phenomenal. The need of the country is for better not more pharmacists.—ERNST T. STUHR. *J. Am. Pharm. Assoc.*, 25 (1935) 1092. (Z. M. C.)

Research—Undergraduate. "Research, fundamental or industrial, undergraduate or graduate is one of the best means of acquiring new information, of developing in the student the qualities of originality, accuracy, reliability, a regard for professional ethics and a respect for hard work and properly directed imagination." Survey of catalogs of sixty-three schools shows that seven require a thesis, fifteen offer research as an elective, two schools offer it but give no credit. Pharmaceutical educators have objected to undergraduate research. Insufficient time in the four-year course, expense and, most frequently, that the undergraduate cannot do acceptable research are some objections. Choice of thesis needs careful consideration. Three types may be offered; a library thesis, a simple problem involving laboratory work also. Both types teach the students to make use of scientific journals. The third type is for those whose interests are commercial. Undergraduate research teaches how to use scientific literature, how to organize material, it develops responsibility, serves as apprenticeship for those who plan to enter graduate work and it engenders scientific attitude.—LAWRENCE H. BALDINGER. *J. Am. Pharm. Assoc.*, 25 (1936), 46. (Z. M. C.)

MISCELLANEOUS

Dentistry and Pharmacy. Literature, education and organization are the foundation of any lasting profession. Education is what raises a craft to the dignity of a profession. Historically pharmacy antedates the other health professions. From the time of Hippocrates until the 15th century information on dental disease was a small part of medical literature. In the 18th century dental books began to appear in Europe but writers on American dentistry start with the 19th century. Dental schools were established and in 1897 what is now called the American Dental Association. For more than a hundred years the profession has improved. A dentist discovered nitrous oxide, another discovered ether; both were first used as anesthetics in the extraction of teeth. Research on diets in relation to caries has been extensive. The American Dental Association has a council that determines the worth of drugs and preparations used in dentistry. A list of accepted preparations has been published.—P. T. MEANLY. *J. Am. Pharm. Assoc.*, 25 (1935), 1087. (Z. M. C.)

Pharmacist, Physician and Dentist—National Unity of State Coöperation between. The author outlines the work that is being done in New Jersey to increase professional usefulness of pharmacists. The state pharmaceutical association has a professional relations committee and with coöperation of other professions a New Jersey formulary has been authorized. The Journal of the New Jersey Medical Society each month contains an article concerning these preparations or some in the U. S. P. and N. F. Displays of these special preparations have been shown. Speakers have been arranged for. Comparative cost of a number of preparations are given. A large hospital has requested that a course in prescription writing be given. This coöperative work should be undertaken by the A. PH. A. It was recommended that the Section on Education and Legislation request the A. PH. A. to create a body which will give up-to-date information on a number of things which will help in coöperative service.—GEORGE C. SCHICKS. *J. Am. Pharm. Assoc.*, 25 (1935), 1083. (Z. M. C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Acetyl-β-Methylcholine and Acetyl-choline—Antagonism between the Cardiac Action of, and That of Quinidine. In anesthetized (chloralosane) cats and in isolated cats' and rabbits' hearts quinidine regularly diminished or abolished the ability of acetyl-β-methylcholine and acetylcholine to slow the heart rate. In the intact animal the ability of acetyl-β-methylcholine to prolong auriculoventricular conduction was likewise antagonized by quinidine. The effect of the two choline derivatives on blood pressure was not materially influenced by quinidine. The well-known action of quinidine which blocks the response to electrical vagus stimulation is not identical with that blocking the cardiac action of the choline derivatives, for, under certain circumstances, the former may be at a maximum when the latter is absent or scarcely demonstrable, and vice versa.—ISAAC STARR, JR. *J. Pharmacol.*, 56 (1936), 77. (H. B. H.)

Adrenaline and Insulin—Effects of, on the Oxalic Acid Content of Blood. Adrenaline increases oxalemia in the rabbit; insulin decreases it slightly. Convulsions also are a factor in oxalemia. There is an antagonism between the two hormones as regards the oxalic acid content of blood, the production of which is governed by the factors which affect the mobilization of glucides in the organism.—S. SUZUKI. *Japan. J. Med. Sci., II, Biochem.*, 3 (1935), 23–31; through *Chimie & Industrie*, 34 (1935), 1375. (A. P.-C.)

Bulbocapnine—Pharmacology of. Besides its cataleptic action, bulbocapnine (I), the the principal alkaloid of *Corydalis cava*, has hypnotic properties. In non-cataleptic doses, it can reduce the minimum hypnotic dose of paraldehyde, 5-cyclohexenyl-1,5-dimethylbarbituric acid (Evipan), 5-β-bromallyl-5-sec.-butylbarbituric acid (Pernocton) and 5-β-bromallyl-5-isopropyl-1-methyl-barbituric acid (Eunarcon, II), 30–40% in white mice. The characteristic hyperexcitability evident with sub-threshold doses of barbiturates, especially II, can be removed by small amounts of I. The same is true for combinations of I and sodium 5-ethyl-5-phenylbarbituric acid (Luminal-sodium) in cats. In rabbits, which are very resistant to the action of I generally, this alkaloid may lower the body temperature to 37.1°. It also reduces the fever produced by β-tetrahydronaphthylamine, indicating an action on the heat-regulating center especially since the fever produced by α-dinitrophenol is not affected by I. I also has a marked quieting effect on the various jerky and violent movements induced in rabbits and pigeons by injections of apomorphine (III). There is no effect, however, on the emesis produced by III in dogs. The narcotic effect of morphine is markedly potentiated by I and its emetic effect reduced. The above results with I indicate its applicability with hypnotics or scopolamine clinically in cases where sleep is disturbed by motor unrest and excitation, especially since I is only slightly toxic and does not produce habituation.—FRANZ T. BRUCKE. *Arch expil. Path. Pharmakol.*, 179 (1935), 504; through *Squibb Abstract Bull.*, 8 (1935), A-1810.

Bulbocapnine—Type of a New Group of Medicaments. The so-called true sympathicolytics have the power to reverse the hypertensive effects of adrenaline and to paralyze the adrenaline-sensitive renal vasoconstrictors. Bulbocapnine produces this paralysis but it is unable to reverse the hypertensive effects of adrenaline. It was thought that liminal doses of adrenaline excite the adrenaline-sensitive vasodilators while superliminal doses stimulate at the same time both the vasodilators and the vasoconstrictors, the action of the latter removing that of the former.

True sympathicolytics paralyze the adrenaline-sensitive vasoconstrictors without touching the vasodilators. Bulbocapnine should strike at the same time both the former and the latter. This hypothesis was verified by comparing the action on a dog of bulbocapnine against the phenylethylamine derivative corresponding to adrenaline which has all the properties of adrenaline but acts more energetically on the adrenaline-sensitive vasodilators. If it could be proved that the adrenaline-sensitive dilators are of a sympathetic nature, bulbocapnine should be considered as a more perfect sympathicolytic than those which inverse the hypertensive effects of adrenaline.—RAYMOND-HAMET. *Compt. rend.*, 202 (1936), 357. (G. W. H.)

Bulbocapnine—Use of, in Pre-anesthetic Medication. The toxicity of bulbocapnine and its safety as a pre-anesthetic medicament was determined on white mice. Its lethal dose (50%) was found to be 195 mg. per Kg. subcutaneously, its minimum lethal dose 140 mg. per Kg. and its optimum dose for pre-anesthetic medication (suppression of muscular struggling) 15 mg. per Kg. Efficient doses of bulbocapnine or morphine did not change the mortality curves of ethyl ether or vinyl ether anesthesia. Addition of atropine to bulbocapnine or morphine decidedly decreases the mortality curves of ethyl ether or vinyl ether anesthesia. Bulbocapnine does not markedly affect the Sherrington pseudo pain reflexes. Up to very high doses bulbocapnine has little influence upon heart action and blood pressure. It stimulates respiration up to toxic doses. Respiratory failure occurs shortly before heart failure.—HANS MOLITOR. *J. Pharmacol.*, 56 (1936), 85. (H. B. H.)

Calcium—Form of, Which Acts on the Heart. Calcium is present in the blood in three forms: (*a*) 2.5 to 3 mg. per cent is ionized calcium; (*b*) 5 mg. per cent is in soluble complex compounds; (*c*) 5 mg. per cent is bound up with protein. Similar conditions exist in all body fluids, except urine, and probably in all tissues. Every change in the ions, according to the law of mass action, necessarily alters both the complex forms in the same direction. This reaction of both the complex forms to a change in the ionic form takes place very quickly. Since, therefore, any change in calcium ions only could not be expected to give an answer to the problem, two series of experiments changing the accompanying ions as well, were carried out. The action of calcium and phosphate on the isolated heart of the frog was first investigated. Diastolic arrest of the heart occurred in a solution free from phosphate at $^1/_{30}$ of the normal calcium concentration, but if sufficient phosphate were present, the calcium could be reduced to $^1/_{200}$ of the normal amount without affecting the beat, showing that phosphate can replace calcium to a very large extent. On the other hand, systolic arrest was obtained in a solution free from phosphate by adding seven times the normal amount of calcium; less was needed in the presence of phosphate. This augmentation of the action of calcium on the heart by adding phosphate—in spite of its precipitating action *in vitro*—leads the author to the conclusion, (1) that the complex compounds of calcium must be those which act on the heart, and (2) that phosphate must be one ingredient of the complex compound. The same has been shown by Clark for fatty acids. A second series of experiments has been carried out with calcium and strophanthin on the isolated heart of the tortoise. After administration of strophanthin some calcium passed from the heart into the surrounding fluid. This was shown to be due not to a change in the ionic equilibrium but to a lessened absorption of the complex calcium compounds, glycosides having a surface activity and being adsorbed in place of some of these compounds. The fixation of strophanthin on the healthy normal heart is believed to be due to such an exchange, whereas in the diseased heart, which has lost some of its calcium, the place of calcium is taken by digitalis. This would explain the similarity of the action of calcium and digitalis on the heart.—K. POHLE. *Arch. exptl. Path. Pharmakol.*, 178 (1935), 109; through *Quart. J. Pharmacol.*, 8 (1935), 585. (S. W. G.)

Calcium Salts—Toxicity and Rate of Disappearance of Intracisternally Injected, in the Dog. Solutions of calcium chloride, calcium gluconate and calcium lactate containing 0.25 mg. or less of calcium per Kg. of body weight were injected intracisternally in dogs without the occurrence of pronounced toxic reactions. Larger doses caused pronounced respiratory depression and 0.40 mg. of calcium per Kg. of body weight was found to be a lethal dose in all instances. The simultaneous injection of magnesium chloride and calcium chloride did not increase the tolerance of dogs to calcium chloride. No pronounced differences were found in the rate of disappearance from the cerebrospinal fluid of intracisternally injected calcium chloride, calcium gluconate and calcium lactate, although in some instances the calcium level remained considerably elevated for several hours.—MORTON F. MASON and HARRY RESNIK. *J. Pharmacol.*, 56 (1936), 53. (H. B. H.)

Digitalis—Assay of. In a series of comparative studies on English and Japanese digitalis leaves and digitalis preparations, good agreement was found in results by the Focke intravenous frog and Straub 1-hour frog methods of assay. On the other hand, the 4-hour frog and the M. L. D. mouse methods agreed, but were not in harmony with results by the other frog method. It was believed that the 4-hour frog or the mouse method measured the slowly absorbed constituents, and gave a better expression of clinical value than did methods measuring the acute toxicity.—BUNZABURO NUKI, MASAKATSU TAMAKI and TOSHIZO MATSUO. *Japan. J. Med. Sci., IV, Pharmacol.*, 8; *Proc. Japan. Pharmacol. Soc.* (1934), 146; through *Chem. Abstracts*, 29 (1935), 2306.

Digitalis—Assay of. The relative susceptibilities of Japanese *Rana nigromaculata* Hallowell and the Formosa *Rana tigerina* Daudin were determined for various digitalis preparations with the Focke method of assay. For a 10% infusion the Japanese frog gave a value, V, of 5.31; the Formosan frogs, 3.31; for digifolin, 4.84 and 1.76; for 0.1% solution of heleborein, 11.77 and 7.14.—BUN KO. *Japan. J. Med. Sci., IV, Pharmacol.*, 8; *Proc. Japan. Pharmacol. Soc.*, (1934) 144; through *Chem. Abstracts*, 29 (1935), 2237.

Digitalis—Clinical Testing of. The author points out that while digitalis is usually examined on frogs or on cats, the results in the two species do not always go parallel to one another, and he suggests that the only results of value are those which can be obtained in human patients with heart disease. He has attempted to standardize some proprietary preparations of digitalis and some convallaria leaves by comparing them with strophanthin. On admission each patient was given a daily intravenous dose of 0.3 mg. of strophanthin for about 6 days during which the pulse rate fell. The strophanthin was then discontinued and a digitalis preparation substituted, a fixed daily dose being given. If the pulse rate rose while the digitalis was administered the conclusion was drawn that the dose of the digitalis preparation was less efficient than 0.3 mg. of strophanthin. The author did not succeed in obtaining an equivalence to strophanthin for any of the preparations examined.—E. EDENS. *Klin. Wochschr.*, 14 (1935), 414; through *Quart. J. Pharm. Pharmacol.*, 8 (1935), 587. (S. W. G.)

Digitalis—New Method of Assay of. The author proposes a new method of standardizing digitalis on mice. To each of 5 mice the same dose of digitalis is given by subcutaneous injection; they are kept under observation and every half hour their condition is given a number from 1 to 9 according to the severity of the symptoms. The figure for each mouse is multiplied by its weight in Gm., and the average of the five products is taken to represent the effect in the group. The highest figure for the average is taken to represent the effect of the dose injected. With *Digitalis lanata* the maximum effect is seen in 2.5 hours, with *D. purpurea* it is seen in 4 hours. That quantity of digitalis which gives the number 100 is defined as 100 units of digitalis. The chief disadvantage of the method is that the digitalis has to be given in very concentrated form; a solution of *D. lanata* must be 4% and one of *D. purpurea* must be 15–20%. This means that weaker solutions must be concentrated *in vacuo* before being injected. For an exact estimation the author uses a total of 15 mice. The mean deviation from the average of a series of estimations is less than 5% and deviations of 10% or more never occur.—B. NEILSEN. *Acta med. scand.*, 84 (1935), 315; through *Quart. J. Pharm. Pharmacol.*, 8 (1935), 587. (S. W. G.)

Digitalis Preparations—Bioassay of. In measuring isometric and isotonic contractions of the isolated heart of *Rana nigromaculata*, the isometric contraction "B" measured the absolute contractility and the heat volume "A" was determined from the isotonic contraction. The product of "A" times "B" was taken as a measure of the value of the digitalis preparation. In tests upon 4 proprietary extracts no relation was found between toxicity to the frog heart and the product "AB." Marked differences in potency of the 4 products were found.—TADASHI TAKABE. *Japan. J. Med. Sci., IV, Pharmacol.*, 8; *Proc. Japan. Pharmacol. Soc.*, (1934) 141; through *Chem. Abstracts*, 29 (1935), 2036.

Dilaudid—Effects of, on Intact Uterus of Animals Anesthetized by Cerebral Anemia. These experiments were done mostly upon rabbits, supplemented by a small number of observations upon cats and guinea pigs. Animals were anesthetized by means of the cerebral anemia method suggested by Swenson. The drugs were given intravenously. Dilaudid causes a brief rise in tonus and a prolonged inhibition in rate and force of contraction of the intact non-pregnant rabbit uterus, the effects occurring separately in some animals. The tendency to produce increased tonus and inhibit contractions decreases with the advance of pregnancy; dilaudid is prac-

tically devoid of effect on tonus or movement in the rabbit, cat or guinea pig uterus near term. No decrease in uterine tonus is found after dilaudid. Increased rate of contraction is noted only during the brief period of increased tonus in a few instances. Fetuses are frequently stimulated to kicking movements *in utero* by the intravenous injection of large doses of dilaudid into the mother.—J. B. MITCHELL, JR., and D. S. PANKRATZ. *J. Pharmacol.*, 56 (1936), 69. (H. B. H.)

Dinitrophenol—Effects of, on Deglycogenized Rats. Dinitrophenol failed to cause a rise in the temperature of rats whose glycogen reserves have been greatly reduced by phlorhizin, epinephrine and exposure to cold. The possibility that this failure of response is dependent upon an insufficiency of tissue glycogen is discussed.—BARRETT L. TAUSSIG. *J. Pharmacol.*, 56 (1936), 223. (H. B. H).

Equilin—Some Biological Properties of. Œstrone and equilin have been compared as to their relative effects on the sexual organs of mice, rats and guinea pigs. To induce œstrus in the castrated mouse, 0.15 microgram of equilin was as effective as 0.10 microgram (1 international unit) of œstrone. For rats, equilin was found to be four thirds as œstrogenic per mg. as œstrone, contrary to the findings of Firard. In other tests, the two hormones were employed in doses equal as regards their œstrogenic powers toward the mouse. Equilin was the more active in producing uterine and vaginal growth in the rat, inhibition of the testes and secondary sex organs of the male rat, stimulation of the mammary gland of the guinea pig and metaplasia of the prostatic epithelium of the mouse. Œstrone was the more active in stimulating growth of preputial glands in the young female and male rats, and of the seminal vesicles in the entire rat, "paradoxical" stimulation of the growth of seminal vesicles in the young castrated rat or of nipples in the guinea pig, metaplasia of the vesicular duct epithelium of the mouse, and changes in the connective tissue of the mouse's vas deferens. It is concluded that the presence of equilin in commercial œstrogenic preparations cannot be regarded as an undesirable contamination.—K. DAVID and S. E. DE JONGH. *Biochem. J.*, 29 (1935), 371; through *Quart. J. Pharm. Pharmacol.*, 8 (1935), 557. (S. W. G.)

Ergometrine—Pharmacology of. This paper records a lengthy investigation of the action of ergometrine. In mice doses of 0.1 mg. per Gm., like similar doses of ergotoxine, do not cause death, but symptoms of sympathetic stimulation; ergine, however, is rapidly fatal in 0.08 mg. per Gm. In the rabbit the effect of ergometrine is like that of -tetrahydronaphthylamine, causing raised heart beat. In the cat ergometrine, like ergotoxine, causes incoördination of movements and great anger, with dilatation of the pupil. This dilatation is in part due to the liberation of adrenaline from the suprarenal glands, which are stimulated by impulses proceeding by way of the splanchnic nerves. Ergometrine causes darkening but not gangrene of the cock's comb. The darkening appears after oral administration, whereas the effect of ergotoxine by mouth in the cock is relatively slight. The effect of ergometrine passes off in 24 hours, whereas that of ergotoxine (given by intramuscular injection) persists. The effects of ergometrine on the blood pressure of the spinal cat are similar to those of ergotoxine, but are much feebler in intensity. There is a diminution but not a reversal of the pressor effect of adrenaline. The peculiar property of ergometrine is that it can cause prolonged rhythmic activity in a quiescent uterus; its effect differs from that of ergotoxine in that the latter produces an exaggerated tone, rather than an increase of rhythm. Ergometrine does not paralyze the stimulant action of adrenaline, as ergotoxine does. When a uterus already has a vigorous spontaneous rhythm, ergometrine does not enhance it. Although general toxic effects of ergometrine are seen when it is given by mouth, effects on the uterus of animals are only occasionally seen. The authors say "in dealing with impure extracts the action with oral administration to anesthetized animals would have been too irregular, and the action with parenteral injection, or application to isolated tissues, too much complicated by the presence of other ergot alkaloids and of histamine, for any certain recognition of the presence of an additional activity due to a substance with the properties of ergometrine."—G. L. BROWN and HENRY DALE. *Proc. Roy. Soc., Ser. B.*, 118 (1935), 446; through *Quart. J. Pharm. Pharmacol.*, 8 (1935), 588. (S. W. G.)

Ether Anesthesia—Changes in the Serum Potassium Content during and following Anesthesia. Studies were made upon dogs. Under ether anesthesia there was an immediate fall in the serum potassium concentration which persists for at least thirty minutes after the anesthetic is stopped. The serum potassium concentration returned to its normal level within five hours after anesthesia. The serum potassium value for dogs is about 20 mg. per 100 cc.

and for guinea pigs, 34 mg. per 100 cc.—B. H. ROBBINS and H. A. PRATT. *J. Pharmacol.*, 56 (1936), 205. (H. B. H.)

Ethyl Alcohol—Pharmacology of. I. Effects of Grain and Synthetic Ethyl Alcohols. II. Local Irritant, Anesthetic and Toxic Effects of Three Potable Whiskies. The local irritant, corrosive, anesthetic and toxic effects of equivalent concentrations or dosages of C. P. ethyl alcohol obtained from fermented grain or prepared synthetically were indistinguishable by pharmacological tests on egg white, isolated surviving tissues, paramœcia, daphnia, helminthes, rats, rabbits, cats or man. The presence of solids, extractive, etc., as present in whisky accentuated the local irritant properties of alcohol *per se* as judged by a comparison of the effects of whisky and equivalent concentrations of alcohol on subcutaneous injection into the rabbit ear, the greater incidence of emesis and the greater degree of gastritis in cats. The toxicity of whisky for paramœcia distinctly exceeds that of equivalent concentrations of pure ethyl alcohol. The observed order of toxicity from high to low is as follows: "straight run," "synthetic or grain blended" whiskies, grain alcohol and synthetic ethyl alcohol. The results obtained following the administration of whisky intraperitoneally in the rat, orally and intravenously in the rabbit and orally in the cat permits similar conclusions. Alcohol administered in a concentration of 7.5% of absolute alcohol by volume to young rats as the sole source of fluid in the form of grain or synthetic ethyl alcohols or as whisky was without significant effect on the normal growth rates during the period of study. Concentrations of 15% alcohol fed under similar conditions slightly (whisky) or definitely (grain alcohol) retarded growth. The secretory reactions of the fasting human stomach differed in no significant respects following the administration of a standard alcohol meal either in the form of grain or synthetic ethyl alcohol, "straight run" or blended whiskies. The order of irritation following the administration of a 30% concentration of alcohol judged subjectively, as well as objectively by the fasting mucous values, from high to low is as follows: straight run, grain or synthetic blended whiskies and grain or synthetic ethyl alcohols. The tone and peristaltic activity of the human stomach was diminished by all doses of alcohol tested. The median effects of single therapeutic doses were transient and in certain individuals the tone and motility was actually increased by whisky. This type of reaction was not observed after alcohol *per se*. Five therapeutic doses of whisky depressed gastric tone and motility but to a lesser degree than after equivalent doses of alcohol *per se*.—O. W. BARLOW. *J. Pharmacol.*, 56 (1936), 117. (H. B. H.)

Fluidextract of Ergot. Effect of Acidity on Biologic Acitivity as Determined by U. S. P. 1935. Revised Assay. Attention has been directed to the influence of acid upon the yield of ergot alkaloids and also upon the stability of the alkaloids. In 1930 a series of experiments was undertaken in order to study the value of acid in extracting the drug. General indications were that increase in acidity increased initial and maintained activity of the extract but there were some unexplained irregularities and it appeared possible that increased acidity might in itself be a factor in the higher activity as determined by the cock's comb assay. Experimental work reported covers details of procedure and method of calculation and also preparation of the samples. Results are carefully tabulated. The author reaches the following conclusions: 1. Neutralization of an acid fluidextract of ergot at the time of injection resulted in a decrease of apparent activity proportional to the amount of alkali added. 2. Adjustment of the p_H of a neutral alcoholic extract from 5.7 to 3.2 by addition of hydrochloric acid increased by 32% the apparent activity so it was thought that the apparent decrease in activity which followed neutralization of the acid fluidextract was not related to the added alkali. 3. Simultaneous injection of hydrochloric acid equivalent to that in the neutral alcoholic fluidextract did not increase apparent activity of the fluidextract as compared to the activity observed in a second series of cockerels injected with the neutral fluidextract alone. It was concluded that observed influence of the degree of acidity is not related to any systemic factor but is to be explained in terms of the rate of absorption of the ergot alkaloids. 4. Using tartaric acid with solutions of ergotoxine ethanesulphonate, it was concluded that the apparent activity of ergotoxine ethanesulphonate is influenced in the same way by acid that the fluidextract was, though probably to a lesser extent. 5. It was concluded that the U. S. P. X assay value of fluidextract of ergot may be materially influenced by the acidity of the solutions. This suggests that the U. S. P. monograph should have a specification for the adjustment of solutions intended for injection to a stated p_H.—F. F. BERG. *J. Am. Pharm. Assoc.*, 25 (1936), 32. (Z. M. C.)

Follicular Hormone—Action of, on the Coagulation of Blood. A study of the action of

folliculine on the time of coagulation of blood and on the calcium (diffusible fraction) and fibrinogen contents of blood. Subcutaneous injection of folliculine into normal male dogs decreases the time required for coagulation of the blood and tends to increase the fibrinogen and calcium contents; when added *in vitro* to the blood of the same animal it exerts no action on the time of coagulation nor on the calcium and fibrinogen contents. The action of folliculine on calcemia and on coagulation can be explained by an excitation of the parathyroid glands, as it possesses a chemical structure analogous to that of irradiated ergosterol which has been shown to act through the intermediary of the parathyroid glands; moreover, folliculine exerts an action on the anterior pituitary lobe which secretes a special hormone. It is suggested that hemophily might be treated by a sexual hormonotherapy consisting in administering ovarian extracts to hemophilic patients. The attempts that have been made along these lines having given results that are sometimes successful and sometimes unsuccessful; the absence of folliculine in the urine is not a constant phenomenon in hemophilic cases, and it is sometimes observed in the absence of the disease.—M. SAVIANO. *Mem. R. Acad. Lincei (Cl. Sc. Fis.)*, 6 (1935), 163–183; through *Chimie & Industrie*, 34 (1935), 1372–1373. (A. P.-C.)

Methyl-2-Keto-Gluconate—Antiscorbutic Properties of. The substance protects guinea pigs against scurvy when fed at levels of more than 20 mg. per day. The curative dose is 50 mg. per day.—A. E. SIEHRS, PAUL GOTTARDO, F. G. BRAZDA and C. O. MILLER. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 422. (A. E. M.)

Morphine, Heroine, Dilaudid and Codeine—Analgesia, Subjective Depression, and Euphoria Produced by, in the Normal Human Subject. A technique is presented, and its advantages and limitations described, whereby the von Frey hairs are utilized in establishing the average pain threshold on five sensitive face spots. This procedure is applicable in a reasonably quantitative manner to the study of the rapidity of onset, intensity and duration of action of analgesia produced by drug action in the normal human subject. Morphine, heroine, codeine and dilaudid have been studied following both subcutaneous and intravenous injection in eight subjects as regards the analgesia, subjective depression, euphoria and side actions produced by these four drugs. The subcutaneous dosages of the four drugs which produce a comparable elevation of the pain threshold were as follows: morphine sulphate, 10 mg.; heroine hydrochloride, 1 to 2 mg.; dilaudid hydrochloride, 0.8 to 1 mg.; codeine phosphate, 64 mg. On this dosage basis, these drugs appear to be potent in the order named with respect to the following qualities. *Duration of Action.*—Morphine, dilaudid, codeine and heroine. *Duration and Intensity of Subjective Depression.*—Morphine, dilaudid, heroine and codeine. *Euphoria.*—Heroine, morphine, dialudid and codeine. *Side Actions.*—Morphine, dilaudid, codeine and heroine. The average time interval, which must elapse after subcutaneous injection of the four drugs before the maximum elevation of the pain threshold occurs, is as follows: Heroine, thirty minutes; codeine, thirty to sixty minutes; morphine, sixty to ninety minutes; dilaudid, ninety minutes. After intravenous injection, the peak of analgesia occurs at twenty minutes with all four drugs. In addition to the latter fact, evidence is presented to show that the variations between subcutaneous and intravenous administration result primarily from differences in the absorption rate from the skin area. Intravenous differs from subcutaneous administration of the above doses of the four drugs as follows: 1. A less pronounced and less prolonged elevation of the pain threshold occurs, the rise being relatively the same with morphine, dilaudid and codeine, whereas heroine is almost as effective as if given under the skin. 2. Greater subjective depression for a short period and less euphoria occurs, the drugs having the same order of potency as for subcutaneous administration. The analgesic action of these compounds appears to involve an influence upon a different mechanism than that which is responsible for subjective depression or narcosis, since no absolute correlation between the two could be made. In a few experiments, where scopolamine was administered alone, an intense subjective depression was produced which tended to lower rather than to raise the pain threshold. No potentiation of the morphine curve was obtained when the two drugs are given simultaneously. The observation of Mullin and Luckhardt, that hypersensitivity to painful stimuli is a common sequel to a previous drug elevation of the pain threshold, is confirmed.—M. H. SEEVERS and C. C. PFEIFFER. *J. Pharmacol.*, 56 (1936), 166. (H. B. H.)

Myrrh, Krameria and Eriodictyon—Contribution to the Pharmacology of. The local effect of the three vegetable astringents, myrrh, krameria and eriodictyon, was studied on the mucous membranes of the mouth, tongue and pharynx and compared with that of tannic acid alone. It

was found that tannic acid markedly delayed the absorption through the mucous membrane of the powerful alkaloid nicotine, subsequently applied, while the vegetable astringents did not. This was true of the mucous membranes of the pharynx, of the tongue and of the cheeks. Experiments on surviving intestinal segments in oxygenated Locke solution revealed that tannic acid alone produces a slight inhibition of the amplitude and the rate of rhythmic contractions without injuring the preparation. The three vegetable astringents, however, produced paralysis and death of the intestinal muscle, as indicated by its failure to respond to subsequent treatment with such powerful stimulants as pilocarpine, etc. It is therefore concluded that both in respect to their local effect on the mucous membranes of the mouth and in respect to their effect on the intestines, myrrh, krameria and eriodictyon act very differently from pure tannic acid solutions. This difference must be ascribed to the presence of volatile oils or some other constituents of the three vegetable astringents.—DAVID I. MACHT and HILAH F. BRYAN. *Am. J. Pharm.*, 107 (1935), 500. (R. R. F.)

Parathyroid Hormone—Use of Mice in the Standardization of. The following summary is given: 1. The proposal of Simon (*Arch. exptl. Path. Pharmakol.*, 178 (1935), 57) to use the antagonism between calcium and magnesium salts for measuring parathyroid activity has been examined. A method of arranging groups of animals to give reliable quantitative results is described. 2. The principle underlying the method is that the increase of blood serum calcium, caused by injections of parathyroid into mice, reduces the narcosis produced by injections of magnesium sulphate. 3. When using the method to compare the potency of two parathyroid extracts, it is recommended that (I) at least twenty mice be used in each group, (II) the dose of magnesium sulphate by 1.7 to 1.8 mg. of $MgSO_4.7H_2O$ per Gm. of body weight, (III) the maximum number of mice affected between 20 and 60 minutes after the injection of magnesium be recorded. 4. The percentages of mice affected by the two extracts under comparison are then referred to the curve relating dose to effect and the corresponding abscissæ found. The two potencies are then proportional to the abscissæ, *i. e.*, to the two doses of standard extract used in preparing this curve. 5. Until the standard powder now in course of preparation is ready, the potency of an extract must be compared with that of a reliable preparation such as parathormone (Lilly) used as a provisional standard. 6. Parathormone was found to supplement the calcification produced by vitamin D in the "Line Test." At least 10 daily injections each of 20 Collip units were required to produce a measurable effect with the parathyroid alone.

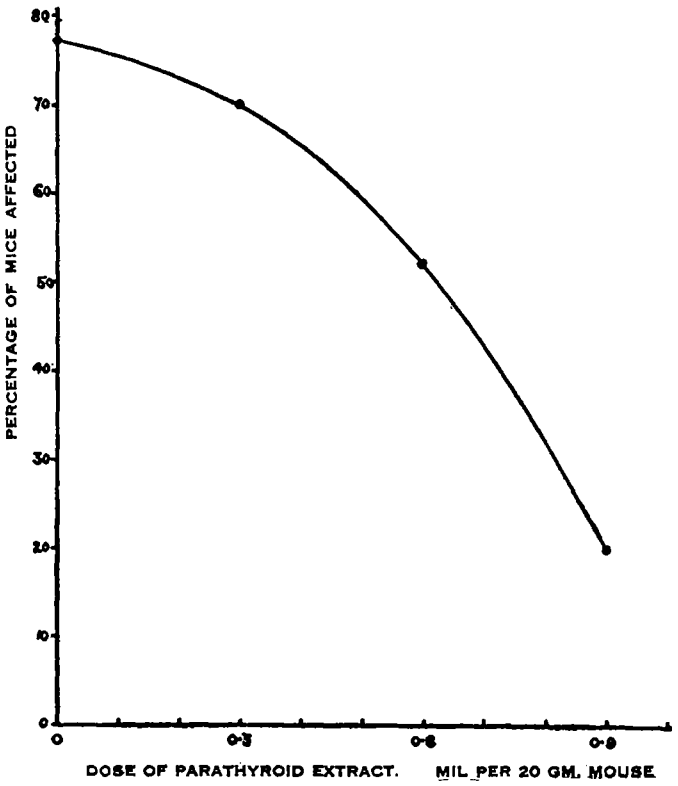


Fig. 1.—Effect of Parathyroid Extract (A) in Preventing Narcosis in Mice Produced by Injections of Magnesium Sulphate.

7. Apart from the fact that this effect is not specific for the hormone, the expense involved would not justify the use of the line test for measuring parathyroid activity.—F. J. DYER. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 513–524. (S. W. G.)

Physostigmine—Pharmacological Action of. Physostigmine opposes the synaptic paralysis due to nicotine or curare in the sympathetic as well as the parasympathetic system.—THEODORE KOPPANYI, CHARLES R. LINEGAR and JAMES M. DILLE. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 438. (A. E. M.)

Pituitary Preparations, Posterior—Effects of, upon Colloid Osmotic Pressure of Serum Protein, Water and Mineral Metabolism of Dogs. Dogs weighing 10 to 18 Kg. were given single subcutaneous injections of 20 to 50 international units of pituitrin and of pitressin. A rather marked hydremia was observed one hour after injection of the pressor hormones. Examination of the blood showed a fall in hematocrit, a decrease in the specific gravity, the refractive index and total protein of serum, and an increase in the plasma volume. The colloid osmotic pressure of the serum changed merely in proportion to the concentration of serum protein. The pressure per gram of protein (specific pressure) showed moderate variations, but these variations were not related to the administration of pituitrin or pitressin. The fact that significant changes in the specific pressure were not observed after the injection of the hormones is evidence against any marked change in the state of molecular aggregation of the serum proteins. During the period of hydremia, the potassium content of the serum increased. It is suggested that the hydremia and increase in the concentration of potassium in the serum were caused by transfer of cell water and potassium to extracellular fluid.—KINTARO YANAG. *J. Pharmacol.*, 56 (1936), 23. (H. B. H.)

Sparteine—Antagonism of, to Yohimbine in Adrenalinic Hyperglycemia. By determining at intervals the blood sugar of rabbits which at first had received subcutaneously 0.007 Gm. of yohimbine hydrochloride per Kg., and after 20 to 30 minutes 0.001 Gm. of adrenaline per Kg. which normally produces a strong hyperglycemia for 3–4 hours, it was found that there was only a slight hyperglycemia. After about one hour 0.01 Gm. of sparteine sulphate per Kg. was injected intravenously and 0.02 Gm. per Kg. subcutaneously, and this was followed by a strong hyperglycemia. This antagonism of sparteine and yohimbine in adrenaline hyperglycemia is the same as that shown to the vasoconstriction and hypertension in dogs.—RENE HAZARD. *Compt. rend.*, 202 (1936), 345. (G. W. H.)

Strophanthus Hispidus and Strophanthus Kombé—Pharmacological Differences between Tinctures of. In perfusion tests on the heart of the toad, tincture of *Strophanthus Kombé* was found to be much more active than tincture of *S. hispidus*. It decreases the activity of the auricle and increases that of the ventricle, by first producing an increase in cardiac tonus and then stopping the heart in systole; moreover, it easily produces circulatory disturbances which persist even after washing with physiologic salt solution. The disturbances produced by *S. hispidus* are much less marked; stopping in systole is rather exceptional and there are no extrasystoles. It was observed that 0.03 Gm. of tincture of *S. Kombé* produced vomiting and caused the death of a pigeon in 24 hours; 0.05 Gm. of the same tincture caused death almost instantly; the same amount of *S. hispidus* caused vomiting, but the animal was again normal at the end of 30 minutes. Finally, injection of 0.03 Gm. of tincture of *S. Kombé* in the heart of a frog in systole stopped it in 15 minutes; the same quantity of *S. hispidus* produced the same result in 40 minutes.—N. SABATUCCI. *Scienza Farm.*, 3 (1935), 49–63; through *Chimie & Industrie*, 34 (1935), 1375. (A. P.-C.)

Ustilago Maidis—Comparative Study of the Toxicity of Aqueous Extracts of, and Ergot Preparations. An aqueous extract of *Ustilago maidis* (I) prepared by extracting 10 Gm. of 6 months old Jugoslavian spore material for five hours at 60° C. with 90 Gm. distilled water, evaporating the filtrate to dryness and dissolving the residue in 10 cc. of 0.9% sodium chloride solution is much more toxic to mice than commercial ergotamine tartrate (gynergen) or ergotin (II). Acute intoxication with 0.5 cc. of I was equivalent to that with 1 cc. of II. Symptoms of acute toxicity were hyperemia of the tail, feet and ears, complete paralysis of the hind extremities, clonic-tonic convulsions, bloody urine and death. Symptoms of chronic poisoning with I and II were paralysis and gangrene. Feeding 8% *Ustilago polenta* provoked hyperemia and cyanosis of the extremities, paralysis of the hind extremities, gangrene of the snout and clonic-tonic convulsions after 14 days. Post-mortem findings are described. The analogy of the symptoms produced by the drugs indicate that *Ustilago maidis* contains a large amount of ergotamine-like

drugs.—B. DRAGISIC and B. VARICAK. *Arch. exptl. Path. Pharmakol.*, 179 (1935), 319; through *Squibb Abstract Bull.*, 8 (1935), A-1655.

Vitamin D by Inunction. In 1927, to prove that the absorption of vitamin D from the skin was a possibility, experimental animals were fed on a ricket-producing diet for four weeks, then irradiated cholesterol, with hardened cottonseed oil to make the cholesterol adhere, was applied to the depilated backs of the animals for 10 minutes three times a week. The inunction resulted in renewed growth, protection from rickets and an almost normal calcification of the bones. Recently in 1935, an attempt has been made to determine the amount of vitamin D it is necessary to absorb through the unbroken skin to prevent and heal rickets in experimental animals. Animals were fed on a standard rachitogenic diet and areas of skin from which the hair had been removed by a sulphide depilatory were treated by irradiated ergosterol inunction. The X-rays and "line charts" indicated that the inunction not only prevented rickets but produced well-advanced healing. From the evidence available, although the dermal absorption of vitamin D appears an established fact, the advantages of such a method are not quite clear.—*Chem. and Drug.*, 123 (1935), 281. (T. G. W.)

Vitamins—Absorption of, through the Skin. The author considers that the results of J. Blier's investigation (*Rev. Pathol. Comp. Hyg. Gen. Publique* (Aug. 1935)) regarding the frequency of cancer among those who handle raw meat proves conclusively that biological products of the nature of hormones or vitamins that protect against cancer are absorbed through the teguments of the hands.—R. M. GATTEFOSSE. *Parfumerie Moderne*, 29 (1935), 369. (A. P.-C.)

TOXICOLOGY

Barbiturate Poisoning—Antidotal Action of Picrotoxin in Extreme Cases of Experimental. Dogs receiving four times the average fatal dose of sodium barbital (1.25 Gm. per Kg.) will survive with the aid of picrotoxin. It is doubtful whether the animal's life can be saved after doses of more than 100 mg. pentobarbital per Kg. Doses of picrotoxin amounting to 0.1 Gm. per Kg. administered during 24 hours can be tolerated if the animals are in a state of great depression.—CHARLES R. LINEGAR, JAMES M. DILLE and THEODORE KOPPANYI. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 396. (A. E. M.)

Ephedrine—Toxic Effects of. Nausea is one of the commonest symptoms of the toxic effects of ephedrine, others being palpitation, sweating and throbbing of the temples. These results are referable to the cardio-vascular action of the drug.—ANON. *Pharm. J.*, 135 (1935), 641. (W. B. B.)

Potent Medicaments in Sugar-Coated Pills and in Confections. The problem of disguising disagreeable medicine deserves consideration. Sugar-coating not only makes things more agreeable to take but also allows children to eat many poisonous things. The author cites numerous cases of small children being accidentally poisoned by eating tablets or pills, a good percentage of them containing strychnine. Scientific groups have seriously considered the subject. It has been suggested that the pills or tablets be left uncoated or even coated with something bitter. The value of strychnine in laxative pills is being questioned from the standpoint of therapeutics. Certainly the problem of candied or sugar-coated medicaments merits consideration.—JOHN F. SUCHY. *J. Am. Pharm. Assoc.*, 25 (1935), 1081. (Z. M. C.)

Salvarsan Poikiloderma. A report is given of secondary changes occurring after arsphenamine, consisting mainly of general rapidly appearing dermatoses which with their polymorphic characteristics, atrophy, reticular pigment disturbances, crested horny growths and ectatic vascular degeneration are indicative of poikiloderma. The origin, as in most arsenobenzene reactions, is in the damaged capillaries which permit the absorption of toxic serum. Complete healing is no longer possible since, besides the elastin network, the sebaceous and sweat glands are severely damaged.—G. NOBL. *Wien. med. Wochschr.* (1935), 39; through *Squibb Abstract Bull.*, 8 (1935), A–1698.

Strychnine—Poisoning by, with Recovery. A woman, aged 25, attempted to commit suicide by swallowing one ounce of solution of strychnine hydrochloride, approximately 4 grains of strychnine hydrochloride. Convulsions began one-half hour later and continued for one-half hour before she was attended by a physician who administered 1/4 grain of morphine hypodermically and two drachms of solution of morphine hydrochloride by mouth and anesthetized the patient with ether. She was sent to a hospital where gastric lavage was performed with four pints of

weak potassium permanganate solution two hours after taking the drug. Convulsions were stopped by the use of 120 grains potassium bromide, chloroform anesthesia and 7 grains of sodium luminal and 1 Gm. sodium evipan, the latter two being given intravenously. The patient left the hospital five days later apparently well.—T. ROSE. *Australasian J. Pharm.*, 16 (1935), 269. (T. G. W.)

THERAPEUTICS

Alkyl- and Alkylene-Mercapto Groups—Influence of, on the Therapeutic Action of Organic Compounds. III. Some Alkyl-Mercapto Compounds. When chloro-2 or chloro-4-nitrobenzene is treated with sodium bisulphide, dinitro-4, 4'- or dinitro-2,2'-diphenyl disulphide is formed. Under the action of sodium monosulphide it breaks down into two molecules of sodium nitro-2- or sodium nitro-4-phenylmercaptan. The latter combines with allyl bromide to give nitro-2- or nitro-4-phenylallyl sulphide, which on reduction with iron and hydrochloric acid yields the corresponding amino derivative. Amino-4-phenylallylsulphide is easily acetylated by acetic anhydride to allyl-4-mercaptoacetanilide. Amino-2-phenylallyl sulphide behaves differently and yields diacetylamino-2-phenylallyl sulphide. With potassium cyanate, in presence of sodium acetate, the hydrochlorides of the two amino-phenylallyl sulphides give the corresponding allyl-2- and allyl-4-mercaptophenylureas. The latter differ from dulcin in that they have no characteristic taste. Amino-2- and amino-4-phenylallyl sulphides combine with benzaldehyde and pyruvic acid to give allylmercapto-6- and allylmercapto-8-quinolein carboxylic acids (allylmercapto atophan). The antipyretic action of these two atophan derivatives is quite negligible, as is that of allylmercapto-4-acetanilide. Allylmercapto-4-phenylurea produces a slight rise in temperature. Dibromoallylmercapto-4-acetanilide possesses somewhat more pronounced antipyretic properties, but produces vomiting.—K. BRAND and W. BAUCH. *Arch. Pharm.* (Feb. 1935), 65–76; through *Chimie & industrie*, 34 (1935), 1366–1367. (A. P.-C.)

Amibiarson—Value of, in Treatment of Chronic Intestinal Amebiasis. Amibiarson is a new drug similar to *N*-carbamylarsanilic acid (carbarsone) with amebicidal properties. A dose of 0.25 Gm. in gelatin capsules twice daily for 10–15 days in conjunction with daily saline purgatives in 40 cases of chronic intestinal amebiasis, produced cure in 63%, indeterminate results in 17% and failure in 20%. Untoward effects were mainly on the gastro-intestinal and nervous systems. There were observed slight pain in the epigastric region, flatulence, slight headache and insomnia. All symptoms disappeared on the cessation of treatment.—R. N. CHOPA, B. SEN and G. SEN. *Indian Med. Gaz.* (June 1935); through *Squibb Abstract Bull.*, 8 (1935), A–1805.

Aromatherapy. A review of the use of essential oils as therapeutic agents, dealing successively with their action on the respiratory organs, as revulsive agents, on the nervous centers, on the digestive tract and as anti-toxic agents. Experiments were carried out comparatively on guinea pigs by giving them ethyl alcohol, pure and with addition of essential oils such as are present in liqueurs, the amounts given daily over a period of 28 days increasing from 0.5 to 2 Gm. of 30% ethanol, corresponding to about 0.5 liter per day of commercial liqueur for an adult man. The results showed that the addition of essential oils to a toxic substance such as alcohol decreases its toxicity, facilitates elimination through all the natural means and opposes the tonic or special actions of the oils to the toxic action of the alcohol. The volatile principles of essential oils have a very low toxicity; that of the whole oil is about 10 times greater, while that of the nonvolatile portion freed from the volatile fraction is from 50 to 100 times greater. The pharmacological and practical (as regards consumption of liqueurs) consequences of these results are briefly discussed.—R. M. GATTEFOSSÉ. *Parfumerie Moderne*, 29 (1935), 511–529. (A. P.-C.)

Ephedrine—Retention of Urine Due to. Three cases are presented to show that prolonged use of ephedrine, *e. g.*, in asthmatics, may cause acute retention of the urine probably due to a sympathetico-mimetic action which increases spasm of the internal sphincter. These cases all showed evidences of prostatism. Utilizing this principle, the authors applied ephedrine in cases of weak sphincteric control, *i. e.*, dribbling and incontinence, resulting from prostatectomy. Of the 5 cases treated two showed no improvement, one improved but probably not because of the ephedrine, while the remaining two showed marked benefit. The dosage used was $^3/_8$ and $^3/_4$ gr. ephedrine sulphate three times daily. It is felt that enough success has been obtained to warrant further observation on the therapeutic use of ephedrine for the retention of the urine.—JULIUS J. VALENTINE and JOHN S. FITZGERALD. *J. Urology*, 34 (1935), 314; through *Squibb Abstract Bull.*, 8 (1935), A–1708.

Hexylresorcinol—Use of, in Treatment of Tapeworm Infestation. In 75% of the cases, segments of *Tænia saginata* reappeared in the feces 2–3 months after administration of 1–2 doses of hexylresorcinol (0.4–1.0 Gm. dose) at 1-day to 1-week intervals; the other cases were apparently cured. After administration of the drug to a person harboring *Diphyllobothrium latum* eggs could not be found in the feces for about 6 weeks, but subsequently they reappeared in large numbers.—O. R. McCoy. *Proc. Helminthol. Soc. Washington*, 1 (1934), 7; through *Chem. Abstracts*, 29 (1935), 3401.

Iron in Chemistry and Pharmacy. III. Compounds. An historical review of the compounds and forms of iron used in medicine.—G. M. Dyson. *Pharm. J.*, 135 (1935), 679. (W. B. B.)

Vangueria Edulis—Anthelmintic Action of the Root Bark of. Boil the ground bark for 10 min. with an equal quantity of water and press through linen; to 1 liter of the liquid add 100 Gm. of sugar and 0.5 Gm. of thymol (as preservative). The dose for adults is 300 cc.; for children 10 yrs. of age, one-half the amount. The active principle is neither a saponin nor an alkaloid.—G. Teichler. *Arch. Schiffs- u. Tropen-Hyg.*, 39 (1935), 211–213; through *Chimie & industrie*, 34 (1935), 1369. (A. P.-C.)

X-Rays—Use of, in Skin Treatment. Short of destructive effects, X-rays set up a reaction in the skin which may have very beneficial results in certain pathological conditions and may result in the restoration of practically normal skin. Young and actively growing cells are specially vulnerable to X-rays. Bacteria are affected directly only a little, although they are affected indirectly in the tissue by the hypermia and phagocytosis and probably by other changes produced there by exposure. One of the most striking skin effects is in the relief of pruritus or itching, and chronic conditions defying all other remedies often yield to X-ray treatment.—Anon. *Pharm. J.*, 135 (1935), 630. (W. B. B.)

NEW REMEDIES

Specialties

Acécolex is an ointment containing 2% of acetylcholine combined with fenchone in an anhydrous base. It is recommended for the treatment of conditions requiring an epithelial stimulant, such as varicose ulcers and atomic wounds. A thick coating of acécolex is applied to the wound and surrounding skin, and covered with a dressing. Pain very rapidly disappears, and ulcers usually cicatrize in a week; more heavily infected wounds become healthy in a week and cicatrize in a month. Acécolex is not toxic even when applied in large quantities. It is supplied in 35-Gm. and 105-Gm. tubes.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 603. (S. W. G.)

Adonigen Plugs (Chem.-phar. Werke, Bad Homburg) contain adonigen concentrate, valerian extract, etc.; dose for adults, 1 plug of 1500 F. D., for children, 1 plug of 500 F. D.; sold in packages of 10.—*Pharm. Presse*, 41 (1936), 21. (M. F. W. D.)

Anaquintine nasal drops contain benzaldehyde 0.25%, thymoform 0.3%, eucalyptol 0.1%, thymol 0.6%, menthol 0.25%, ephedrine 0.5%, α-butyl para-aminobenzoate 0.5% in poppy seed oil. It is recommended for the disinfection of the nasal passages in the treatment of colds, catarrh and sinusitis. It can also be used with advantage in cases of influenza, whooping-cough and mumps. Anaquintine is supplied in a vial fitted with a patent drop-counting instillator which ensures asepsis and correct dosage. Three to 8 drops, 3 to 5 times a day, in each nostril is the dose suggested. Anaquintine is supplied in bottles containing 22 cc.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 603. (S. W. G.)

Angiolingual Tablets (Ernst Silten, Berlin) contain 0.0006 Gm. nitroglycerin, etc., packages of 20.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Antihyperton contains strontium thiocyanate, theobromine and carbon issued in the form of pills for the reduction of blood-pressure. It is claimed that in this preparation the hypotonic action of the thiocyanate has been combined with the soothing and moderating effect of strontium on the nervous system. Theobromine relieves a tendency to arteriosclerosis, cramp and cardiac failure, while the carbon is included to combat the intestinal poisons which may have a direct influence on blood-pressure. The average dose is 2 pills 3 times a day. Antihyperton is supplied in bottles of 50 pills.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 604. (S. W. G.)

Antiproktan-Cure-Ampuls (Syngala G. m. b. H., Vienna, 16th dist.) are put up in packages

of 1, 3 and 6 ampuls containing quinine dihydrochloride, urethane, plenocaine and tincture catechu.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Antiproktan-Cure-Powder (Syngala G. m. b. H., Vienna, 16th dist.) aluminum acetotartrate, bismuth subgallate, anæsthan, catechu, zinc oxide and talc; packages of 50 Gm.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Antiproktan Suppositories (Syngala G. m. b. H., Vienna, 16th dist.) contained antipyrine, anæsthan, catechu, menthol, extract of belladonna and cacao butter.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Antitanal tablets (Fabrik für pharm. Spezialitäten, Homöpathie und Biochemie G. A. Reinecke, Hannover) contain phenylquinoline carboxylic acid and are used for gout and rheumatism.—*Pharm. Zentralh.*, 76 (1935), 595. (E. V. S.)

Arbuz (Dr. Schwab G. m. b. H., München) contains as much as 90% of the isolated milky juice of *Carica papaya* L. It is indicated for use in gastroenteritis, for disturbances of the digestive tract, and for digestive help in chlorosis, tuberculosis, etc.—*Pharm. Zentralh.*, 76 (1935), 620. (E. V. S.)

Bilival (Ernst Bischoff Co., Inc., New York, N. Y.) is sodium lecithinocholicum. It stimulates the secretion and flow of bile. The dosage is two to four pills three times a day after meals, in acute conditions. One pill thrice daily prevents recurrence. By preventing the precipitation of cholestrin it acts as a prophylactic against gall stones; useful in biliary stasis, hepatic insufficiency, habitual constipation, biliary colic and toxic headache. It is supplied in bottles of 100 pills.—*Drug. Circ.*, 79 (Aug. 1935), 30. (T. G. W.)

Calbrolact is an equimolecular compound of calcium bromide and calcium lactate having the formula $CaBr_2.Ca(C_3H_5O_3)_2$. It is supplied in tablet form, and it does not deteriorate when exposed to the atmosphere. It is readily absorbed from the gastro-intestinal tract, and does not cause eruption of the skin, or gastric disorder. Calbrolact is claimed to combine the action of calcium as a physiological regulator of the nervous system with the sedative effect of bromides. It is indicated for the treatment of epilepsy, insomnia and functional nervous disorders. The adult dose is 2 to 6 tablets daily. Calbrolact is supplied in bottles of 50 and 100 tablets.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 604. (S. W. G.)

Calcium-Injecta (Gehe and Co., A.-G., Dresden N. 6) is a sterile stabilized solution containing 10% (or 20%) of pure calcium gluconate with a calcium oxide content of 1.26% (or 2.52%) and a calcium content of 0.9% (or 1.8%). It is used in the treatment of inflammatory processes, asthma, urticaria, bleeding, tetanus and in dermatological cases.—*Pharm. Zentralh.*, 76 (1935), 620. (E. V. S.)

Calcium-Sandoz. The combination of the contents of these ampuls, for injection, is now known. The 10% as well as the 20% calcium-Sandoz-ampuls contain the easily soluble double salt of calcium gluconate and calcium lactobionate, which prevents crystallizing out. The granulated Calcium-Sandoz is 100% calcium gluconate.—*Pharm. Weekblad*, 72 (1935), 1392. (E. H. W.)

Carbodenal Capsules (Apotheke "Zum heil. Leopold," Ph. Mr. Eder, Linz a. d. D.) contain in each gelatin capsule 0.225 Gm. medicinal charcoal, Merck and powdered chamomile flowers; packages of 12.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Cautus Gargle Tablets (Dr. Sander A. G., Wesermünde) are put up in packages of 70 tablets containing calcium hypochlorite.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Chinimetten (F. J. Kwizda, Korneuburg) are put up in packages of 10 tablets containing 0.50 Gm. and 20 tablets of 0.25 Gm. of quinine hydrochloride.—*Pharm. Presse*, 41 (1936), 21. (M. F. W. D.)

Coffeminal Compostium (I. G. Farben Bayer) is obtainable in dragées and rectal capsules. The dragées contain coffeminal (caffeine and luminal) 0.05 Gm.; scopolamine hydrobromide 0.0002 Gm.; ephedrine 0.01 Gm.; papaverine hydrochloride 0.02 Gm.; strychnine nitrate 0.0005 Gm. and atropine methyl-brom. 0.0001 Gm. The rectal capsules contain coffeminal 0.08 Gm.; scopolamine hydrobromide 0.0003 Gm. and ephedrine 0.015 Gm.—*Pharm. Weekblad*, 72 (1935), 1392. (E. H. W.)

Colliron is a colloidal preparation containing 10% of iron and a trace of copper. One teaspoonful is equivalent to 6 grains of pure iron or 12 Blaud's pills. It is pleasantly flavored and has no constipating effect. For adults the dose can be from 20 minims up to 1 tablespoonful; for

children the maximum recommended is 1 dessertspoonful three times daily. Colliron is issued in 4-oz., 8-oz., 16-oz. and 80-oz. bottles.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 604.

(S. W. G.)

Collopyrin (Kaopyrin) is a combination of acetylsalicylic acid and kaolin in tablet form each tablet containing 5 grains of acetylsalicylic acid. It is claimed that the kaolin ensures an extreme state of subdivision and even diffusion of the antirheumatic, antipyretic and analgesic properties of the acetylsalicylic acid. A dose of 1 or 2 tablets stirred in 2 tablespoonfuls of water can be taken 3 or 4 times a day. Kaopyrin is packed in tubes of 10 tablets. The tubes are issued in boxes of five.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 604. (S. W. G.)

Cystazol granules and tablets contain hexamine in combination with sodium benzoate. The sodium benzoate not only ensures that the urine is sufficiently acid to liberate formaldehyde from hexamine, but itself possesses antiseptic properties. Cystazol is recommended for the treatment of all bacillary infections of the urinary bladder and gall bladder and for the sterilization of the urine of typhoid carriers. It is also suggested for the treatment of acute rhinitis and bronchitis. One to 3 of the tablets (10 grains each) should be allowed to disintegrate in water, and be taken three times a day. The granules are effervescent, and a dessertspoonful in water once or twice daily is suggested. Each drachm of the granules is equivalent to 5 grains of cystazol. The tablets are supplied in bottles of 20, 40, 80, 160 and 500 tablets. The granules are supplied in small and large bottles.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 604. (S. W. G.)

Desitine-Instillatie contains cod liver oil, hydrous lanolin and percaine 0.1% and is used in the treatment of cystitis.—*Pharm. Weekblad*, 72 (1935), 1393. (E. H. W.)

Detavit Emulsion (Bayer I. G. Farben A. G., Leverkusen and E. Merck, Darmstadt) in oil-free emulsion; put up in packages of 125 cc.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Devegan tablets contain 4-oxy-3-acetylaminophenylarsinic acid and boric acid, with carbohydrate hydrolyzed by a special process as a vehicle. It is suggested for the treatment of leucorrhœa by local application. One or two tablets are inserted high into the fornices, once, twice or three times daily. Devegan tablets are issued in aluminum containers of 15, 30 and 150 tablets.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 605. (S. W. G.)

Diplosal Ointment (C. F. Boehringer and Soehne, G. m. b. H., Mannheim-Waldhof) for muscular rheumatism contains 5% of Diplosal.—*Pharm. Zentralh.*, 76 (1935), 620. (E. V. S.)

Emanal Tablets (Bayer I. G. Farben) contain iodized thyroid albumen and are used in paranchymatous struma in children and adults.—*Pharm. Weekblad*, 72 (1935), 1393. (E. H. W.)

Emge is pure magnesium hyposulphite supplied in ampuls containing a solution of 1 Gm. in 10 cc. for intramuscular injection, and in tablet form for oral administration, each tablet containing 0.6 Gm. of magnesium hyposulphite with 0.2 Gm. of magnesium silicate to neutralize the laxative effect of the magnesium. By injection it is recommended as an anti-anaphylactic, and for the treatment of allergic conditions, and orally for stimulation, and regularization of the digestive functions. The dose by injection is 10 cc. every second day. It causes no local or general reaction. The oral dose suggested is 2 to 4 tablets daily.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 605. (S. W. G.)

Ephecardol Tablets (F. J. Kwizda, Korneuburg) contain in each 0.05 Gm. ephedrine hydrochloride; packages of 10 and 20.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Estivin is a liquid preparation of *Rosa Gallica*, recommended as a local application for the treatment of hay fever. It is dropped into the inner corners of the eyes, one drop, three times a day, usually being sufficient to give relief. In more severe cases it may be used more frequently. It is also suggested for the treatment of rhinitis, blepharitis, conjunctivitis and trachoma. Estivin is issued in a vial fitted with a dropper of convenient size to be carried in the pocket.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 605. (S. W. G.)

Eumenol is prepared from the root of the Chinese plant Tangkui, belonging to the family *Umbelliferæ*, and probably a species of *Levisticum*. It has been used in Chinese medicine as an emmenagogue from time immemorial. It is non-toxic and, since its introduction into Europe in 1896, it has been found to be a tonic which exerts a regulating influence on the process of menstruation. The dose suggested is 1 teaspoonful of the liquid, or 2 to 4 tablets three times daily, a few days previous to menstruation. Eumenol fluidextract is supplied in bottles of 25, 50, 150 and and 250 Gm. The tablets are issued in bottles of 50 and 100.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 606. (S. W. G.)

Flavadine (Curta & Co. G. m. b. H., Berlin-Britz) is a 2% solution of 3, 6-diamino-10-methylacridiniumglycolylaminophenylarsenic acid brought into solution by an excess of 3, 6-diamino-10-methylacridinium chloride. It is used in the treatment of gonorrhœa in females particularly cervix gonorrhœa. In spite of its strong gonocidal properties it has little effect on the tissue and may therefore be injected in 1–3 cc. quantities. A special Falkenstein uterus syringe is employed for the treatment.—*Pharm. Weekblad* 72 (1935), 1393. (E. H. W.)

Flavosan Tablets (Dr. Baljet's Chem. Co. Arnhem) are tablets containing diaminomethylacridine-chloride which are used on account of their bactericidal properties for the disinfection of the mouth and throat.—*Pharm. Weekblad*, 72 (1935), 1393. (E. H. W.)

Gynantrin (G. D. Searle & Co., Chicago, Ill.) is an extract from the sex hormones from fresh anterior pituitary lobe tissues. The extracted hormones are standardized so that 1 cc. contains 100 rat units. It is claimed to supply deficiency of the gonadotropic hormone, to be non-irritating and is only active when administered parenterally, preferably by intramuscular injection. The dosage varies from $^1/_2$ to 2 cc., depending on the frequency of injection and the response of the patient. It is indicated in retarded sexual development; deficient follicle stimulation (functional amenorrhea, oligomenorrhea and dysmenorrhea); deficient corpus luteum stimulating (functional uterine hemorrhage-menorrhagia or metrorrhagia); the menopause. It is supplied in 5-cc. and 10-cc. rubber diaphragm-stoppered vials.—*Drug. Circ.*, 79 (Aug. 1935), 30. (T. G. W.)

Humidon Hemmorhoidal Suppositories (Dr. A. Nachmann, Chem.-pharm. Praparate G. m. b. H., Berlin W 8) contain as active ingredient ethyl *p*-aminobenzoate.—*Pharm. Zentralh.*, 76 (1935), 587. (E. V. S.)

Humidon Laxative Pills (Dr. A. Nachmann, Chem.-pharm. Präparate G. m. b. H., Berlin W 8) contain phenolphthalein, extract rhubarb compound, extract cascara and oil of caraway.—*Pharm. Zentralh.*, 76 (1935), 587. (E. V. S.)

Intestinal Colic Balsam (Twega G. m. b. H., Vienna, 3rd dist.) contains sulphur balsam, tinctures of veratrum, valerian and aloes, and bitter tincture, etc., in packages of 100 Gm.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Irmitol and Irmitol-Extra (W. Brett, Schönebeck (Elbe)) are chlorxylol-thymol combinations having high germicidal powers. Both preparations are non-irritating, non-poisonous, and free of the usual disinfectant odor. They are used for surgical, gynecological and room disinfection.—*Pharm. Zentralh.*, 76 (1935), 587. (E. V. S.)

Ituran Tablets (Apotheke "Zum heil. Leopold," Ph. Mr. Eder, Linz a. d. D.) are put up in packages of 12 and 48 tablets containing in each 5.0 Gm. pure urea, sodium bicarbonate, citrated oil sugar, etc.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Kaba is a preparation for the treatment of constipation, containing the refined and solidified sap of a tree which grows wild in India, combined with brewer's yeast and savita yeast extract to make it palatable. It is claimed to produce normal regular bowel movement, without irritation or griping. Kaba absorbs 20 times its own weight of water providing ample bulk and lubrication in the intestine, but the substance is not assimilable and does not interfere with digestion. Vitamins B and G, provided by the yeast, are claimed to energize the bowel. The dose of kaba is 1 or 2 teaspoonfuls placed dry on the tongue, and followed by 1 or 2 glasses of water. The dose can be repeated 2 or 3 times a day preferably after meals. Kaba is supplied in tins containing 11 ounces, and 3 lbs.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 606. (S. W. G.)

Lactometten (F. J. Kwizda, Korneuburg) are tablets containing 0.50 Gm. calcium lactate in each; packages of 20.—*Pharm. Presse*, 41 (1936), 21. (M. F. W. D.)

Luteogan Ampuls (G. Henning, Berlin) are 2-cc. ampuls containing corpus luteum hormone in oil solution; packages of 3.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Luteogan Dragees (G. Henning, Berlin) contain in each dragee 0.10 Gm. corpus luteum hormone; packages of 40 dragees.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Luteolipex Ampuls (Sanabo-Chinoin G. m. b. H., Vienna, 12th dist.) contain in each cc. 10 clinical units of corpus luteum hormone; packages of 5 ampuls.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Magnolax is an emulsion containing in each fluidounce, magnesium hydroxide 24 grains; liquid paraffin, 2 drachms; glycerin, 24 minims; and vanillin, $^1/_{25}$ grain. It is recommended as a laxative for expectant mothers and young children, where drastic purgatives are not required.

The dose for children is from 1/4 to 2 teaspoonfuls, taken at night or before breakfast mixed with water, or followed by half a glass of water for older children and adults. Magnolax is supplied in bottles containing 8 oz., 20 oz. and 80 oz.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 606. (S. W. G.)

Metuvit Ointment with Cod Liver Oil (Chemosan Union and Fritz Pesoldt A. G., Vienna, 3rd dist.) contains metuvit ointment, cod liver oil, subjected to ultraviolet radiations; packages of 25 Gm.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Metycaine and Merthiaolate Jelly (Eli Lilly & Co., Indianapolis, Ind.) is composed of metycaine borate, 8% and merthiolate, 1:5000, in a water-soluble jelly. It combines the anesthetic properties of metycaine with the germicidal properties of merthiolate. The jelly may be applied directly to burns, ulcers and wounds. It is used preliminary to rectal examination and treatment, and for the relief of discomfort due to hemorrhoids previous to operation, as well as the relief of pain subsequent to operation; also for relief in cases of rectal pruritis and in various conditions such as burns, ulcers of the body surface and other painful superficial wounds.—*Drug. Circ.*, 79 (Aug. 1935), 30. (T. G. W.)

Nasal Catarrh Powder (Bauer & Cie., Berlin) put up in packages of 5 Gm. containing boric acid, menthol, ethyl-*p*-aminobenzoate, and formamint.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Oljecal with Lecithin (Œsterreich Pentosinwerk, Langenlebarn, N. Œ.) is put up in packages of 125 and 250 Gm. containing cod liver oil emulsion, calcium hypophosphite and lecithin.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Optonicum-Merck (E. Merck, Darmstadt) contains hepracton, iron, ammonium citrate, cupric chloride, sodium glycerophosphate, purified caffeine, quinine hydrochloride, manganese glycerophosphate, tincture of orange, tincture of strychnine, etc.; packages of 150 cc.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Pencils of Mercury Sozoiodol (Twega, G. m. b. H., Vienna, 3rd dist.) contain 0.02 Gm. mercury sozoiodol to 8 Gm. kaolin, cocoa butter, etc., in packages of 10 pieces.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Pencils with Pure Lysol (Twega, G. m. b. H., Vienna, 3rd dist.) contain lysol, kaolin, cocoa butter and wax, etc., in packages of 10 pieces.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Planzym (Galactina G. m. b. H., Frankfurt a. M.) contains the colloidal phosphatid-cholesterin-lipoids obtained from the radicle of germinating wheat for strongly active growth development and, in addition, highly breed yeast and pollen with its ferments and enzymes in combination with magnesium glycerophosphate. The purpose of the preparation is to act as a regenerative for a consuming and exhaustive state by the normalization and nourishment of hormone eliminating internal secretory glands.—*Pharm. Zentralh.*, 76 (1935), 587. (E. V. S.)

Plasticum Tablets (Twega G. m. b. H., Vienna, 3rd dist.) contain arsenous acid, manganese sulphate, and saccharated ferrous carbonate; packages of 30.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Puerperal Fever Serum (Behringwerke, I. G. Farbenindustrie A.-G., Leverkusen a. Rh.) is an antitoxic horse serum of filtered and unfiltered cultures of highly virulent hemolytic streptococci. It has been shown clinically to be of therapeutic value in the prophylaxis and therapeutics of puerperal fevers.—*Pharm. Zentralh.*, 76 (1935), 587. (E. V. S.)

Pyo-Cones (Rahme & Son, Schonebeck a. d. Elbe) are put up in packages of 20 containing pyoktannin, cocoa butter and coconut oil.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Pyo-Foils (Rahme & Son, Schonebeck a. d. Elbe) are put up in packages of 25 pieces containing pyoktannin and zinc sulphate.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Pyoktannin Pencils (Twega, G. m. b. H., Vienna, 3rd dist.) contain pyoktannin Merck, kaolin, cocoa butter, wax, etc., in packages of 10 pieces.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Radiotétrane (from the laboratory of Dr. Gérard, Paris) is sodium tetra-iodophenolphthalein. It is used for radiographic examinations of the gall bladder and is found on the market in dragees of which 15–20 are used at meal time. In powder form the dose is 4 Gm. It also appears in colloidal solution and in ampuls for intravenous injection.—*Pharm. Weekblad*, 72 (1936), 1393. (E. H. W.)

Reduction tablets (Chem. Fabrik Sicco A.-G., Berlin-Johannisthal) contain quinine dihydroiodide and are used for the treatment of colds.—*Pharm. Zentralh.*, 76 (1935), 595. (E. V. S.)

Renaleptine (Poulec Bros.) is synthetic lævorotatory adrenaline.—*Pharm. Weekblad*, 72 (1936), 1393. (E. H. W.)

Rhodazil (Poulec Bros.) is benzyl benzoate and is used as an antispasmodic in asthma.—*Pharm. Weekblad*, 72 (1935), 1393. (E. H. W.)

Sango-Stop Ampuls (Omon A. G., Basel) contain 0.30 Gm. colloidal poly-galacturonic acid ester, calcium chloride, sodium chloride, in distilled water; packages of 2 and 4 ampuls of 20 cc.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Sango-Stop Solution (Omon A. G., Basel) is put up in packages of 50 cc. containing colloidal poly-galacturonic acid ester, calcium chloride, sodium chloride and distilled water.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Sanostol (Chem. Fabrik Promonta G. m. b. H., Hamburg 26), an assumed liver oil tasting preparation, is prepared from a rich vitamin containing liver oil concentrate manufactured from entire halibut livers and possessing the entire medicinal value of natural undiluted liver oil. The preparation contains vitamins A and D and, in addition, vitamin C of orange and vitamin B of germinating barley. It is indicated for use in the therapy and prophylaxis of rickets, for the convalescence of chronic infectious diseases, and for undernourishment.—*Pharm. Zentralh.*, 76 (1935), 595. (E. V. S.)

Selvoral (Bayer, I. G. Farbenindustrie A.-G., Leverkusen A. Rh.) is the calcium salt of gluco-hexacitric acid containing 8.5% of calcium. It is slightly soluble in water, tasteless and used for oral administration. It is indicated for use in calcium deficiencies, vegetative disturbances, inflammatory conditions, certain dermatological cases and bleeding.—*Pharm. Zentralh.*, 76 (1935), 595. (E. V. S.)

Silver Proteinate Pencils (Twega, G. m. b. H., Vienna, 3rd dist.) contain silver proteinate, kaolin, cocoa butter, wax, etc., in packages of 10 pieces.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Somnacetin is a combination of sodium diethylbarbiturate and acetphenetidine in tablets weighing 6 grains. It is claimed that in the mixture the activity of the diethylbarbituric acid is increased, making smaller doses possible and avoiding after-effects. As a hypnotic a dose of 2 to 4 tablets is recommended, as a sedative, 1 tablet 3 or 4 times a day. It is also suggested as an anodyne, and as a prophylactic against sea-sickness. Somnacetin is supplied in tubes of 10 tablets and in bottles of 20 and 50 tablets. Somnacetin-soluble is a combination of sodium diethylbarbiturate with phenazone supplied in ampuls containing 2 cc. of solution representing 12 grains of somnacetin-soluble. For insomnia, 1 cc. given subcutaneously in the evening and repeated in two hours is recommended. In conditions of excitement, 1 ampul three times a day may be given. One or 2 injections of 2 cc. every two hours is suggested for sea-sickness. Somnacetin-soluble is supplied in boxes of 6 ampuls.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 607. (S. W. G.)

Takazyma contains in each ounce magnesium carbonate 72 grains, bismuth subcarbonate 42 grains, taka-diastase 36.5 grains, with calcium carbonate and aromatics up to 1 ounce. It is a very light powder suggested as an antacid and digestive for the treatment of hyperchlorhydria, and gastric pain due to the incomplete digestion of starchy foods, and also for the intensive alkaline treatment of gastric and duodenal ulcers. The usual dose is 1 teaspoonful (30 grains) suspended in a wine-glassful of water, three times a day after meals. It is supplied in glass jars containing approximately 2 ounces.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 608. (S. W. G.)

Thebaimetten (F. J. Kwizda, Korneuburg) are tablets of morphine hydrochloride put up in packages of 20 tablets of 0.005 Gm., 10 of 0.01 Gm. and 10 of 0.03 Gm.—*Pharm. Presse*, 41 (1936), 21. (M. F. W. D.)

Thiosept Oil (Pharm. Drogenhandels-Ges., Vienna, 6th dist.) contains the oil obtained from schale; packages of 40 Gm.—*Pharm. Presse*, 41 (1936), 22. (M. F. W. D.)

Ultracarbon is a highly adsorbent form of a pure activated charcoal, prepared for internal medicinal use. It is claimed to have a very high coefficient of adsorption which is maintained in the presence of colloids. Ultracarbon is recommended for the treatment of gastro-intestinal disturbances, poisoning due to decomposed food, vegetable poisons and inorganic poisons such as arsenic, mercuric chloride and hydrocyanic acid. It is issued in three forms: powder, granules

and tablets. Two or three tablespoonfuls of the powder stirred in water is the daily adult dose. The average dose of the granules is 1/2 to 1 teaspoonful, but more can be given in severe cases. One or two of the 4-grain tablets can be taken three or four times daily. The tablets are supplied in tins of 50. Ultracarbon granules are issued in tins of 50 Gm.; the powder is supplied in packages of 25, 50 and 100 Gm.—*Quart. J. Pharm. Pharmacol.*, 8 (1935), 608. (S. W. G.)

Vaginal Suppositories with Boric Acid (Twega G. m. b. H., Vienna, 3rd dist.) contain boric acid, kaolin, wax, cocoa butter, etc., packages of 10.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Vaginal Suppositories with Mercury Sozoiodol (Twega G. m. b. H., Vienna, 3rd dist.) contain in each 0.02 Gm. mercury sozoiodol to 8.0 Gm. of kaolin, wax, cocoa butter, etc., packages of 10 pieces.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Vaginal Suppositories with Pure Lysol (Twega G. m. b. H., Vienna, 3rd dist.) contain lysol, cocoa butter, kaolin, wax, etc., packages of 10.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Vaginal Suppositories with Pyoktannin (Twega G. m. b. H., Vienna, 3rd dist.) contain pyoktannin, kaolin, wax, cocoa butter, packages of 10 pieces.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Vaginal Suppositories with Silver Proteinate (Twega G. m. b. H., Vienna, 3rd dist.) contain silver proteinate, koalin, wax, cocoa butter, etc., packages of 10 pieces.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Verodigen ampuls (C. F. Boehringer and Soehne G. m. b. H., Mannheim-Waldhof) contain in each ampul 0.8 mg. of the well-known digitalis preparation Verodigen (*Pharm. Zentralh.*, 61 (1920), 304) mixed with 0.1 Gm. of dextrose. In addition, each package contains an ampul of distilled for the preparation of the solution. It may be injected either intravenously or intramuscularly.—*Pharm. Zentralh.*, 76 (1935), 595. (E. V. S.)

Vinethin Merck is synthetic vinyl ether which is kept from decomposing by the addition of 3.5% of absolute alcohol and 0.01% of a non-volatile stabilizer. It is used as an inhalant for narcosis.—*Pharm. Weekblad*, 72 (1935), 1393. (E. H. W.)

Vitamin Preparations Containing Vitamin D—Water-Miscible. Vitamin D is dissolved in a solvent selected from the group consisting of the propanediols to obtain a stable vitamin D preparation that is miscible with water.—CHARLES W. HOOPER assignor to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,030,792, Feb. 11, 1936. (A. P.-C.)

Wind Colic Balsam (Twega, G. m. b. H., Vienna, 3rd dist.) contains sulphur balsam, tincture of chamomile, gum ammoniak, camphor, ether, chloroform, alcohol, water, etc., packages of 100 Gm.—*Pharm. Presse*, 41 (1936), 61. (M. F. W. D.)

Yeast Tablets "Squibb" (E. R. Squibb & Sons, New York, N. Y.) are physiologically standardized tablets made from pure dehydrated brewer's yeast. Each tablet contains 6 grains of dried yeast and contains at least 6 international (18 Sherman) units of vitamin B, and 9 Sherman units of vitamin G. They are used in the treatment of conditions due to the lack of the antipellagra factor and to anorexia, subnormal growth, intestinal sluggishness and other conditions arising from deficiency of vitamins B and G. They are supplied in bottles of 100 tablets.—*Drug. Circ.*, 79 (Aug. 1935), 30. (T. G. W.)

BACTERIOLOGY

Antirabic Treatment, Pasteur, at the Bureau of Science, Manila. Interesting statistics are given involving 17,858 cases over a period of 19 yrs.—ANA VAZQUEZ-COLET. *Philippine J. Sci.*, 57 (1935), 435. (P. A. F.)

Carbocyclic Antiseptics—Effect of Acids on Certain. The antiseptic effect of certain carbocyclic compounds which have been considered of little value can be greatly enhanced by combination with acids. A p_H of 2 to 3 was found to be optimal and associated with no damage to tissues.—F. W. HARTMAN and VICTOR SCHELLING. *Proc. Soc. Expti. Biol. Med.*, 33 (1935), 469. (A. E. M.)

Cholera Vaccine, Prepared by the Philippine Bureau of Science—Antigenic Properties of. For more than 30 yrs. vaccination against cholera has been practiced on a large scale in the Philippines. Although it has been successful from a practical standpoint, no laboratory data are available to demonstrate the immunological properties of the vaccine used. This study attempts

to supply such data. The cholera vaccine used contained 3000 million killed cholera vibrios per cc. suspended in physiological salt solution to which 0.5% phenol is added as preservative. The organism used was isolated several years ago from a fatal case of cholera in Manila and is known under the designation "cholera strain No. 22." This vibrio used to prepare the vaccine possesses two characteristics which render it unique; namely, inability to ferment mannite and non-motility. Using guinea pigs the vaccine was shown to possess marked antigenic powers and to protect effectively against various strains of cholera vibrio. No relation was found between the virulence and the immunological group of cholera vibrio. In a given group some strains are very virulent, while others are weak.—KOUHEI SUGINA. *Philippine J. Sci.*, 58 (1935), 153. (P. A. F.)

Compound Solution of Cresol—Variation of Phenol Coefficient of, When Different Oils Are Used for Saponaceous Base. The Bureau of Animal Industry of the United States Department of Agriculture has described means for disinfecting cages as well as animals and is interested in control of the material used in these disinfecting methods. The Bureau deviated from the standards laid down by the U. S. P. as early as 1915. Requirements were more stringent than those of the U. S. P. Economy of manufacture as well as effectiveness of final product was given consideration. In an attempt to improve the compound solution of cresol of the U. S. P. the authors tried corn oil, peanut oil, sesame oil, cocoanut oil and soy bean oil. A control was made with linseed oil and comparison, especially of phenol coefficients was made. Actual worth of phenol coefficient in evaluation has been questioned. Age and viability of organism used, the media, the test broth and possibly technique cause variation. In this study phenol coefficients were determined on all samples at the same time with the same cultures, so numerical values show ratios correctly whether actual value is correct or not. Results are shown by tabulation. The sample made from cocoanut oil showed a coefficient 100% higher than samples from other oils when tested with *B. typhosus* and 50% greater when tested with *Staphylococcus aureus*. In order to have a brilliant solution filtration is the final step, so ease of filtration was considered an advantage. This is indicated in the table. Water content and excess alkali were determined. The solution made from sesame oil had poor solubility in alcohol. That made from peanut oil was thick and turned to jelly when stored at room temperature. Shaking *temporarily* restored liquid condition. Chill points were determined for all by a method outlined in Bulletin No. 1308 of the Agriculture Department. These results also are shown in the table. The table shows that several oils serve as well as linseed. No comparison of oils on price basis was made. All oils were of high grade. Corn oil and sesame oil make a satisfactory product with chill point lower than that made from linseed. Cocoanut oil makes a good product with phenol coefficient from 50 to 100% higher than products from other oils. Peanut and sesame are not desirable.—P. L. BURRIN, A. G. WORTON and F. E. BIBBINS. *J. Am. Pharm. Assoc.*, 25 (1935), 1077. (Z. M. C.)

Disinfection and Essential Oils. A brief discussion of the use of essential oils as disinfectants.—R. M. GATTEFOSSÉ. *Parfumerie Moderne*, 29 (1935), 459–463. (A. P.-C.)

Germicidal Substances—Comparison of Resistance of Bacteria and Embryonic Tissue to. VII. Potassium Mercuric Iodide. Potassium mercuric iodide is very toxic and rates very low as a germicide. The phenol coefficient is next to the lowest found. The germicides studied are placed in the following order on the basis of their toxicity indices: Iodine 0.09; iodine trichloride 0.4; hexylresorcinol 3.0; metaphen 12.7; phenol 12.9; potassium mercuric iodide 13.3; merthiolate 35.3; mercurochrome 262.—A. J. SALLE and A. S. LAZARUS. *Proc. Soc. Exp'l. Biol. Med.*, 33 (1935), 393. (A. E. M.)

Germicides Having an Oligodynamic Action—Production of. Supporting material is loaded or impregnated with an oxide of manganese, *e. g.*, MnO_2, combined with silver oxide, preferably in the form of silver manganite.—DEUTSCHE GOLD- UND SILBER-SCHEIDEANSTALT VORMALS ROESSLER. Belg. pat. 409,800, July 31, 1935. (A. P.-C.)

Hemolytic Streptococci—Demonstration of Capsules of, with India Ink or Azo Blue. *India Ink Technique.*—A drop of 6 per cent dextrose is placed on a clean slide and sufficient organisms are added to make a thin suspension. A small drop of India ink is evenly mixed with the suspension and is spread over the slide. Dry the film and counterstain with equal parts of stock methylene blue solution and methyl alcohol. The excess stain is washed off with water and the slide is allowed to air dry without blotting. A 6 per cent dextrose-diluted ink gives much larger zones than ink diluted with water or normal salt solution. In fact many of the "capsulated" strains of hemolytic streptococci do not produce zones at all in India ink diluted with water. The

same one per cent solution of azo blue in 6 per cent dextrose is used as in the India ink technique. A thin suspension of the organisms is made in a drop of the dye which is thinly smeared with the edge of a slide and allowed to dry. The bodies of the organisms appear as pale silver bodies in very large clear zones that are oval and for the most part free of particles of dye.—E. M. BUTT, C. W. BONYNGE and R. L. JOYCE. *J. Infectious Diseases*, 58 (1936), 5. (A. H. B.)

Hexachlorethane—Use of, in the Fight against the Larvæ of Mosquitoes. A mixture of two parts of hexachlorethane and one part of talc when dusted on water destroys the larvæ and pupæ of all species of mosquitoes. It has several advantages over the methods already used. It does not contaminate the water and render it unfit for domestic use and for watering of vegetables. It does not destroy other organisms and penetrates well agglomerations of plants and algæ. It is non-toxic to man and higher animals, and, finally, it is not very expensive.—RAOUL-MICHEL MAY. *Compt. rend.*, 202 (1936), 246. (G. W. H.)

Insecticidal or Anti-Parasitic Agent. The product is composed of polychlorinated aliphatic alcohols or their esters and/or similarly substituted aromatic alcohols and/or their esters.—SCHERING-KAHLBAUM A. G. Belg. pat. 408,846, May 31, 1935. (A. P.-C.)

Mercury—Bactericidal Action of. Suspensions of *B. coli*, *B. typhus*, *vibrio cholera* and *Brucella abortus* in water are rendered sterile by metallic mercury in a few hours. The speed of sterilization depends on the quantity and surface of mercury utilized and the nature and number of microbes. The same results are obtained by the use of natural, salt or distilled water whether previously sterilized or not. As has been demonstrated with silver, the water once sterilized and separated from the mercury retains its bactericidal action for several hours and even after prolonged boiling. The same action is obtained in liquid petrolatum. In the absence of oxygen, an appreciable retarding of the bactericidal action is observed. Several hypotheses are advanced to explain this action, none of which is satisfactory. The water treated by mercury contains traces of this metal in the form of the cation which is the only precise statement which can be made concerning it.—MARCEL LISBONNE and RAYMOND SEIGNEURIN. *Compt. rend.*, 202 (1936), 169. (G. W. H.)

Micro-organisms—Destruction of, in the Presence of Sugars. II. Influence of Sugars in Chemical Disinfection. Concentrated solutions of sucrose or glycerol have been shown to slow down the germicidal action of mercuric chloride, formalin, tannic acid and colloidal silver on *B. coli*. When the germicide is non-coagulating in its action on protein, as in the case of hydrogen peroxide, the presence of concentrated sucrose or glycerol solutions has no protective effect. An explanation is put forward that the protective action is due to intense hydration around the protein particles (bacteria) caused by adsorbed hydrated sugar molecules. Longer time is required for germicidal action to be effective since more ions have to be adsorbed to offset the stabilizing factor of hydration.—M. D. WALLACE and J. G. BAUMGARTNER. *J. Soc. Chem. Ind.*, 55 (1936), 37T. (E. G. V.)

Opsonins for Diplococcus Morbillorum and for Streptococcus Scarlatinæ in Convalescent Measles Serum, Convalescent Scarlet Fever Serum and Placental Extract. Placental extract, normal serum, pooled convalescent scarlet fever serum and measles serum were heated at 56° C. for one-half hour to get rid of normal opsonins and then reactivated. Scarlatinal streptococcus absorbed the opsonin for the homologous and a heterologous scarlet fever streptococcus, but not the opsonin for *D. morbillorum*, Type I *pneumococcus* and *S. viridans*. The measles coccus absorbed the opsonin for this coccus but not for *S. scarlatinæ*, Type I *pneumococcus* and *S. viridans*. The high opsonic content of convalescent measles and scarlet fever serum and of placental extract for *D. morbillorum* and *S. scarlatinæ* may account for some of their protective and curative power in measles and scarlet fever.—RUTH TUNNICLIFF. *J. Infectious Diseases*, 58 (1936), 1. (A. H. B.)

Parasiticides. In a parasiticidal composition, the active ingredient is lauryl alcohol, or one of its esters or amines.—EUCLID W. BOUSQUET, GEO. D. GRAVES and PAUL L. SALZBERG, assignors to THE GRASSELLI CHEMICAL CO. U. S. pat. 2,030,093, Feb. 11, 1936. (A. P.-C.)

Poliomyelitis—Vaccination against Acute Anterior. Effective vaccination against acute anterior poliomyelitis requires the administration of active virus. Treatment of remote monkey passage virus with sodium ricinoleate and phenyl-mercuri-nitrate has resulted in sufficient attenuation to render the vaccine safe for the vaccination of monkeys. No individual who received the full 3 doses has developed poliomyelitis. Among the 10,725 inoculated individuals were 10

cases of poliomyelitis following 1 or 2 doses. It is believed that the vaccine is probably safe for the immunization of human beings and especially when given during non-epidemic periods. The duration of the immunity at present cannot be given except to state that it has endured in monkeys up to at least 3 years, and antibody has persisted in children for at least 11 months.—J. A. KOLMER. *Am. J. Pub. Health*, 26 (1936), 126. (A. H. B.)

Poliomyelitis in North Carolina in 1935. The best means of prevention is in avoiding contacts. So far, nothing has been learned from the vaccination of 300 children in the City of Greensboro, with the Park-Brodie poliomyelitis vaccine. In the Park-Brodie vaccine, local abscesses occurred in 6 per cent of cases; 12 per cent developed nodules at the site of intradermal inoculation; 12 per cent developed medium size durations. One in 4,600 developed the disease. Assuming that the vaccine is effective, would not the incidence of the disease decry its general use?—C. V. REYNOLDS and J. C. KNOX. *Am. J. Pub. Health*, 26 (1936), 95. (A. H. B.)

Poliomyelitis Vaccine—Results of Field Studies with. The evaluation of the efficacy of a vaccine against poliomyelitis introduces problems peculiar to any disease carrying a low morbidity rate and factors inherent in human nature itself. One thousand four hundred and fifty-two applications for vaccine were received, of which 766 were selected for vaccination and 686 held as controls. Four hundred and fifty-eight of those selected were inoculated, 422 with 2 doses and 36 with 1 dose. In addition, 10 controls were known to have been inoculated. No cases of poliomyelitis were reported in any of the 1,452 candidates, and hence no conclusions concerning the efficacy of the vaccine can be reached from this study. Local reactions occurred in 50% of those inoculated but were not of serious import except in 3% (14 abscesses).—A. G. GILLIAM and R. H. ONSTOTT. *Am. J. Pub. Health*, 26 (1936), 113. (A. H. B.)

Poliomyelitis Vaccine—Value of. According to the author's count of the onsets, 1 fatal case occurred 6 days after the second dose, another fatal case 6 days after the second dose, and 12 days after the first dose, 2 paralytic cases and 1 fatal case 8 days after the first dose, a fatal case 9 days after the first dose, another fatal case 10 days after the first dose, a paralytic case 11 days after the first dose, and another paralytic case 14 days after the first dose.—JAMES P. LEAKE. *Am. J. Pub. Health*, 26 (1936), 143. (A. H. B.)

Poliomyelitis Virus—Failure to Infect Monkeys with, through Isolated Intestinal Loops. Suspensions of poliomyelitic spinal cords of monkeys were instilled repeatedly into loops of isolated bowel in 4 M. rhesus monkeys without producing infection. Attempts to induce poliomyelitis in these animals by administering whole virus-cord were likewise negative, despite the comparatively huge dosage employed. Virus in one form or another was administered intensively into the intestines over a period of 3 months, but no poliomyelitis occurred at any stage of the experiment.—E. H. LENNETTE and N. P. HUDSON. *J. Infectious Diseases*, 58 (1936), 10. (A. H. B.)

Pyrethrum Spray for Mosquitoes—Non-Inflammable. The increase of international travel by air has provided new problems in controlling the spread of diseases. In the case of yellow fever, the destruction of infected *Aëdes ægypti* in æroplanes while in flight is suggested as one means of restricting the possible spread of the disease. A mixture of 1 part pyrethrum extract in kerosene (containing 2% pyrethrums) with 4 parts of carbon tetrachloride in four tests has killed 100% of *Aëdes ægypti* with five minutes' exposure, when 5 cc. were sprayed per 1,000 cubic feet. By ordinary tests the mixture is non-inflammable, and it has not appeared that the amount given is too great to be easily tolerated by human beings for the length of exposure necessary to kill the insects, or even up to periods of fifteen minutes.—C. L. WILLIAMS and W. C. DRESSEN. *U. S. Public Health Reports*, 50 (1935), 1401; through *Pharm. J.*, 135 (1935), 655. (W. B. B.)

Quaternary Nitrogen Compounds. Aliphatic compounds containing at least two substituents capable of reacting are made to react with tertiary amines, at least one of the reacting compounds containing a higher aliphatic hydrocarbon radical. The resultant quaternary polyammonium compounds can be used as disinfectants and preservatives.—I. G. FARBENINDUSTRIE A. G. Belg. pat. 409,596, June 29, 1935. (A. P.-C.)

Rinderpest Vaccine, Glycerinated—Storage at Room Temperature. The preparation of an improved vaccine is given which has all the advantages of rapid preparation and retains its protective power at room temperature for three months at least. The spleen and lymph glands of rinderpest animals were removed aseptically and treated in the manner employed in the preparation of the Kelser vaccine. The milled tissue pulp was strained without the addition of saline.

The strained pulp was passed through a grinder of the type used for grinding corn for further trituration into much finer particles to the consistency of a soft paste. The concentration of the tissue pulp was prepared in the proportion of 2 cc. of tissue to 8 cc. of 50% glycerin-saline, 2.5–7.5, and 3 to 7 of the diluent, respectively. The mixture was shaken by hand in a bottle containing glass beads and infused in a Frigidaire at 0° to 5° C. for 24 hours. After the mixture had been strained through a double layer of gauze, formalin was added in a dilution of 1 to 1,000 by volume. It was next shaken in a motor-driven shaker for 1 to 2 hrs. and stored in a cool dark cabinet until ready for testing 3 days after preparation. Later in the experiments the shaking period was reduced from 3 to 10 minutes daily for 3 successive days. Storage was maintained at room temperature throughout the testing periods (20° to 30° C.). Fourteen different lots of vaccine were tested on 29 native Fuga cattle. The total protection value of the vaccines was found to be 86.2%.—TEODULA TOPACIO. *Philippine J. Sci.*, 57 (1935), 427. (P. A. F.)

Sterilization of Bandages and Dressings—Discussion of Equipment for. Autoclave sterilization apparatus is discussed from the standpoint of economical employment in hospitals and institutions for sterilization of dressings, etc. A steam pressure of 2 atmospheres and a temperature of 120° C. is advisable. The following points must be considered in purchasing sterilization apparatus: simplicity, safety, time for sterilization, initial cost and maintenance costs.—R. HANNE. *Pharm. Ztg.*, 80 (1935), 1301, 1315. (H. A. M.)

Yellow Fever—Vaccination against. Length of Persistence of the Immunity Conferred by. A report of five cases of vaccination against yellow fever. Tests of the blood indicate that the immunity remains unchanged after four years of observation.—J. LAIGRET and E. BONNEAU. *Compt. rend.*, 202 (1936), 172. (G. W. H.)

BOTANY

Lavender—A New. A variety of lavender, called *Lavandula hybrida* Abriali, has been found which furnishes a yield of 3 kilos of oil, containing 30 to 32% linalyl acetate, from 100 kilos of flowers.—ABRIAL. *Parfumerie Moderne*, 29 (1935), 503–505. (A. P.-C.)

Opium Poppy—Cultivation of the, in Denmark. A study of the opium poppy grown in Denmark in the summer of 1935 is reported. A field of 6,150 sq. m. at Jyderup in northeastern Seeland was sewn to the crop on April 24th. Plants were seen in flower between July 13th–25th. A collection of opium in the classical manner was made from a part of the crop (7,000–8,000 capsules) on July 23rd–24th. From this, 70 kilos of air-dried opium was obtained. The rest of the crop was harvested Aug. 12th and gave 350 kilos of raw seed, 275 kilos clean seed, 1,075 kilos of capsules, stem and leaves (corresponding to 1.75 tons per hectare). The opium specimen was dried thoroughly in a vacuum desiccator over sulphuric acid for a month, weight loss 8.2%. It was then pulverized and assayed. Extract 54.7%, morphine (by League of Nations method) 23.8%. This high morphine content agrees with past reports on cultivation of the poppy in northern and central Europe. The harvested, dried plants were analyzed as to morphine content of different parts. This work is reported in a separate paper by C. J. Jespersen (*vide infra*).—H. BAGGESGAARD-RASSMUSSEN and K. SALOMONSEN. *Dansk Tids. Farm.*, 10 (1936), 1. (C. S. L.)

CHEMISTRY

INORGANIC

Boric Acid. This paper discusses the properties of boric acid, its history, identification, uses, etc.—V. EVRARD and A. DE SWEEMER. *Pharm. Tijdschrift*, 13 (1935), 165. (E. H. W.)

Hydrogen Peroxide—Manufacture of, by Means of Electrical Discharges. Water vapor having a saturation temperature higher than 40° C. is added to the reaction gases.—ELEKTROCHEMISCHE WERKE MUNCHEN A. G. Belg. pat. 409,918, July 31, 1935. (A. P.-C.)

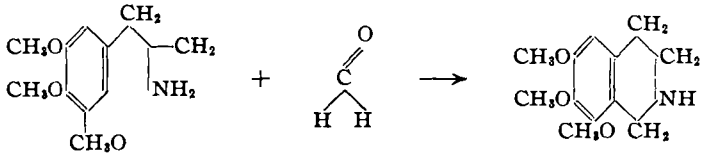
ORGANIC

Alkaloids

Aconitine. Oxonitin (m. p. 278°) was found to be $C_{32}H_{43}O_{12}N$; oxidized with nitric acid $C_{31}H_{35}O_{14}N_3$ (m. p. 263°, decomp.) was formed. Oxidation of aconitine with chromic acid yielded aconitoline, $C_{30}H_{37}O_9N$ (m. p. 220°); this hydrolyzed to produce $C_{23}H_{33}O_8N$. $HCl.3H_2O$ (m. p.

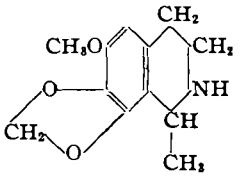
222°); oxidation of aconitoline yielded an acid $C_{31}H_{35}O_{14}N_3$ (m. p. 268°, decomp.); this acid hydrolyzed to benzoic acid, acetic acid, and $C_{22}H_{29}O_{11}N_3$ (m. p. 201°, after softening, 186°); treatment of the acid with anhydrous hydrogen chloride yielded $C_{31}H_{36}O_{12}N_2.HCl.2H_2O$ (m. p. 218°, decomp.); oxidation of aconitoline with nitric acid yielded a nitroso-acid, $C_{29}H_{33}O_{13}N_3$ (m. p. 186°, decomp.); which produced the amino-acid, $C_{29}H_{34}O_{12}N_2$ (m. p. 250°, decomp.) with anhydrous hydrogen chloride; this acid hydrolyzed to form $C_{22}H_{30}O_{11}N_2.HCl.2H_2O$ (m. p. 218°, decomp., after softening, 180°), oxidation of aconitine with nitrous acid, a nitroso-compound, $C_{31}H_{40}O_{12}N_2$ (m. p. 276°, decomp.). The author found the formula for aconitoline could be extended: $C_{17}H_{16}O$-$(CH_3.CO.O)$ $(C_6H_5.CO.O)$ $(N.CH_3)$ (OH) $(0.CH_3)_3$.—ALEXANDER LAWSON. *J. Chem. Soc.*, (1936), 80–83. (G. W. F.)

Anhalinine—Constitution of Anhalonine. Although work has been done before on the drug *Anhalonium Lewinii*, nevertheless the authors deemed it advisable to investigate this drug further for unknown alkaloids. In order to isolate the different alkaloids, they were analyzed and separated first into alkaloids having phenol as their base, and then into alkaloids with a non-phenol as their base. These in turn were separated with mercuric chloride and then dissolved in ether. From the solution containing the alkaloids which have not phenol as their base, the alkaloids, mescaline and anhalonine were removed, a crystalline substance separated out as a hydrochloride which, until now, was unknown as a natural product. An alkyl group determination indicated a resemblance to a salt of *o*-methyl-anhalanine. The hydrochloride was freed from impurities and then compared with the synthetic product obtained by E. Späth when he reacted mescaline with formaldehyde.



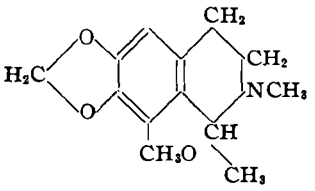
I II

This base having the chemical name of 6,7,8-trimethoxy-1,2,3,4-tetrahydro-isoquinoline melted at 61–63° and had the same melting point as the product obtained from the natural alkaloid. Formula II was proposed as the true formula for the new product obtained which was named anhalinine. Anhalonine was first isolated by Lewin and Heffter from *Echinocactus Lewinii* Schumann which was compared to Brutto's formula ($C_{12}H_{15}O_3N$). This compound contains no phenol-hydroxyl groups, but has methoxy groups attached to the ring. Thirty-five years later E. Späth and J. Gangl, through synthetic methods, proved the constitution of these alkaloids. The reaction between *n*-acetyl-homo-myristicyl-amine and phosphorus pentoxide and the subsequent reduction gave a compound represented by Formula III:



III

because the iodomethylate differs from the iodomethylate of α-methyl-dihydrocotarnine as indicated by Formula IV:



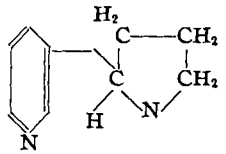
IV

In conclusion Formula III was accepted as the structural formula for anhalonine. In addition to this conclusion, 0.5 Gm. of anhalonin hydrochloride was analyzed, and found to have the same formula and properties as anhalonine.—E. SPÄTH and F. BECKE. *Ber.*, 68 (1935), 501. (G. B.)

Betaine—Effect of Heat on. One of the most important nitrogenous compounds associated with the sugar beet plant is betaine, occurring to the extent of about 1%. The main products of the heating of betaine are methyl dimethylaminoacetate, trimethylamine, dimethylamine and nitrogen. Small quantities of monomethylamine, formaldehyde and pyrrole or derivatives of pyrrole are also formed.—H. T. STRAW and H. T. CRANFIELD. *J. Soc. Chem. Ind.*, 55 (1936), 40T. (E. G. V.)

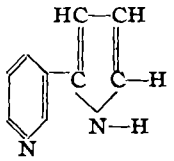
Epiquinine and Epiquinidine—Presence of, in Cinchona Bark. Chemistry of Quinoidine. An analysis was made of the non-crystallizing clear brown syrup, quinoidine, remaining after the removal of the usual cinchona alkaloids from cinchona bark extract. It shows 5% more C and 1% less N than in quinine. Oxidation converted about 30% of quinoidine into quinic acid. About $^1/_2$ of quinoidine may be attributed to methoxy-quinoline. Its toxin derivative is practically identical with quinotoxin. The presence of quinine and quinidine in quinoidine seems very improbable, especially since the latter is inactive in bird malaria. About $^1/_4$ of crude quinoidine or $^1/_2$ of the purified product consists of equal portions of epiquinine and eqiquinidine which have actually been separated. This is the first instance of these epi-bases being found in nature.—WILHELM DIRSCHERL and HEINRICH THRON. *Ann.*, 521 (1935), 48; through *Squibb Abstract Bull.*, 8 (1935), A-1837.

Nicotine—Synthesis of. Little work has been done on the determination of the structural formula of nicotine except that done by Skraup and Huber who analyzed nicotinic acid and found it to be pyridine-β-carbonic acid. The research done by Pinner proved that the remaining carbon and hydrogen atoms are united to the second nitrogen atom, possibly in this manner:



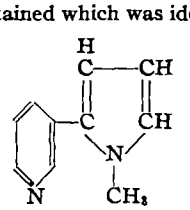
I

This proposed formula was not approved by many workers until Pictet confirmed the formula by making synthetic nicotine. Using 3-amino-pyridine, the compound 1-[3'-pyridyl]-pyrrole was obtained. Through intense heat, like most N-alkyl pyrroles, the compound changed to 2-[3'pyridyl]-pyrrole (nornicotyrine) with this proposed structural Formula II.



II

Upon the action of methyl iodide on the potassium derivative of this compound and subsequent distillation with lime a product was obtained which was identical with nicotyrine (III).



III

The method used was as follows: Iodine reacted with nicotyrine to obtain the product monoiodonicotyrine. On reducing this compound with zinc and hydrochloric acid, dihydronicotyrine was

obtained. The perbromide of the bromine derivative of dihydro-nicotyrine was again reduced with zinc and hydrochloric acid to tetra-hydro-nicotyrine which was identical with *d,l*-nicotine obtained by Pictet. In order to remove all possible doubts as to the chemical constitution of synthetic nicotine the following wet reaction process of obtaining synthetic nicotine was used. Nicotinic acid-ethyl ester was condensed with *N*-methyl pyrrolidone, the lactone ring was subsequently opened, the resulting ketone was reduced with alcohol, and finally hydriodic acid added to obtain the desired *d,l*-nicotine. To simplify the method used by Pictet in obtaining nicotine, it was found that, if palladium and animal charcoal are used as catalyzers and if the nucleus of pyrrole in nicotyrine is carefully hydrated, the method is simplified considerably. Consequently nicotyrine free of nicotine was used which was obtained according to the method of Blau, and then subjected to the influence of the above catalyzers, proper temperature and hydrogen and careful hydration to satisfy the double bonds of pyrrole, when the compound tetra-hydro-nicotyrine was obtained. Because nicotine bi-picrate is slightly soluble in picrate solution, tetra-hydro-nicotyrine was easily separated out. It was found upon further examination that tetra-hydro-nicotyrine was identical with the synthetic *d,l*-nicotine.—E. SPÄTH and F. KUFFNER. *Ber.*, 68 (1935), 494. (G. B.)

Sophora Alopecuroides—Alkaloids of. Two new alkaloids were isolated from the herb *Sophora alopecuroides*. The first alkaloid obtained was named *sophoridine* and had the formula $C_{15}H_{26}N_2O$. It melted at 109–110° and had the following optical rotation: $[\alpha]_D = -63.57°$. The second alkaloid was named *sophoramine* ($C_{15}H_{20}N_2O$); it melted at 164–165°. Its optical rotation was $[\alpha]_D = -90.85°$. This compound was an isomer of thermopsins and it behaved as an unsaturated compound.—A. P. ORECHOW. *Chem.-Pharmaz. Ind.* (russ.: Chemoko-pharmazewtitscheskaja Promyschlemost) (1934), No. 5, 10–13; through *Chem. Zentr.*, 106 (1935), 2215. (G. B.)

Essential Oils and Related Products

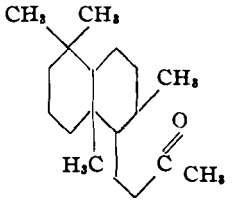
Aristolochia Indica Linn—Chemical Examination of the Roots of. II. Essential Oil. The essential oil has been found to consist mainly of a new sesquiterpene, ishwarene, a new sesquiterpene ketone, ishwarone, and a new sesquiterpene alcohol, ishwarol, and a small amount of camphor.—U. S. K. RAO, B. L. MANJUNATH and K. N. MENON. *J. Indian Chem. Soc.*, 12 (1935), 494; through *Squibb Abstract Bulletin*, 8 (1935), A-1534.

Camphor from Wormwood. The essential oil of *Artemisia Austrachanica* contains 60–70% of *l*-camphor.—T. A. SOKOLOVA. *Plasticheskie Massui* (1934), 26, No. 5; through *Chem. Abstracts*, 29 (1935), 3112.

Citronellols—Variations in Commercial. A review and discussion of the structure of citronellol. The author concludes that natural citronellols are chiefly of the form 2,6-dimethyl-octen-2-ol-(8).—KONRAD BOURNOT. *Am. Perfumer*, 31 (1936), 57, 98. (G. W. F.)

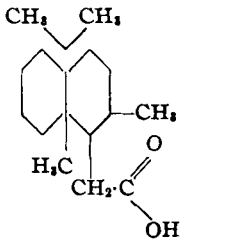
Dacrydium Biforme—Di-Terpene-Alcohol of. The wood of *Dacrydium biforme* contains a characteristic red coloring material and an oil which has a pleasant smell. The wood was extracted with 96% hot alcohol and a resin was obtained of a reddish color. The red color in the resin is insoluble in ether or benzene. The resin was extracted with ether, and then to this 5% of sodium carbonate was added. From this was obtained 10% of a material which was acid in nature and 70% of a yellowish, viscous neutral oil. Using benzene as an extraction factor now direct from the wood the same yield of oil was obtained as when alcohol was previously used. The acidic substances were recovered from the alkaline extract of the benzene mixture of the resin with HCl and ether; from this mixture an impure crystalline acid substance was obtained and a mass of dark acidic substance which had an odor of fatty acids; a clear crystalline product melting at 158° was also obtained. Using the vacuum distillation process for the neutral oil the following fractional distillation products were obtained; 1. b. p. 150–152°, 67.1%; 2. b. p. 152–157°, 12%; 3. b. p. 157–185°, 8.9%; 4. b. p. 185–210°, 3.4%. From the fractional products (1) and (2) *manool*, $C_{20}H_{34}O$, was obtained; b. p. $_{0.6}$ 153° to 158°; b. p.$_{0.2}$ 122–145°; the crystals recovered from petroleum ether had the following properties: m. p. 53°; D_4^{19} 0.9712; n_D^{19} = 1.5156; mol. refr. for $C_{20}H_{33}OH$, $F_2 = 90.21$; e. m.$_D$ = −0.54; $[\alpha]_D^{19}$ = +30.4°. This compound behaved as an unsaturated hydrocarbon. It reacts with HCl in ether to form manoentrichloride, $C_{20}H_{35}Cl_3$; manool reacts with ethyl acetate and platinum oxide + H_2 at 15° to yield tetrahydro-*manool*, $C_{20}H_{38}O$; needle-like crystals separated out from a solution of petroleum ether and ace-

tone; m. p. 55–56°. In hydrating this compound with ethyl acetate and platinum a new substance formed, namely, dihydromanool, $C_{20}H_{36}O$; m. p. 151–152°; reacting this with HCl, the dihydrochloride derivative is obtained, $C_{20}H_{36}Cl_2$. Manool reacts with hot formic acid (98%); during this reaction, the (OH) group is eliminated and a tricyclic hydrocarbon $C_{20}H_{32}$ with 2 double bonds is the result; m. p. 121°; D_4^{18} 0.9482; n_D^{18} = 1.5179; mol. ref. F_2 87.04; subsequently manool is a bicyclic diterpene alcohol with 2 double bonds, which is identical with manoyl-oxide's arrangement of the carbon atoms. The good yield of manoolbenzoate (64%) which was obtained tends to indicate that the tertiary (OH) group is located on the outside of the cyclic ring. This was confirmed in using ozone on tetrahydromanone. *Tetrahydromanool* reacts in absolute ether and HCl to yield a liquid monochloride. When this compound is reacted with anilin at 100° a liquid bicyclic tetrahydromanone $C_{20}H_{38}$ is recovered; b. $p._{0.2}$ 141–142°; D_4^{20} 0.9158; n_D^{20} = 1.5030; mol. ref. F_1 89, 19; e. $m._d$ = −50°. This compound has a double bond at the tertiary carbon atom. With carbon tetrachloride and ozonization at 0° it forms an ozonoide which separates again at 110° into a neutral and acid constituent. The neutral constituent was distilled and it yielded a liquid ketone $C_{18}H_{32}O$. (I)



I

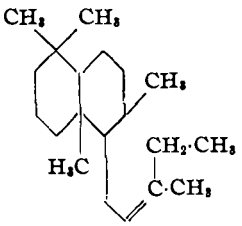
This compound separates out from alcohol in crystalline needles (semi-carbazone). Using oxalic acid, water and a high temperature the ketone $C_{18}H_{32}O$ was again recovered. The acid constituent was composed entirely of a crystalline compound $C_{16}H_{28}O_3$. (II)



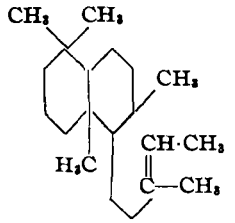
II

Hence the Hel separation points out in two directions either (III or IV)

III

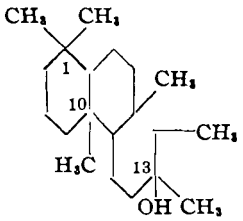


or



IV

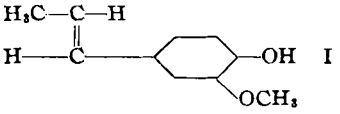
The (OH) group in manool is found to be at the C_{13} atom



V

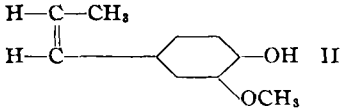
Tetrahydromanool is then produced according to the explanation in the structural formula, in (V). One of the double bonds in manool is located on the outside of the cyclic ring.—J. R. HOSKING and C. W. BRANDT. *Ber.*, 68 (1935), 1311–1316; through *Chem. Zentr.*, 106 (1935), 2217. (G. B.)

Isoeugenol—Physical Constants of. Solid isoeugenol was conceived after analagous comparison to the trans-form of the formula:



I

and the liquid isoeugenol as the cis-form having the formula II



II

The constants of the two isomers were examined and more constituents supplied with samples of the liquid isoeugenol, whose methyl ether and acetate were examined by Junge (*a*) and Volk (*b*) who prepared pure compounds of the two acetates, from which were separated out by Riedel the free isoeugenols and the methyl ether. All the isomers and new compounds were carefully examined and the following classified table compiled.

Crystalline isoeugenol..	(*b*) (No. 1)	m. p. 33°; b. $p._{12}$ 140°; D_4^{20} 1.087; $n\text{He}^{20}$ = 1.5778.
Liquid isoeugenol.....	(*b*) (No. 2)	—; b. $p._{11}$ 133°; D_4^{20} 1.088; $n\text{He}^{20}$ = 1.5724.
Liquid isoeugenol.....	(*a*) (No. 2*a*)	—; b. $p._{11}$ 130°; D_4^{20} 1.086; $n\text{He}^{20}$ = 1.5716.
Methyl ether from crystalline isoeugenol..	(*b*) (No. 3)	—; b. $p._{10}$ 142°; D_4^{20} 1.056; $n\text{He}^{20}$ = 1.5699.
Methyl ether from liquid isoeugenol	(*b*) (No. 4)	—; b. $p._{11}$ 130°; D_4^{20} 1.055; $n\text{He}^{20}$ = 1.5647.
Methyl ether from liquid isoeugenol	(*a*) (No. 4*a*)	—; D_4^{20} 1.053; $n\text{He}^{20}$ = 1.5626.
Acetate from crystalline isoeugenol.....	(*b*) (No. 5)	—; b. p. 99.7°; D_4^{20} 1.0251; $n\text{He}^{20}$ = 1.5108.
Acetate from liquid isoeugenol.....	(*b*) (No. 6)	—; b. p. 99.7°; D_4^{20} 1.0251; $n\text{He}^{20}$ 1.5055.
Acetate from liquid isoeugenol.....	(*a*) (No. 6*a*)	—; —; D_4^{20} = 1.093; $n\text{He}^{20}$ = 1.5395.

This proves that the crystalline isoeugenol and its derivatives have a higher boiling point than the corresponding isomers, and also a higher refractive index, while they show no differences in their vapor densities. The following arrangement of the spectroscopic constants follows the classification in Table I. E $\Sigma\alpha$; E $\Sigma\gamma$; E ($\Sigma\beta - \Sigma\alpha$); E ($\Sigma\gamma - \Sigma\alpha$): No. 1: + 1.46; +1.57; +72%; +80%; No. 2: +1.21; +1.29; +61%; +68%; No. 2*a*: +1.23; +1.34; +61%; —; No. 3: +1.61; +1.75; +77%; +86%; No. 4: +1.43; +1.54; +68%; +78%; No. 4*a*: +1.40; +1.51; +63%; +71%; No. 5: +1.55; +1.64; +62%; —; No. 6: +1.32; +1.38; +50%; —; No. 6*a*: +1.00; +1.09; +46%; —. The constants are higher in the solid isoeugenols than those of its isomers. Taking in consideration the melting and boiling points and the spectroscopic constants this proves that the solid isoeugenols exhibit a trans-form. A hydroaromatic combination was established for the 1-2 derivatives; because the cis-form has a higher density, b. p., and refractive index than the trans-form, it will possess a smaller mol. wt. In order to prove these statements an examination was made of a number of styrole derivatives such as: ω-bromstyrole A, ω-bromstyrole B, crystalline isoeugenol, liquid isoeugenol, stilbene, isostilbene, trans- and cis-α,β-dimethylstilbene, trans- and cis-β-methylcinnamic acid-methylester, trans- and cis-β-methyl-*o*-methoxycinnamic acid methylester. In all these cases, the constants of the isomers

having high indices are of the trans-type; the specific rotations and melting points are often but not always higher than the compounds of the cis-form. The refraction and dispersion indices were higher for the trans-type also. These comparisons were not true when the two β-methylcinnamic acid were esterified. The compound bromstyrole A was found to be of the trans-type, in contrast to the bromstyrol B which is of a cis-type.—K. v. AUWERS. *Ber.*, 68 (1935), 1346; through *Chem. Zentr.*, 106 (1935), 2048. (G. B.)

Natural Fruit Odors in Perfumery. Extractions of perfume materials from fresh fruits are superior to many synthetic substances used in perfumery.—A. T. FRASCATI. *Am. Perfumer*, 13 (1936), 76–77. (G. W. F.)

Oil of Carrot Seed. Cultivation, collection, distillation and chemistry of oil of carrot seed (*Daucus Carota L.*) is discussed. Oil of French carrot seed had the following properties: Specific gravity (15°) −0.906–0.928; $[\alpha]_D$ −12° 15′ to −22° 18′; refractive index (18°) 1.4799–1.4882; acid value 1.4–2.8; saponification value 10.3–42.0; ester value after acetylation 47.6–93.3; soluble in up to 10 volumes of 80% alcohol, and in 0.5 volume and more of 90% alcohol.—ERNEST S. GUENTHER. *Am. Perfumer*, 31 (1936), 71–72. (G. W. F.)

Oil of Sweet Oranges from French Guinea. A review of the economic and technical characteristics of oil of sweet oranges from French Guinea. Analyses carried out since those reported in 1932 and bearing on over 50% of the production in French Guinea, indicate some slight modifications in the previously reported constants; optical rotation frequently reaches 99°, the maximum figure observed being 99° 16′; the refractive index frequently reaches the minimum figure of 1.4720 ± 0.0002 in fresh oil; the aldehyde content frequently exceeds 1.5%, and the maximum of frequently observed values should be raised to 2.4%; oils from ripe fruit have the highest aldehyde and nonvolatile contents. From a discussion of the work of various investigators, it is concluded that the hydroxylamine hydrochloride method is the only one that gives accurate results for the determination of aldehydes.—Y. R. NAVES. *Parfums France*, 13 (1935), 298–308 (in French and English). (A. P.-C.)

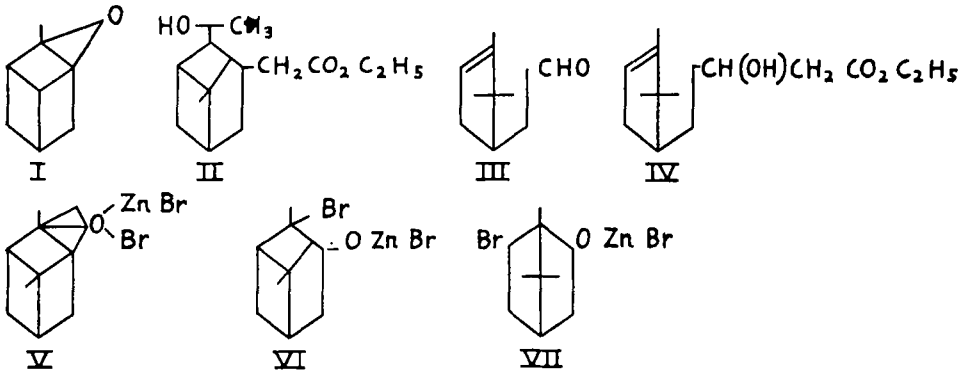
Otto of Roses, Bulgarian. Semi-commercial distillations were carried out on rose petals, separating the oil obtained directly and that obtained by redistillation of the water, and 9 analyses of the products are tabulated and discussed. Presence of alcohol (in greater amounts in the oil from the water than in the direct oil) was confirmed; also, that the apparent rhodinol content (determined by hot formylation) exceeds 40% to 45%, that the rhodinol: geraniol ratio is greater than 1, and that all otto of roses contains azulenogenic sesquiterpenes which are present in greater amounts in the direct oil than in oil from water. The following rapid method is recommended for the determination of stearoptenes: to 2–4 Gm. of sample in a 150-cc. Erlenmeyer add 50 cc. of 75% alcohol, heat a few mins. on the water-bath, immerse while stirring in an ice-water mixture, filter under suction on a Tramm funnel through a tared filter paper dried at 75° C., wash with 200 cc. of 75% alcohol and dry to constant weight in a crystallizing dish at exactly 75° C.; dissolve in a little chloroform and add a few drops of a 5% solution of bromine in chloroform, there should be at most a slight green coloration showing the presence of not more than a trace of azulenogenic sesquiterpenes.—R. GARNIER and S. SABETAY. *Ann. Fals.*, 28 (1935), 585–589. (A. P.-C.)

Star-Aniseed Oil—Sesquiterpenes of. The principal sesquiterpene isolated from star-aniseed oil is the monocyclic bisabolene. The sesquiterpene fraction contains oxygenated compounds which are not removed by distillation from sodium but are destroyed by potassium; the fraction so obtained contains a small quantity of cadinene. Bisabolene can be separated as the hydrochloride and then cadinene can be recovered from the mother-liquors.—R. W. JACKSON and W. F. SHORT. *J. Soc. Chem. Ind.*, 55 (1936), 8T. (E. G. V.)

Styrax. A description of its production, characteristics, composition and uses.—A. ROLET. *Parfumerie Moderne*, 29 (1935), 469–477. (A. P.-C.)

Terpene Oxides—Isomers of. When the compound α-pinene oxide (I) is reacted with zinc and brom-acetic-acid ester it yields an ester $C_{14}H_{24}O_3$ whose behavior indicates a compound with a double bond. Saponifying this compound yields an unsaturated acid $C_{12}H_{22}O_3$ which melts between 74–75° F. A normal course of the same reaction should have yielded a saturated (II) and not an unsaturated compound. The isomerization process was made possible and brought to completion during the formation of the zinc bromide compound. Actually the compound in the formula (I) is converted with the use of $ZnBr_2$ to benzene and this further to

campholenaldehyde (III), whose structure was established through the oxidation process of the compound to campholenic acid and dioxydihydrocampholenic acid. The same ester was obtained when campholenic acid reacted with bromic-acid-ester and zinc as that in formula (I);



consequently the ester $C_{14}H_{24}O_3$ had the structural formula (IV). The isomerization of I to III with the addition of $ZnBr_2$ is completed through the intermediate steps (V), (VI) and VII. This reaction is analogous to the conversion of cyclohexenoxide to cyclopentanaldehyde, using the same reaction scheme. The schemes which different authors give for the explanation of converting campholenaldehyde in hydrating α-pinene with diluted acids is unsuitable in this case.—B. ATBUSOW. *Ber.*, 68 (1935), 1430; through *Chem. Zentr.*, 106 (1935), 2068. (G. B.)

Tyrolean Oils. Gathering and distillation of pine needles is described.—ERNEST GUENTHER. *Am. Perfumer*, 31 (1936), 54–56, 84. (G. W. F.)

Ylang-Ylang and Cananga Oils. Both oils are obtained from the flowers of *Cananga odoratum* although they have quite different odors. The former is obtained chiefly from the Philippines and Reunion, the latter from Java and neighboring localities. They have the following constants (Y—ylang-ylang, C—cananga): specific gravity (30°/4°) Y 0.911–0.958, C 0.896–0.942; optical rotation Y −27° to −49.7°, C −27° to −87°; refractive index (30°) Y 1.4747–1.4930, C 1.4788–1.5082; ester value Y 90–138, C 42–94; solubility in 90% alcohol, Y 0.5–2 volumes. The following substances have been identified in the oils: alcohols—*p*-cresol methyl ether, *l*-linalool, geraniol, eugenol, *iso*-eugenol (the last three possibly as ethers), benzyl alcohol; esters—formates, acetates (mainly benzyl), valerates, benzoates (mainly benzyl and methyl), salicylates (mainly benzyl and methyl). Solvent extraction of ylang-ylang flowers yields only one-third to one-half the quantity obtained by steam distillation. Ylang-ylang is used to the extent of 2–10% with a large number of floral oils to produce a bouquet.—V. G. FOURMAN. *Am. Perfumer*, 31 (1936), 59–60. (G. W. F.)

Fixed Oils, Fats and Waxes

Animal Oils—Note on the Polyethenoid Acids of the *n*-Octadecane (C_{18}) Series Present in. The unsaturated C_{18} acids of whale oil consist mainly of octadecenoic acids (about 90%), chiefly oleic acid, but the latter is accompanied by small proportions of an isomeride. About 3% is tetraethenoid ("stearidonic acid," $C_{18}H_{28}O_2$). The remainder, 7%, may contain octadecadienoic acids, but there can only be a very small proportion, if any, of ordinary linoleic acid in this group. The unsaturated C_{18} acids of cod liver oil include about 70% of monoethenoid acids (chiefly oleic, with small proportions of an isomeric acid $C_{18}H_{34}O_2$) and at least 10% of tetraethenoid stearidonic acid. Of the remaining 20%, some may also possibly be tetraethenoid, or the whole may be di- (or tri-) ethenoid in character; but linolenic acid is not present, and ordinary linoleic acid, if present, is in extremely small amount.—T. G. GREEN and T. P. HILDITCH. *J. Soc. Chem. Ind.*, 55 (1936), 4T. (E. G. V.)

Coconut-Oil Wax—Products from. Five hundred tons of coconut oil stored for about 3 mos. yield about 40 kilos of a sediment which when purified by filtration and crystallizing from kerosene gave white crystals m. p. 93–96° C. It is soluble in various organic solvents. Pre-

liminary experiments showed that it was a wax containing the myricyl ester of cerotic acid. Commercial products such as floor wax, furniture and leather polishes were prepared from the wax.—SIMEONA S. TANCHICO. *Philippine J. Sci.*, 57 (1935), 423. (P. A. F.)

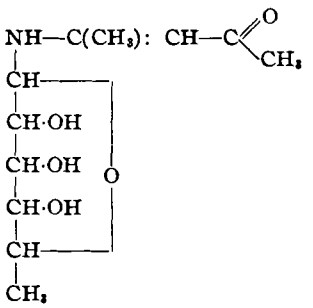
Mustard Oil—Constants of. The bland oil of the mustard seeds *Brassica juncea, napus* var. *dichotoma* and *campestris* var. *sarson.* is used as an edible cooking oil in Bengal. Examination of 49 samples of expressed oil from these 3 species, indicated that the ranges for the saponification and iodine values under the Bengal Food Adulteration Act are too narrow and should be 169–177 and 96–110, respectively, instead of 169–175 and 96–104. Furthermore, the viscosity is also important in detecting adulteration of the oil. The oil may be adulterated with 20% or more of fatty oil without significantly changing the saponification and iodine values.—B. B. BRAHMACHARI. *Indian Med. Gaz.*, 70 (June 1935); through *J. Trop. Med. Hyg.*, 38 (1935), 276; through *Squibb Abstract Bull.*, 8 (1935), A-1828.

Pilchard Oil—Utilization of Canadian. Canadian pilchard oil contains considerable unsaturated components and can be classed as a drying oil, but also contains saturated and other non-drying components. It also contains considerable vitamins and is valuable as a poultry oil, but crystallization of the saturated compounds to form a semi-solid material makes it difficult to handle the oil. By appropriate processes, the raw pilchard oil can be made to yield a clear oil, refined oil, domestic cooking oil, shortenings and soap bases, very hard fats, solid saturated fatty acids, stearin, sulphurized fat, polymerized stand oils, mixed fatty acids, new process varnish, refined non-drying fatty acids and medicinal oils. In the latter group is thallatol which is produced from clear pilchard oil by blending with fish liver oils of high vitamin A content, or by the oil extraction process in which the clear pilchard oil is used as a solvent for the extraction of the high vitamin A oil from the livers of halibut, ling cod, etc. It contains enough vitamin A and D for prophylactic use in humans and animals, is palatable and can be obtained more cheaply than a good grade of cod liver oil to which it is equal in potency.—H. N. BROCKLESBY. *Biological Board of Canada; Progress Reports of Pacific Biological Station and Pacific Fisheries Experimental Station*, 13 (Oct. 1935); through *Squibb Abstract Bull.*, 8 (1935), A-1828.

Ricinus Zanzibarinus—Oil from. The oil obtained from *R. Zanzibarinus* compares closely in physical constants with castor oil obtained from *R. communis.* In the oil 1.1% saturated acids are present and 92.3% are acids with one double linking. In the total fatty acids 6.6% linoleic acid is present; the remainder of the fatty acids consists of ricinoleic alone or possibly with a small quantity of oleic acid.—A. STEGER, J. VAN LOON and C. SMELT. *J. Soc. Chem. Ind.*, 55 (1936), 41T. (E. G. V.)

Glycosides, Ferments and Carbohydrates

Glucosylketonimide—Ternary Combination of Sugars with Ammonia and β-Diketone of. The authors state that previous observations were made by many researchers on rhamnose, which renders a crystalline substance when ammonia and aceto-acetic-ester are acted upon it. Following along the same line of experimentation the authors used aldoses, together with ammonia and 1,3-diketone. The crystalline compound so obtained was named glucosylketonimide. With mannose, using the same method, a crystalline compound was also obtained having the following structural formula:



I

In using arabinose, glucose and galactose, the products obtained were not of a crystalline but of a liquid syrupy nature. The crystals of glucosylketonimide are colorless, slightly soluble in cold but more soluble in warm water. It reduces Fehling's and ammoniacal-silver nitrate solutions when heated. No coloration is obtained when ferric chloride T.S. is added. It is hydrolyzed with dilute mineral acids with the aid of heat. The crystals were analyzed in a dry air chamber, and it was found that it contained one more molecule of water.—E. VOTOCEK and F. VALENTIN. *Coll. Trav. chim. Tchecoslovaguie,* 7 (299) (June 1935), *Prag., Tschech. Techn. Hochschule, Inst. f. organ. Chemie;* through *Chem. Zentr.*, 106 (1935), 2062. (G. B.)

Other Plant Principles

Aristolochia Indica, Linn.—Chemical Examination of the Roots of. I. *A. indica* is a twining perennial plant growing in tropical India. The roots have a very bitter taste and a characteristic aromatic odor. Antivenomous action has been attributed to them but not proved. Analysis of the roots yielded an essential oil responsible for the odor; a fixed oil containing palmitic, stearic, lignoceric, cerotic, oleic and linolic glycerides, sitosterol, etc.; a very bitter yellow compound $C_{17}H_{11}O_7N$, named isoaristolochic acid; a new alkaloid, aristolochine, isolated as the principal component; reducing sugars and allantoin.—P. R. KRISHNASWAMY, B. L. MANJUNATH and VENKATA, S. RAO. *J. Indian Chem. Soc.*, 12 (1935), 476; through *Squibb Abstract Bull.*, 8 (1935), A-1535.

Colombo—Study of the Bitter Principles of. Investigations on Columbine. Columbine is very difficult to obtain pure. Acetylation yields an acetyl derivative melting with decomposition at 230° C. and having a rotary power of 20–22°, and also another acetyl derivative having a much higher melting point. Columbine and acetylcolumbine melt with evolution of carbon dioxide and formation of decarboxycolumbine (rotary power −19.6°, melting point 149°, composition corresponding to $C_{19}H_{22}O_4$) and decarboxyacetylcolumbine (rotary power) −345°, melting point 169°). The formula found for decarboxycolumbine indicates that columbine is $C_{20}H_{22}O_6$. Columbine, and also the impurities which accompany it, exhibit the characteristics of lactones, and attempts were made to make use of differences in the rate of lactonization to effect a chemical purification of columbine. In this operation the product must not be exposed too long to the action of alkalies which gives rise to the formation of uncrystallizable products. When the action of alkali is complete, the solution is acidified and several crystalline fractions are extracted. The first fractions, which crystallize in needles and have a rotary power ranging from 70° to 80°, have a composition corresponding to the formula $C_{20}H_{22}O_6$, and has been called isocolumbine. On acetylation it yields the same acetyl derivative as columbine, while on melting it gives decarboxyisocolumbine. It can be admitted that columbine and isocolumbine contain two lactone groups and one alcohol function, the sixth atom of oxygen being combined in a heterocyclic ring.—F. WESSELY, K. DINJASKI, W. ISEMANN and GRETE SINGER. *Monatsh. Chem.*, 66 (1935), 87–100; through *Chimie & Industrie,* 34 (1935), 1378. (A. P.-C.)

Drugs—Further Contribution to Variation Statistics of. The nitrogen contents of the two adhering cotyledons of sweet almonds and of laurel seeds are compared. The pairs of adhering cotyledons were found to have practically identical nitrogen contents. The nitrogen content for bitter almonds varied from 6.03% to 2.57% and for laurel seeds from 1.89% to 0.56%.—L. ROSENTHALER. *Scientia Pharm.*, 7 (1936), 5. (M. F. W. D.)

Lacinaria Species—Study of. Lacinaria or Laciniaria is generally used to-day for the genus formerly known as Liatris and still used in continental Europe. As "Liatris" the corn of several species has been used in medical practice especially by Eclectics and Shakers. The present study was of *L. spicata* and *L. tennifolia.* The two species are described. A general chemical analysis was made. Findings are tabulated and discussed. Members of the genus have been used as foods, in perfumery, as an insect repellant, in medicine and as an adulterant for other crude drugs. In the past, "Liatris" has been claimed to be alexiteric, diuretic, astringent, tonic, stimulant, alterative, diaphoretic, febrifuge, antispasmodic, anodyne, emmenogogue, expectorant, carminative and antisyphilitic. Experiments with guinea pigs and later on a human subject gave evidence of value as a tonic, stimulant and cardiac drug but little value as a diuretic or diaphoretic as it has been claimed. The chemical examination showed presence of volatile oil, fixed oil, resins, tannin, a sterol similar to Beta-sterin, and bitter principle.—B. V. CHRISTENSEN and G. M. HOCKING. *J. Am. Pharm. Assoc.*, 25 (1936), 15. (Z. M. C.)

Perilla, Chinese—Chemical Examination of. An alcoholic extract of the leaves of *Perilla nankinensis*, when distilled with steam, yields a large amount of an essential oil, which contains a ketone, but not perilla aldehyde (cf. *C. A.*, 14 (1920), 2839). The nonvolatile residue of the extract is a dark green resin (9.6% of the leaves) which yields a phytosterol, ceryl alcohol, hentriacontane, palmitic, stearic, oleic, linoleic, linolenic and isolinolenic acids, and a new alcohol perillol, $C_{28}H_{50}O_2.2H_2O$, m. 271–272°. The water-soluble portion of the alcoholic extract contains a large amount of glucose.—YUOH-FONG CHI. *J. Chinese Chem. Soc.*, 2 (1935), 315; through *Chem. Abstr.*, 29 (1935), 2659.

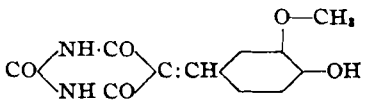
Sterols of Achillea Millefolium. Phytochemical Notes. No. 112. Some experimental work on a sterol mixture indicated that stigmasterol and sitosterol were present, the latter predominating.—OLE GISVOLD. *J. Am. Pharm. Assoc.*, 25 (1935), 1071. (Z. M. C.)

Tannins—Natural. This review of the natural tannins covers the physiological significance, extraction, properties and classification of the natural tannins, the tannins related to the depsides, tannins related to diphenyldimethylolid, phlobaphene-producing tannins or phlobatannins, and caffetannins. R. concludes that the method of classification of the tannins is somewhat artificial since all, with a few exceptions, are phlobatannins. The caffetannins do not possess tanning powers. A graphic summary of the relations between the various plant coloring matters of the benzopyran type is given. 63 references.—ALFRED RUSSELL. *Chem. Rev.*, 17 (1935), 155; through *Squibb Abstract Bull.*, 8 (1935), A-1731.

Unclassified

Acridine Series—Chemotherapeutic Studies in. The following members of the 2:6- and 2:8-diaminoacridines were synthesized: 5:5′-dinitrodiphenylamine-2-carboxylic acid (m. p. 263°), obtained by condensing 2-chloro-4-nitrobenzoate with *m*-nitroaniline in the presence of copper; 3:3′-diaminodiphenylamine (m. p. 94.5–95°), prepared by reducing the above acid or the following amine; 3-3′-dinitrodiphenylamine (m. p. 186.5°), obtained by condensation of *m*-nitroaniline with *m*-bromonitrobenzene; 5-chloro-2:6-dinitroacridine (m. p. 200–203°), obtained by ring closure of the above acid using phosphorus oxychloride, some of the corresponding 2:8 compound was also obtained; 2:6-dinitroacridone obtained by hydrolysis of the former 2:6-diaminoacridone (m. p. 306°), obtained by reducing the previous compound with stannous chloride; 2:6-diaminoacridine (m. p. 213–216°), produced by reduction of the previous compound with sodium amalgam; 5-chloro-2:8-dinitroacridine (m. p. 247–248.5°), obtained as above hydrolyzed to form 2:8-dinitroacridone which likewise was reduced to 2:8-diaminoacridine (m. p. 280°).—ADRIEN ALBERT and W. H. LINNELL. *J. Chem. Soc.* (1936), 88–93. (G. W. F.)

Aldehydes—Tautomerism of. The different vanillins obtained from ether (Bourbonal) can hardly be distinguished one from the other, because of the slight difference in their melting points and because of the similarity in behavior during the reactions. In order to identify them, the attempt was made to convert them into a barbituric acid condensation derivative. The condensation was accomplished by warming the components in alcohol from which the corresponding (1) C-Vanillin and (2) C-Bourbonal barbituric acid (I) were obtained.

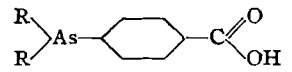


I

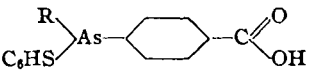
The first compound begins to melt at 263° but decomposes at 270°. The second compound melts at 248°. Both are light orange in color, slowly soluble in water and alcohol. The yellow color in water changes to orange by the addition of an alkali. This reaction is very sensitive: p_H = 8.5–9.0. The change in color is due to conversion of the benzoid to the chinoid form which exhibits an orange color. The compound without a *p*-(OH) group shows no tautomerism. When C-piperonal and C-veratrylbarbituric acid are produced in the same manner they exhibit a yellow color also, but on adding an alkali to this solution, the yellow color does not change. The condensation products from *m*- and *p*-nitrobenzaldehyde with barbituric acid are colored light orange. On the addition of an alkali the light orange color changes to a yellow

color.—M. KRAKOWSKI. *Arch Chemji Farmacji*, 2 (1935), 164–170; *Warshau Hygien. Inst.*; through *Chem. Zentr.*, 106 (1935), 2213. (G. B.)

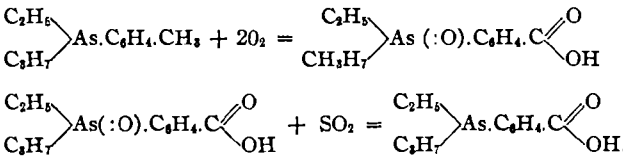
Arsenic—Stereochemistry of. The author tried to prepare arsenic carboxylic acid compounds of the type formulæ

I 

and

II 

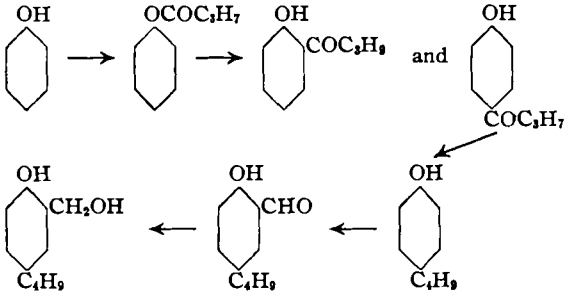
from methylethyl-*p*-bromphenylarsin and methyl-*p*-tolyl-*p*-bromphenylarsin, respectively, by substituting the bromine atom at the para position with a  group. The substitution method of Rosenmund was used with little success. On further examination it was found that in first oxidizing a tertiary tolyl group of an arsine, and then reducing it with SO_2, the following reactions took place:



In this manner it was possible to obtain *p*-(ethyl-*n*-propylarsenic) benzoic acid which had a melting point of 154–156°.—G. KAMAI. *Ber.*, 68 (960), (1935); through *Chem. Zentr.*, 106 (1935), 2047. (G. B.)

Azo Compounds, Medicinal. A new monoazo compound useful for medicinal purposes consists of a diaminophenylazophenyl compound, in which the amino groups of the first phenyl group are unsubstituted, while the second phenyl group is provided with at least two substituents; at least one of the substituents is in ortho-position to the azo linkage, and at least one of the substituents consists of a methyl group while the other consists of a methoxy or a hydroxy group.—R. R. RENSHAW, E. T. TISZA and B. F. DUESEL, assignors to THE PYRIDIUM CO. U. S. pat. 2,030,896, Feb. 18, 1936. (A. P.-C.)

***p*-Butyl Saligenin—Preparation of.** The preparation of this compound was undertaken in order to compare some of its physical and pharmacological properties with other substituted saligenins. The intermediate compounds prepared are shown by the following scheme:



The method used was that of Fries for the rearrangement of phenyl-acyl esters to acyl phenols with the aid of aluminum chloride and subsequent reduction according to Sandulesco and Girard with amalgamated zinc and hydrochloric acid. This involved formation of phenyl butyrate and its rearrangement to produce both *o*-butyryl phenol and *p*-butyl phenol. The *p*-butyryl phenol was then reduced to give *p*-butyl phenol. The 5-butyl-salicylaldehyde was made from *p*-butyl phenol by means of the Reimer-Tiemann reaction for the production of aldehydes and this compound was reduced to *p*-butyl saligenin by the Adams platinum oxide catalyst reduction method. —ROBB V. RICE and WILTON C. HARDEN. *J. Am. Pharm. Assoc.*, 25 (1936), 7. (Z. M. C.)