PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

CONTENTS

GALENICAL (*Continued*)

Dyes—Injectible Solutions of. Since the use of certain dyes intravenously has been found beneficial in various conditions as leprosy, etc., the need of stable solutions for injection is evident. The method devised for preparing gentian violet solutions is as follows:

Solution A		Solution B	
Gentian violet	10 Gm.	Cane sugar	95 Gm.
Double distilled water	250 cc.	Double distilled water *q. s. ad*	500 cc.
N/20 sodium hydroxide	100 cc.		
Double distilled water *q. s. ad*	500 cc.		

Dissolve the gentian violet in the water in a mortar, add 100 cc. *N*/20 sodium hydroxide and make up to 500 cc. with distilled water. Mix with solution B, filter and adjust to p_H 7.4. Fill in 5-cc. ampuls and sterilize by tyndallization at 80° for one-half hour on 3 successive days. The solution will not develop a precipitate on standing. The method of preparing a methylene blue solution for injection is the same as above using the following formula:

Solution A		Solution B	
Methylene blue	10 Gm.	Cane sugar	94 Gm.
Double distilled water	250 cc.	Double distilled water *q. s. ad*	500 cc.
N/10 sodium hydroxide	20 cc.		
Double distilled water *q. s. ad*	500 cc.		

When a solution is prepared similar to the above but substituting *N*/10 sodium chaulmoograte for part of the sodium hydroxide, a clear solution cannot be obtained. Thus, it appears that in this case both solutions must be injected separately.—H. MITREA. *Schweiz. Apoth.-Ztg.*, 73 (1935), 561. (M. F. W. D.)

Formalin—5 to 10% Solution of. A 5 to 10% solution of formalin is proposed to replace tincture of iodine (D. A. B.—10%) for the sterilization of operation sites. Experimental work shows that it has greater efficiency as a bactericide than 10% tincture of iodine. The formula used is as follows: Formalin, 5 to 10 parts; eosin, 0.05 part; alcohol 96% (denatured), to make 100 parts.—ANON. *Pharm. J.*, 135 (1935), 213. (W. B. B.)

Galenical Studies. I. Creosote Pills. The disintegration of pills and disintegrating agents are discussed. The following formulas are offered: (1) Creosote 1.25, extract fæcis siec. (Cenomasse) 1.50, powdered licorice root 2.50, glycerin and water *q. s.* to make 25 pills. The mass is plastic and disintegrates in alkaline solution. (2) Creosote 1.25, black pepper 0.25, extract fæcis siec. 4.00, glycerin and water *q. s.* to make 25 pills. The pills decompose in an alkaline solution. (3) Creosote 0.63, extract fæcis siec. 3.5, glycerin 0.5, water *q. s.* to make 25 pills. The pills disintegrate in acid solution. (4) Creosote 1.25, extract fæc. siec. 1.00, fæc. med. 1.50, glycerin and water *q. s.* to make 25 pills, which decompose in an alkaline solution. (5) Creosote 1.25, medicinal carbon 1.25, extract fæc. siec. 2.00, glycerin and water *q. s.* to make 25 pills which decompose in an acid solution. (6) Creosote 5, benzoin 3, starch 4, licorice root 13, glycerin *q. s.* to make 100 pills, which decompose in acid solutions. Formulas for pills and masses of creosote from five different sources are also given and discussed.—B. SAIKO. *Pharm. Monatshefte*, 16 (1935), 131–133. (H. M. B.)

Galenicals Containing Poisons—Uniformity of Methods of Preparation of. An explanatory commentary of the technique adopted in the Phar. Helv. V for the preparation of potent dry extracts of certain drugs. The following are some of the proposals: (1) To interest schools of pharmacy of those countries which are adherents to the International Pharmaceutical Federation and of those countries which are signatories to the International Agreement of September 1, 1929, to examine the technique of the Phar. Helv. V. (2) To modify, if necessary, the preparation of extracts of digitalis, coca, colchicum and ergot of rye, according to the suggestions of Professor Tiffeneau. (3) To introduce the revised formulæ into a future international pharmacopœia.—H. GOLAZ. *Pharm. J.*, 135 (1935), 209. (W. B. B.)

Hypochlorites—Antiseptic Qualities of. The authors, who consider the hypochlorites to be the most efficient and inexpensive antiseptics in present use, report that considerable variations

have been observed in the efficacy and hypochlorite content of Dakin's solution and eusol. Solutions of "calsol" showed very little loss of strength after exposure to light at room temperature for 18 days, but at the end of 32 days considerable loss had occurred. In the dark, however, no loss of strength could be detected during exposure to room temperature for 42 days, to 37° C. for 7 days or to 57° C. for 19 hours. Dakin's solution and eusol did not stand exposure to light as well as "calsol;" bringing to boiling point did not materially alter the concentration of "calsol" or Dakin's solution, apart from the fact that there might be an increase in concentration due to the evaporation of water. The authors advise the adherence in practice to well-proved hypochlorite solutions, adding that some proprietary brands are valueless. The concentration should be approximately 0.5% of sodium hypochlorite or its equivalent. Dilution (because of the burning pain produced by strong solutions) is wrong; such irritation is often due to excess of alkali and is neutralized by boric acid in Dakin's original solution. To dilute the preparation interferes with the hypochlorite content and reduces the antiseptic value. This solution, however, keeps better at a higher concentration than at which it should be used, and when this has been previously foreseen in the course of preparation, subsequent dilution to the degree indicated is necessary. The authors condemn the practice of making up solutions of a concentration higher than that at which they are intended to be used, unless careful directions as to dilution are given.—H. S. STACY and H. S. H. WARDLAW. *Med. J. Australia* (June 1, 1935), 682; through *Brit. Med. J.*, 3902 (1935), 770B. (W. H. H.)

Iodine Ointments—Non-Staining. Non-staining iodine ointments, whether prepared by the B. P. C. or N. F. formulæ, show considerable variation in appearance and stability and there is considerable variation in iodine content, both free and combined. These facts prompted the author to conduct an investigation of iodine ointments. Conclusions reached, as a result of this investigation, are as follows: (1) Terebene appears to be a suitable base for the preparation of a non-staining iodine ointment, or for stabilizing the present types made with fixed oils. (2) Two types of ointment are possible—one lemon-yellow in color, and one deep green, depending upon the relative quantities of terebene and iodine used. (3) When iodine and a fixed oil are heated together in a closed system the constituents tend to set up an equilibrium so that a small percentage of free iodine is always present. (4) The following is a suitable formula for a non-staining iodine ointment, since a standardized "Iodized terebene" could be made and the ointment made by simple dilution: iodine, 264 gr.; chloroform, 90 m.; terebene, 14 oz.—C. L. M. BROWN. *Pharm. J.*, 135 (1935), 271. (W. B. B.)

Oil-in-Water or Water-in-Oil. A discussion of emulsions.—THORPE W. DEAKERS. *Drug and Cosmetic Ind.*, 37 (1935), 323–325. (H. M. B.)

Pharmaceutical Products—Research on Sterilization and Biochemical Control of. The author concludes that some pharmaceutical products in powder and crystals can be sterilized by treating them with cold carbon disulphide.—A. J. J. VAN DE VELDE. *Pharm. J.*, 135 (1935), 210. (W. B. B.)

Solution of Adrenaline Hydrochloride—Preparation of. The Danish Dispensatory of 1934 corrects an incorrect description of the mode of preparation of adrenaline hydrochloride solution which was cited in the last Danish Phar. The author describes his technique in preparing the solution by the corrected method. In a liter, stoppered, volumetric flask of Jena glass the solution of sodium chloride (*pro analysi*) (9 Gm.) is made in freshly distilled water (981 Gm.) and filtered through a Jena sinter glass filter, then autoclaved for 15 min. at 120° C. After cooling for 10 min. at room temperature 5 Gm. of chloretone are introduced aseptically and dissolved by shaking. In a sterile test-tube 1 Gm. of adrenaline base is dissolved in 4 Gm. of 2*N* hydrochloric acid and transferred quantitatively into the flask containing the chloretone-salt solution. Finally 1.5 Gm. of sodium bisulphite reagent (Swedish Phar. X) are added. The solution is then filled into sterile, resistant glass bottles, which may be stoppered with cork if a thin cellophane is used.—S. ANDERSON. *Farm. Revy*, 34 (1935), 661. (C. S. L.)

PHARMACOPŒIAS AND FORMULARIES

B. P. C. 1934—Comments on. Criticism is made of the arrangement whereby those materials discarded from the current B. P. are adopted by the Codex. It is suggested that the "unit method" be adopted as a universal method for stating quantities for internal medicines. The method consists of writing down the materials for one dose, instead of some arbitrary number. It is regrettable that Easton's Syrup of the B. P. is still unsatisfactory and discolors with age. It is

well known that the syrup is frequently made from concentrated solutions by dilution with syrup. Some of these are made, it is feared, of a concentration that can only be attained by substituting or adding to the phosphoric acid some extraneous acid, yielding when diluted a product which is not strictly B. P. A few comments are made concerning *Collodium Salicylicum, Collodium Stypticum, Unguentum Potassii Polysulphidi, Unguentum Iodi Denigrescens, Liquor Sodii Ethylatis* and *Filtration Problems*. Some additional incompatibilities might have been mentioned. For example, under soluble barbitone there is no mention of the incompatibility with acids and ammonium salts, although earlier in the monograph it is stated that dilute acids cause the precipitation of barbitone. On the other hand, under phenobarbitone soluble there is nothing to suggest under "Incompatibility" that phenobarbitone is precipitated by acidic infusions such as the compound gentian infusion or by acidic salts, etc.—H. FINNEMORE. *Pharm. J.*, 135 (1935), 131. (W. B. B.)

NON-OFFICIAL FORMULÆ

Bath Crystals and Bath Cubes—Manufacture of. Bath crystals are expected to possess the following attributes: (1) Ready solubility in water; (2) An attractive color; (3) An attractive perfume; (4) Water-softening powers, combined with mild alkalinity, to improve detergent powers; (5) An attractive pack; (6) A reasonable price; (7) Stability under storage conditions. The choice of possible crystals includes sodium carbonate, sodium sesquicarbonate, sodium phosphate and borax. A description of each of these crystals is discussed. The question of suitable perfumes for bath crystals requires very careful consideration. The colors used for bath crystals must be harmless and non-fading. For small scale work the manufacturing process can easily be carried out by hand. The crystals are placed in a large open bowl. The color is mixed with glycerin, a little water to reduce viscosity, and the perfume, or, if desired, the perfume may be added after coloring. It is then poured on to the crystals and stirred with a stick until the crystals are uniformly coated. The glycerin, being hygroscopic, prevents efflorescence of the crystals and assists in the adhesion of the color. About 8 ounces of glycerin and 2 to 4 ounces of water are sufficient for 1 hundredweight of crystals. The quantity of color required varies with the shade required but it is usually $^1/_2$ oz. to 2 oz. per cwt. The exact amounts must be experimentally determined for each kind of bath crystal. In the case of bath cubes and bath tablets any of the ordinary ingredients for bath crystals may be used in the dehydrated form for bath tablets. Sodium bicarbonate is frequently used, especially in effervescing bath tablets, where an organic acid like tartaric may be included to generate carbon dioxide. Sodium perborate which generates nascent oxygen for oxygen bath tablets also may be used. A new possibility for bath tablets recently marketed is Calgon, chemically sodium hexametaphosphate $(NaPO_3)_3$. This chemical softens water without actually precipitating the calcium and magnesium salts present in hard water. The base chosen must be granulated, colored, perfumed and compressed in a machine designed for this work. It is advisable to perfume after granulation in order to prevent loss of perfume during exposure on the drying trays. Wrapping is usually done by automatic machines.—M. LOVAT HEWITT. *Perfumery Essent. Oil Record*, 26 (1935), 409. (A. C. DeD.)

Creams, Acid. A discussion with the following formulæ: (1) *Vanishing Cream.*—Melt 45 parts of lanette wax and 103 parts of stearin, add 3 parts olive oil and preserve with 2 parts of methyl *p*-hydroxybenzoate. When the fats are melted stir in 20 parts of triethanolamine warmed to 60° C. Pour this mixture into 800 parts of boiling water and stir until a uniform thick emulsion arises, acidify to litmus with 3% citric acid solution (about 100 parts). (2) *Lemon Cream.*—Melt 8 parts lanette wax SX and 7 parts adeps lanæ; into the molten fat dissolve 1 part benzoic acid, stir in 42 parts warm water and then 42 parts pure lemon juice; color yellow and perfume with lemon oil. (3) *Cold Cream.*—Cream concentrate 35 parts; liquid petrolatum 5, lemon oil 3, water 60, boric acid 0.5; color a light yellow.—HAGEN. *Riechstoff-Ind. Kosmetik*, 10 (1935), 131–132. (H. M. B.)

Fatty Alcohol Sulphonates in Cosmetics. Soapless shampoos may be prepared with sulphonates of mixed fatty alcohols obtained from hydration of coconut fatty acids. Usually about 10% of cetyl or stearic alcohol sulphonate is included. These shampoos do not contain free alkali nor produce precipitates with hard water; they do not clean as satisfactorily as soap shampoos. They may also penetrate deeper into the skin and lixiviate it more thoroughly. Acids such as tartaric or boric produce a better lathering consistency. Addition of sulphonates to soap shampoos up to 20% is helpful. Sulphonates are valuable in dentifrices, either paste or powder.

They do not gelatinize like soap; hence tragacanth or similar binder must be used. 1% + 2–3% of soap or 0.5% sodium lauric alcohol sulphonate and 2% sodium cetyl alcohol sulphonate are satisfactory for a non-foaming dentifrice. In shaving creams, easily soluble sulphonates cause irritation. The addition of 2% cetyl alcohol sulphonates is agreeable. In toilet soaps, addition of sulphonates is limited because of price. They are, however, very valuable as emulsifiers of essential oils. One part of suphonate in 2 or 3 parts of oil with some alcohol is sufficient. JOSEPH AUGUSTIN. *Am. Perfumer*, 31 (1935), 79–81. (G. W. F.)

Make-up Preparations. The table which appears on pages 54 and 55 is offered. ANON. *Drug and Cosmetic Ind.*, 37 (1935), 316–317. (H. M. B.)

Ointment of Casein (Unna). Sodium caseinate 15.5 Gm., glycerin 7 Gm., vaseline 21 Gm., antiseptic (selected) 0.5–1.0 Gm., water enough to make 100 Gm. The antiseptic may be salol, phenol, thymol, etc. It is a white cream, which when applied to the skin and allowed to dry forms a supple, resistant varnish, which may be removed simply by washing.—*Bull. Ch. Synd. Pharm. Seine* (May 1935); through *J. pharm. Belg.*, 17 (1935), 572. (S. W. G.)

Ointment of Mercuric Nitrate, Stronger, B. P. An ointment of mercuric nitrate of suitable consistency was obtained by adding the mercurial solution prepared by the directions given in the B. P., but kept cool until the reaction was complete, to the lard and olive oil heated to about 95° on a water-bath. The heating was continued for 45 minutes with constant stirring.—F. H. GILLETT and J. C. JAMESON. *Pharm. J.*, 135 (1935), 230. (W. B. B.)

Protective Creams. These creams are of three types: an emulsified waxy cream, a vanishing cream and a paste. (1) White petrolatum 61%, anhydrous lanolin 10, white beeswax 4, cetyl alcohol 13, bismuth subnitrate 4, zinc stearate 4, zinc oxide 4, perfume *q. s.* 4. Mix and sift the dry powders; melt the other ingredients in order of their melting points and strain into a steam-jacketed mixer. Sift in the powders stirring until a smooth white cream is formed. (2) *Greaseless Type.*—Glyceryl monostearate 12%, cetyl alcohol or spermaceti 10, white mineral oil 7, petrolatum 5, glycerin 3, titanium oxide 5, water 58, perfume *q. s.* Heat with constant stirring until the glyceryl ester has melted and has become white and homogeneous, strain, stir slowly until cool enough to add the perfume. (3) Petrolatum 35%, cetyl alcohol 5, butyl stearate 5, anhydrous lanolin 4, zinc stearate 5, talc 17, white mineral oil 25, titanium oxide 4, perfume *q. s.* Melt the petrolatum, lanolin, cetyl alcohol and mineral oil together and then add the butyl stearate. Mix and sift the dry ingredients and add to the melt, agitating constantly, mix for 2 hours.—ANON. *Drug and Cosmetic Ind.*, 37 (1935), 321–322. (H. M. B.)

Sulphurated Camphor. Precipitated sulphur 10 Gm. and camphor 30 Gm. are fused by heating in a dish. It is used in sulphurated oil solutions.—*Bull Ch. Synd. Pharm. Seine* (May 1935); through *J. pharm. Belg.*, 17 (1935), 572. (S. W. G.)

Sunburn Preventive Ointment. Phenyl salicylate (salol) incorporated in a cream makes an effective topical application for absorbing ultraviolet rays, and so preventing sunburn. Phenyl salicylate is used in 10% strength. The cream is made by dissolving the drug in a minute amount of liquid petrolatum, and this solution is thoroughly dispersed in a cold cream base. Such a cream used on the surface of the skin in a thin layer in the usual manner of applying a cosmetic is sufficient to effect the desired result.—HERMAN SHARLIT. *Arch. Dermatol. Syphilol.*, 32 (1935), 291; through *Squibb Abstract Bull.*, 8 (1935), A-1236.

Vanishing Cream. Vanishing cream is made in a comparatively large water-bath equipped with mixing arrangement. The stearic acid is melted first, and the castor oil, starch or other agents to accord the sheen, added next. The temperature used is generally about 30° C. higher than the melting point of the stearic acid secured. The caustic potash is next weighed out in closed containers, according to the calculated formula, mixed with a proportion of water and the solution added to the fats. This quantity of caustic alkali must be in excess of that required, although it may not be necessary to add all of it. The stirring is continued after the addition, and the mass maintained at the same temperature throughout by means of the water in the bath. The alkali is completely neutralized by the stearic acid, which is purposely in excess of that required by calculation. The mixing has then to be continued with the cold mass, while the addition of the perfume is made. Only the best perfume should be used. The principal ingredient in vanishing cream is water, but it is imperative that this content of water remains unaffected. The cream should be placed in air-tight containers. The filling must be carried out so that no possibility

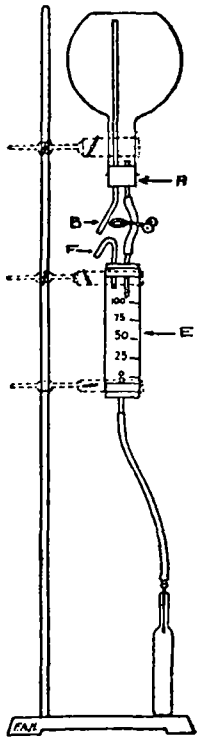
Item	Purpose	Properties	Composition	Formulæ			
1. Lipstick	To tint the lips, keep them soft and smooth	Good color variety required; color present or developed on the lips	1. Consists of color and base; includes pigments and oil - soluble dyes to give permanence; body is fats, oils, waxes to give correct physical properties and fats to soften lips; proportions depend upon qualities.	Absorption base or lanolin	20	20	15
				Beeswax	5	7.5	10
				Ceresin or paraffin	10	7.5	5
				Cocoa butter or cetyl alcohol	5	3	5
				Carnauba wax	10	10	10
				Vegetable oil	15	15	15
				Mineral oil	5	7.5	10
2. Eyebrow pencil	To alter color and shape of eyebrows	Should not be brittle or crumble in use. Color should spread easily, uniformly, be reasonably permanent. Good odor and flavor	2. Omit bromo acid and increase pigment.	Petrolatum	12	7.5	10
				Bromo acid	5	5	5
				Zinc oxide	5	5	5
				Pigment color	8	12	10
				Perfume and Preservative			
3. Paste rouge	To color lips or cheeks	Same color, odor and flavor requirements as lipstick. Easy to spread and to remove; softer than lipstick	3. Color, flavor and perfume requirements as for lipstick. Body also similar but does not need stiffening agent.	Absorption base or lanolin	25	22.5	25
				Beeswax	5	5	5
				Ceresin or paraffin	5	5	5
				Cocoa butter or cetyl alcohol	5	7.5	5
4. Eye shadow	Applied to eyelids to provide color background for eyes		4. Omit bromo acid for eye shadow	Vegetable oil	20	17.5	15
				Mineral oil	5	10	10
				Petrolatum	15	12.5	10
				Bromo acid	5	5	5
				Zinc oxide	5	5	5
				Pigment color	10	10	10
				Perfume and Preservative			

5. Cream Rouge	More adherent cheek rouge	Should have beneficial effect on skin; composition depending on type of complexion. Color and texture as above	5. Foundation or vanishing cream with high proportion of pigment	Stearic acid	17	25	14
				Spermaceti	...	...	5
				Lanolin	3	2	1
				Glycerin	6	...	7
				Butyl stearate	...	3	...
				Potassium hydroxide	0.5	0.7	0.6
				Water	40.5	49.3	42.4
				Pigment	33	20	30
				Perfume and Preservative			
6. Mascara	To darken eyelashes and improve their appearance	Should wet eyelashes well and be reasonably fast to moisture. Should not smart the eyes. May be hard cake used with brush or thin paste	6. Water - soluble wax, gum or other binder with pigment. No ingredient should irritate or stain the eyes	Tr. Benzoin	21	...	...
				Gumlac	1.25	...	...
				Glycerol monostearate	....	...	20
				Alcohol	63	...	...
				Castor oil	0.5	...	0.5
				Acacia	....	20	...
				Water	....	60	60
				Pigment	14.25	20	15
				Perfume and preservative			

arises for air to be included, as anything in the nature of bubbles might be regarded with suspicion by a buyer.—A. G. AREND. *Perfumery Essent. Oil Record*, 26 (1925), 423. (A. C. DeD.)

DISPENSING

Ampul Filling—Method of. The apparatus shown in the illustration has been used where a measured volume exceeding 50 cc. was required in ampuls. The most important reason for designing it, though not the only one, was to limit the risk of the filtered solution becoming contaminated by floating or falling dust particles. The reservoir consists of a flat-bottomed liter flask with a rubber stopper (A) carrying two glass tubes. One of these (B) serves for an air inlet and has its outer opening reduced in diameter by rotating it in a Bunsen flame. The second tube is connected by a four-inch piece of $^3/_{16}$-inch diameter pressure-tubing bearing a clip, to a short glass delivery tube passing through a rubber stopper into a cylindrical lamp-glass (E). Through the same stopper there is an air-tube with its outer end bent downward and reduced in the same way as B. Through a stopper at the bottom of the cylinder a delivery tube leads to a 12-inch length of rubber tubing, to the end of which is fixed a straightened lumbar-puncture needle. The cylinder E is graduated to deliver quantities from 25 to 100 cc., the zero mark being made by allowing the cylinder to empty to the level of the delivery tube. The apparatus is very useful in dealing with such preparations as a 50% solution of dextrose, where it is essential to prevent any drops adhering to the inside of the neck and being charred during the sealing of the ampul.—F. A. HUDSON. *Pharm. J.*, 135 (1935), 157. (W. B. B.)



Ampul Filler

Disinfecting Prescriptions—Necessity of. Infectious disease may easily be transmitted by means of paper, and the substances used in paper-making will affect the development of micro-organisms: straw cellulose facilitates their development better than wood pulp, gelatin and starch are favorable media, while vegetable mucilage is unfavorable. The author has examined 360 prescriptions from different pharmacies in Warsaw and found them contaminated with various organisms. He suggests that each prescription be sterilized when it is presented at a pharmacy, and for this purpose has invented an apparatus. This consists of two cylinders heated by electricity to 200–220° C., between which the script is inserted while they are rotating.—B. KOSKOWSKI. *Pharm. J.*, 135 (1935), 231. (W. B. B.)

Emulsions—Troublesome. Methods are given which simplify the preparation of the following troublesome emulsions: *Linimentum Terebinthinæ, B. P.; Haustus Filicis; Emulsio Petrolei cum Kaolini, N. F.; Linimentum Alba; Lotio Calaminæ Oleosa; Emulsio Petrol. c. Agar c. Phenolphthalein N. F.*—J. HALL. *Pharm. J.*, 135 (1935), 133. (W. B. B.)

Incompatibility—A New. The prescriptions of dermatologists offer some interesting problems. The following often prescribed ointment offers no difficulties: aluminum acetotartrate solution 15 parts, distilled water 35 parts and anhydrous Laceran 50 parts. However, the addition of 1% of percaine hydrochloride produces an ointment which soon separates water. A series of 15 different combinations of the above ingredients varying the order of mixing and the ions present results in the conclusion that the above salve cannot be prepared in a stable form using any of the usual water-absorbing ointment bases, since the combination of metal salt-percaine salt causes a separation of the water in oil emulsion. The combination may be made possible by the addition of 2 or 3 parts of a special high-power emulsifying agent or by the substitution of percaine base which is first dissolved in the ointment base before the incorporation of water. Pantocaine was found to behave in the same manner as percaine, while the hydrochlorides of cocaine, novocaine, larocaine, panthesine and psicaine produce stable ointments without difficulty.—K. STEIGER. *Pharm. Acta Helv.*, 10 (1935), 157. (M. F. W. D.)

Pill Excipient. After reviewing the prescribed methods of the pharmacopœias, the author advises the use of a mixture of glucose and glycerin as an excipient for pills. This excipient gives

the best results and the pill masses satisfy the directions of the pharmacopœias.—C. A. ROTHENHEIM. *J. suisse Pharm.*, No. 24 (1935); through *J. pharm. Belg.*, 17 (1935), 695. (S. W. G.)

Zinc Oxide, Bismuth Subnitrate and Glycerin—An Incompatibility of. Experience has shown that the following mixture darkens on exposure to light: bismuth subnitrate, zinc oxide, talc and glycerin, of each 10 Gm., and distilled water *q. s.* 100 cc. The darkening occurs with materials which meet pharmacopœial requirements after a brief exposure to light in clear glass bottles, but not in amber bottles or bottles covered with black paper. To determine which ingredient was the disturbing factor, several combinations of the above substances were prepared, exposed and the results noted. It was thus determined that the zinc oxide oxidizes a small portion of the glycerin to either glycerin aldehyde or dihydroxy acetone. Another series of tests indicated that the zinc oxide is necessary to the reduction of the bismuth subnitrate to free bismuth and also to take up the nitric acid formed by the hydrolysis of the subnitrate. The dark precipitate was separated and identified as free bismuth. It was found also that any polyhydric alcohol gave the same result. If glycerin is combined in such mixtures, the preparation must be protected from light, or better, the glycerin should be omitted.—P. CASPARIS, P. KÄMPF and H. MITREA. *Pharm. Acta Helv.*, 10 (1935), 143. (M. F. W. D.)

PHARMACEUTICAL HISTORY

Cosmetics—History of, in Recent Times. The conclusion of a series of articles.—A. HAUENSTEIN. *Riechstoff-Ind. Kosmetik*, 10 (1935), 144–148, 171–172. (H. M. B.)

Folk Medicine—Animals in. Historical.—A. GÖSCHEL. *Apoth.-Ztg.*, 50 (1935), 824–825. (H. M. B.)

Mortar and Pestle—An Unusual. A bronze mortar bearing the inscription "Napoleon-Empereur" and other interesting points was presented to the Philadelphia College of Pharmacy and Science by Dr. David Costelo. Biellemand, who used the mortar, was pharmacist to Napoleon and his court.—JOHN E. KRAMER. *J. Am. Pharm. Assoc.*, 24 (1935), 574. (Z. M. C.)

Old Grasse Documents. Illustration and translation of the orginal Bill of Lading of the 25th Nivose XIII (January 13, 1805) are reproduced.—*Perfumery Essent. Oil Record*, 26 (1935), 307. (A. C. DeD.)

Places of Healing in Antiquity. The Miraculous Cure of Epidauros. Historical.—POETTER. *Pharm. Monatsh.*, 16 (1935), 133–134. (H. M. B.)

Prescribing in the Eighteen Twenties. Then and Now. A list of reproductions of some old and interesting prescriptions.—ANON. *Pharm. J.*, 135 (1935), 229. (W. B. B.)

Scheele. Addendum I. A personal record of Scheele's confirmed by Jacob Berzelius and dealing with the essential acids of tartar.—O. ZEKERT. *Pharm. Monatsh.*, 16 (1935), 119–120. (H. M. B.)

The Fritze's, an old Upper Silesian Family of Pharmacists. The history of a family of apothecaries dating back 200 years.—ANON. *Apoth.-Ztg.*, 50 (1935), 326–329. (H. M. B.)

PHARMACEUTICAL EDUCATION

Botany and Pharmacognosy—A Statistical Study of the Records of the Same Class in. There is a close relationship between the quality of work done in these two subjects. Quantitative data to support this belief were not available, so this study was undertaken. Final grades in botany represent the average of several examinations and two notebook inspections. The grades in pharmacognosy are averages of quiz grades, notebook and five examination grades. Details of computations are given, and results are tabulated. In botany there were a few extremely good, a few extremely poor, the rest average. Often students who barely passed botany found lots of trouble in pharmacognosy. The author discusses his findings in considerable detail that deserves careful consideration of teachers in these subjects. It seems conclusive that every effort should be made to give students as fine a botanical foundation as possible. In the early months both subjects need very careful teaching.—MARIN S. DUNN. *J. Am. Pharm. Assoc.*, 24 (1935), 991. (Z. M. C.)

Commercial Subjects—The Place of, in the Pharmacy Curriculum. Teachers of commercial subjects must integrate and correlate various commercial interests into a composite whole. Difficulties are augmented because business moves swiftly and students have changed. Satisfactory departmentalization is difficult. Commercial subjects offered bear a definite relationship to

business requirements of the pharmacist. If students were allowed to choose they would evaluate subjects in terms of personal likes and dislikes. Some would not study advertising, others would not study accounting. Some think salesmanship cannot be taught, some would condemn merchandising. The modern pharmacy has come to fill a function in community life that may overlap other trade outlets. It is hardly possible to return to the old days even though it would increase professionalism. Changes in economic conditions indicate that changes in business education are imminent. Subject matter and technique should not be abstract. Business education must remain flexible. The business teacher knows there is real need for business education. The author believes that commercial subjects have a definite place in the pharmacy curriculum. The main objective is to augment not supplant professional training.—NEAL B. BOWMAN. *J. Am. Pharm. Assoc.*, 24 (1935), 987. (Z. M. C.)

Law—The Pharmacist Studies. The law of supply and demand is unalterable but its varying manifestations bring new problems in the interest of fair play. It is necessary also to understand constitutional law and the constitutionality of law is not a subject for exact laboratory technique, for it is a human means and fallible. A new law gets a multitude of interpretations so phrased that when the Supreme Court renders its decision the writer can announce: "I told you so!" Congress has only such power as the people have given it. Within limitations legislatures are the voice of the people. Congress is not. The Constitution can serve the people by permitting free research in local legislative laboratories. Recollection of this fundamental principle should be kept in the minds of druggists, that each state legislature has numerous methods for every one available to Congress. The police power of a state dictates how poisons may be dispensed, when to segregate infectious diseases and many other restrictions. A generation ago, speed laws may not have been necessary; so five years ago a fair trade law was theory but to-day it is a necessity. Approximately half the population is under a fair trade law to-day. Fair trade laws aim to serve the small dealer as well as owners of million dollar trade-marks and they will protect the consumer.—CHARLES G. AJAX. *J. Am. Pharm. Assoc.*, 24 (1935), 863. (Z. M. C.)

Pharmaceutical Education 1870–1930—The Center of Population of. The object of the present paper is to report and discuss results of computations to determine the center of population of pharmaceutical education for each census year since 1870. The number of students involved for each census year is given; and the latitude and longitude and approximate location of the center of pharmaceutical education are shown on a map and in a table which gives county and distances from two cities for each. The most outstanding fact is the rapid westward movement, a total of 463 miles in fifty years, taking the center from western Pennsylvania almost to Illinois. Between 1920 and 1930 it moved back 80 miles into eastern Indiana. It was steadily southward for forty years but since then has been moving northward. Miles per decade are shown in a table. Reference to the map shows that the center of population of pharmaceutical education has always been north and except in 1920 east of the center of general population for the corresponding date. "Relative to the distribution of the general population there has always been a much greater emphasis on education in pharmacy in the North than in the South, and except in 1920 in the East than in the West." On the whole, the East has lost much of its earlier primacy in pharmaceutical education. These facts, summarizing long time trends, furnish food for thought on the part of those responsible for the education of the pharmacists of the future.—WALTER CROSBY EELLS. *J. Am. Pharm. Assoc.*, 24 (1935), 868. (Z. M. C.)

Pharmacology for Pharmacists. The first of a series of articles outlining a course for pharmacists. The first section deals with agents which paralyze and stimulate the nervous system, discussing the anæsthetics administered by inhalation including ether, chloroform, methylene chloride, ethyl chloride and ethyl bromide.—H. FÜHNER. *Apoth.-Ztg.*, 50 (1935), 1097–1500. (H. M. B.)

Pharmacy Internships at the University of Michigan Hospitals—A Plan for. The purpose of this plan is to provide an efficiently functioning service unit for the hospital pharmacy and an educational unit for training graduates in pharmacy for this sort of professional service. The personnel of the hospital pharmacy would have the following scheme:

A. Permanent (Staff) Employees	No.
1. Chief Pharmacist	1
2. Assistant Chief Pharmacist	1
3. Pharmacist-Secretary	1

B. Temporary (Term) Employees	No.
1. Pharmacist, Master Grade	2
2. Pharmacist, Senior Grade	2
3. Pharmacist, Junior Grade	2
4. Pharmacy Assistants, non-registered	0

Functions and duties of permanent employees are obvious. Term employees will be selected from approved applicants, defined as recent graduates from member-colleges of the American Association of Colleges of Pharmacy, an applicant from the University of Michigan to have first favor. The person selected would be appointed Junior Grade Pharmacist for one year. If satisfactory he would be reappointed for a second year as Senior Grade Pharmacist and at the end of that year he may apply for a third year leading to the award of Master Hospital Pharmacist. The experience will represent the best professional practice. The work may be subdivided into magistral pharmacy, galenical and official preparations, colloidal, isotonic and parenteral solutions; analytical and control work. Attention would be given to bacteriological procedures, sterilizing processes, hydrogen-ion concentration, laboratory reagents and solutions, surgical dressings and preparations and modern materia medica. Prescriptions will be stressed. There will be a directed program of extra-mural work with reports at staff meetings. Current professional wage scales would be necessary to attract graduates of high order.—HARVEY A. K. WHITNEY and E. C. WATTS. *J. Am. Pharm. Assoc.*, 24 (1935), 852. (Z. M. C.)

PHARMACEUTICAL LEGISLATION

California Fair Trade Act. The author relates the history of the Fair Trade Act. An anti-trust law was passed in 1907. It was based on the economic theory that the general welfare would be promoted by free and unlimited competition. By 1909 the legislature realized that competition had not made purchasing power equal selling price and decided to reverse economic theories. The law was amended and it became lawful to get a reasonable profit. In 1931 the legislature passed the Fair Trade Act which abandoned the "reasonable profit" test and made resale contracts legal. By 1933 it was evident that the Fair Trade Act had not ushered in an era of abundance. The contracts seemed to be binding only on the signers. So the legislature amended the law so that it seemed to authorize an action to enforce it. The constitutionality has not been decided. A case before the California Supreme Court cannot be decided by any precedent. The Court must theorize so the decision depends on the economic theories of the judge or judges who hear the case. The author continues with a discussion of a number of cases that are of interest in connection with the constitutionality. There are types of disastrous competition that cannot be reached by Fair Trade legislation. More sweeping legislation is needed.—IRA J. DARLING. *J. Am. Pharm. Assoc.*, 24 (1935), 981. (Z. M. C.)

MISCELLANEOUS

Hospitals and the Pharmacist. Many hospitals are still operating drug rooms dispensing under the supervision of nurses, complicated prescriptions being sent to an outside pharmacy. Supplies can be obtained day or night and the operating personnel is almost no expense but prescriptions are filled by unqualified persons with risk to the patients' health and the hospital's reputation. Supplies are not well kept up, student help rotates so often that they do not become proficient. It is very expensive for the quality of service obtained. The question of affording to employ a pharmacist is discussed and it is shown how even comparatively small hospitals can profit by having the service of one who can compound as well as dispense. The author shows also how compilation of a formulary reduced the number of special prescriptions. Details about how to proceed in this work are discussed. He shows also how records were kept so that it became possible to eliminate rarely used formulæ. Figures are given to show how the cost per patient was considerably reduced. It is thought that institutions averaging over fifty patients per day can afford a pharmacist because nurses are relieved to do nursing duties, closer coöperation between institution and doctor can be secured, dispensing is standardized and welfare of the patient and reputation of the hospital protected, a pharmacist can operate a pharmacy at lower cost (including salaries) than an untrained person can.—H. C. MCALLISTER. *J. Am. Pharm. Assoc.*, 24 (1935), 970. (Z. M. C.)

How to Help the Pharmacist Commercially. It is self-evident that a pharmacist must be qualified professionally and if the American people supported professional pharmacy as the English do there would be no reason for talking about help commercially. He should at all times know accurately his cost of doing business and the price at which he must sell to yield a reasonable profit on investment, including his professional training. He should call in a qualified accountant from time to time to check up on his books and system. He should improve the appearance of his store and his display windows. He must be accommodating and inspire confidence. He can cultivate patronage by some sort of advertising. Above all he should use the very best of material and skill in compounding prescriptions and build a reputation for this care. He must hold to fair trade practices. He should be active in city, state and national associations. He must sell his profession to the public.—E. C. BROKMEYER. *J. Am. Pharm. Assoc.*, 24 (1935), 861. (Z. M. C.)

Pharmacy in West China—Development of. The study of Chinese pharmaceutical lore should prove very interesting. Until medical missionaries and representatives of Western pharmaceutical manufacturing houses arrived in China, medicine shops were conducted by pharmacist-physicians. There has been a gradual transformation from those floorless shops with crude native drugs of animal and vegetable origin to the cleaner, brighter modern type of drug store but they are often in charge of people who have not had pharmaceutical training. The Ministry of Health is attempting to control the practice of pharmacy. Medicines may be sold and prescriptions filled only by those qualified. There must be qualified pharmacists on hospital staffs. The task of research on the tremendous variety of crude drugs and manufacture into modern medicines requires many trained pharmacists. A few schools of pharmacy have been established during very recent years. Among these is the Department of Pharmacy of the West China Union University, Chengtu, W. China, which offers a four-year course leading to the degree of Bachelor of Science in Pharmacy. It opened in 1932 with sixteen new students and four transferred from other departments. In June 1934, these four students were graduated. In 1934, the Central Government at Nanking made a $5000.00 grant toward the purchase of equipment. A gift from Germany provided another teacher. Modern scientific pharmacy has a vital missionary service to render to China. In return there would be pleasant and remunerative employment in the profession.—E. N. MEUSER. *J. Am. Pharm. Assoc.*, 24 (1935), 865. (Z. M. C.)

Prescription Department—The Visible. This feature is becoming popular. Some pharmacists have placed the department in the show window so that it is visible from the street, others have a completely visible department inside, others have put the compounding only partly in view. One investigator found that physicians interviewed unanimously disapproved a prescription department where the patient could see the actual compounding. It seems apparent that having the approval of physicians is important to any pharmacist. The author sent a questionnaire to one hundred physicians in Buffalo. Forty replied and 14 (35%) favored a visible department, 36 (65%) disapproved. Favorable comments were that it emphasizes professional pharmacy, it is educational and shows that the pharmacist is a professional man. Care, time and skill can be seen and it will promote confidence. It will be seen that a prescription is not all water and will tend to make customers satisfied with prices. It will incline the pharmacist to make fresh solutions rather than pour out of a stock bottle and he must be clean and orderly. Objections were that prescribing simple drugs will cause the patient to lose confidence in the physician, it will create distrust and loss of confidence in the physician. It would make the pharmacists nervous and take their attention. Sight of poisons and narcotics would make patients fearful. Pouring from one bottle to another would cause lack of confidence. Patients know too much about drugs now; this might lead to self medication. The department should always be open for inspection but not visible. Apparently physicians are opposed to entirely visible compounding.—GEORGE W. FIERO. *J. Am. Pharm. Assoc.*, 24 (1935), 973. (Z. M. C.)

PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

PHARMACOLOGY

Acetanilid—Antipyretic and Toxic Effects of Combinations of, with Sodium Bromide and with Caffeine. The purpose of the present study was an attempt to determine whether the toxic effects of acetanilid, sodium bromide and caffeine might be additive, and whether sodium bromide and caffeine, or both, influence the antipyretic action of acetanilid. The lethal dose of the substances was determined by oral administration to white rats, and it was found that the lethal dose

of sodium bromide was approximately 3500 mg. per Kg. body weight; the lethal dose of caffeine, 200 mg. per Kg. body weight. The lethal dose of acetanilid had previously been established by these authors as being 800 mg. per Kg. Combinations of acetanilid and sodium bromide caused fewer fatalities than one would surmise if their toxic actions were purely additive. Combinations of acetanilid and caffeine are additive in their toxic effects. A combination of acetanilid, sodium bromide and caffeine, given in two different sized doses, was much less toxic than predicted on the assumption that their effects were additive. Sodium bromide was found to slightly antagonize the antipyretic effects of acetanilid. Caffeine tends to have a pyretic effect and antagonizes the antipyretic action of acetanilid.—PAUL K. SMITH and W. E. HAMBOURGER. *J. Pharmacol.*, 55 (1935), 200. (H. B. H.)

Acetanilid Studies. It was found that in mice alkalies tend to diminish the toxicity of acetanilid when both drugs are given by mouth. Saponin, on the other hand, tends to markedly increase the toxicity of acetanilid when both drugs are administered by way of a food mixture.—B. FANTUS, H. A. DYNIEWICZ and J. M. DYNIEWICZ. *J. Pharmacol.*, 55 (1935), 222. (H. B. H.)

Adrenaline—Physiological Inversion of the Hypertensive Effects of. Using a dog anesthetized by chloralose, bivagotomized at the neck and subjected to artificial respiration, the tensive effects of adrenaline were tested before, during and after the hypertension provoked by the occlusion of the carotids by pinching. A dose of adrenaline which caused a distinct rise in pressure caused a lowering in the hypertension produced by the pinching of the carotid, after disocclusion of this artery it was only with the second or third injection of adrenaline that the same hypertension was obtained as before its occlusion.—RAYMOND-HAMET. *Compt. rend.*, 201 (1935), 570. (G. W. H.)

Adrenaline and Ephedrine—Halogen Analogues of. A large number of substances structurally related to adrenaline and ephedrine have been prepared and submitted to pharmacological examination. The author tabulates these with their pressor activities. Two important differences in pharmacological activity of adrenaline and ephedrine must be attributed to the differences in the constitution of the two compounds: adrenaline possesses the much greater pressor activity, but only ephedrine exerts its activity when administered by mouth. It appears that the specific properties of adrenaline cannot be attributed to any one feature, but must be due to the molecule as a whole.—W. H. LINNELL. *Pharm. J.*, 135 (1935), 210. (W. B. B.)

Black Widow Spider Venom—Studies on. The average lethal dose of Black Widow spider venom was found to be 0.032 mg. The venom is probably an albumen and is easily denatured by mild chemical reagents. A potent antiserum was prepared of which 0.1 cc. completely protects rats against at least 8 av. lethal doses when given immediately and of which 1 cc. gives prompt recovery when injected 3.5 hrs. after administration of 8 average lethal doses of venom. No antidote was discovered among the various agents tested.—FRED E. D'AMOUR. *Am. Physiol. Soc. Proceedings*, (April 10–13, 1935); through *Squibb Abstract Bull.*, 8 (1935), A-1325.

Cobaltous Compounds and Certain Cobaltic Complexes (Cobaltiamines)—Differential Biologic Reactions of. The hypodermic injection of 1 cc. of an isotonic solution of a cobaltous salt causes a redness of the face and neck, a fall in blood pressure and a sensation of warmth. These phenomena are less marked with salts of organic acids. With about 3 cg. of a cobaltous or cobaltic amine, there is less redness of the face but fibrillary and clonic jerks that extend to all parts of the head, the hands, feet, thighs, breasts and genital organs. There is sneezing, salivation, swelling of the gums and a sensation of constriction of the throat. With larger doses, there is nausea and vomiting and the clonic jerks are replaced by attacks of short duration that cannot be voluntarily controlled. They are provoked by the tetanic action of the nitrogen of the cobaltic cation to which is added perhaps a new property of the trivalent cobalt.—JEAN-MARIE LE GOFF. *Compt. rend.*, 201 (1935), 531. (G. W. H.)

Dendrobine—The Pharmacological Action of. Dendrobine, empirical formula $C_{16}H_{25}O_2N$, is obtained from a Chinese medicinal herb, Chin-shih-hu (*Dendrobium nobile*, family orchidaceæ, or *D. moniliforme*, or a species as yet undetermined. As tested upon experimental animals, it has a slight analgesic and antipyretic action—much weaker than that of amidopyrine. It produces a moderate hyperglycemia, and in large doses depresses cardiac activity, lowers blood pressure, depresses respiration, inhibits isolated rabbit intestines and contracts isolated guinea pigs' uteri. The minimal lethal dose by intravenous injection for white mice and rats is 20 mg. per Kg.; for guinea pigs, 22 mg. per Kg.; and for rabbits, 17 mg. per Kg. Lethal doses induce convulsions

which appear to be of central origin. Sodium amytal tends to have a detoxifying effect.—K. K. CHEN and A. LING CHEN. *J. Pharmacol.*, 55 (1935), 319. (H. B. H.)

Dinitrophenol—Effects of Moderate Doses on the Energy Exchange and Nitrogen Metabolism of Patients under Conditions of Restricted Dietary. The effects of dinitrophenol on the energy exchange and metabolism of three patients were studied under controlled conditions using a fixed diet of low caloric value and minimal protein content. Quantitative urinary, fecal and blood metabolite determinations were made throughout. The energy exchange was calculated from measurements of the respiratory quotient and nitrogen excretion. A week or more was used for control observations and then 0.3 or 0.4 Gm. of dinitrophenol was given daily for from one to two weeks. This period of medication was followed by a second or after-control period of about one week. It was found that dinitrophenol increased the loss of body weight in all the subjects and simultaneously raised the metabolism between 36% and 95%. The extra energy of the metabolism was derived mainly from fat and practically none from protein or carbohydrate. Accordingly, dinitrophenol did not cause the breakdown of significant amounts of body protein, when used in these doses, even though the patients had an inadequate protein intake. The fat was oxidized completely without producing acidosis or ketone bodies, as indicated by unchanged urinary ammonia and organic acids. Determinations of urinary and fecal nitrogen, non-protein nitrogen of the blood, urinary albumen, urea, uric acid, creatine and creatinine of both urine and blood, and blood amino-acid nitrogen all failed to show any significant changes. Hence, the daily administration of dinitrophenol, in doses comparable to those used clinically, did not demonstrably affect the total protein metabolism, or any of these nitrogenous materials. The ethereal sulphate of the urine was not increased, showing that dinitrophenol was not conjugated in the body as an organic sulphate compound. The neutral sulphur excretion and the neutral sulphur–nitrogen ratios showed no consistent changes during the medication. There was a slight increase in the inorganic sulphate excretion of two patients, but the total effect was so small, when compared with the variations of the control periods, that it was of dubious significance. The inorganic, organic and total phosphorus of the urine, blood and feces remained practically unchanged. The increased metabolism was accompanied by an increased perspiration and diminished urine volume. The chloride content of the urine and feces indicated that there was little change in the excretion of this salt by either route or through the skin, despite marked changes in the volumes of fluid excreted. These results showed that moderate dosage of dinitrophenol caused marked stimulation of metabolism, the extra energy being derived mainly from the complete combustion of fat without affecting significantly the protein or nitrogenous constituents of the body.—M. L. TAINTER, W. C. CUTTING and ELIZABETH HINES. *J. Pharmacol.*, 55 (1935), 326. (H. B. H.)

Ergotocin, the New Ergot Principle—The Question of Assaying. Attention is directed to previous reports about ergotocin: its probable formula, melting point, formation of salts; and to evidence that its action differs from that of ergotamine or ergotoxine. Presumably a new method for standardization should be developed. Ergotocin has a specific and prompt oxytocic effect on the postpartum human uterus. The present paper compares six different methods: the polarimetric, the colorimetric, the U. S. P. cock's comb, the isolated rabbit's uterus, the postpartum dog's uterus and the postpartum human uterus. Ergotocin maleate was used and 35 lots were assayed, most of them by three or four methods, only four by all six. The results are tabulated. The isolated rabbit's uterus method yields figures of most value to the chemist. The oxytocic action typifies ergotocin, eliminating ergotamine and ergotoxine, and the prolonged rhythmic contractions distinguish it from histamine and tyramine. A clinical assay is necessary to insure full therapeutic value. The postpartum dog's uterus method appears less sensitive than the clinical. The other tests are essential for confirmatory purposes. The authors suggest that every lot should first be examined polarimetrically, assayed colorimetrically and physiologically by the isolated rabbit's uterus method and finally tested clinically. This would result in a uniform product. The U. S. P. cock's comb method was not specific and the Broom-Clark method was useless.—EDWARD E. SWANSON, CHESTER C. HARGREAVES and K. K. CHEN. *J. Am. Pharm. Assoc.*, 24 (1935), 835. (Z. M. C.)

Estrogenic Substance—Influence of, upon Experimental Syphilis of the Adult Male Rabbit. Estrin given in doses sufficient to affect the mammary glands has a decidedly protecting influence against syphilitic infection. This effect is especially remarkable in the infection of the testis.—C. N. FRAZIER, J. W. MU and C. K. HU. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 65. (A. E. M.)

Ether—Rate of Production of Anesthesia in Mice by, Containing Aldehyde and Peroxide. A mixed quantity of the anesthesia was allowed to volatilize in a bottle of two-liter capacity. Two mice were placed in the bottle which was turned by hand every fifteen seconds, and the time noted at which the mice failed to recover erect posture on being rolled over. "Ether for anesthesia" containing a certain amount of aldehyde and peroxide is less rapid in producing loss of posture in mice than is pure "ether." This reduction in anesthetic effectiveness is related to the degree of impurity, above a limiting value. The presence of 0.2% aldehyde and 0.07% peroxide does not significantly alter the acute toxicity of "ether for anesthesia."—PETER K. KNOEFEL and FLORENCE C. MURRELL. *J. Pharmacol.*, 55 (1935), 235. (H. B. H.)

Ferrico-Ascorbic Salts—Action on Tumors, on Intravenous Injection of New Soluble Complex. Continuing the work previously described (*Compt. rend.*, 201 (1935), 456), calcium, magnesium and lead were substituted for sodium in the complex ferrico-ascorbates. Calcium ferriscorbone showed the effectiveness of the sodium compounds without the production of perifocal edemas; however, after 10–15 days' treatment an intolerance was shown and cessation of the injections showed a continued evolution of the tumors. Clinical tests were the same as with experimental tumors. A cancericidal action seems promising with the soluble ferrico-plumbo-ascorbates of sodium. The first trials on intravenous injection were encouraging.—FERNAND ARLOING, ALBERT MOREL and ANDRE JOSSERAND. *Compt. rend.*, 201 (1935), 745. (G. W. H.)

Hepatoflavin and Pernicious Anemia. Liver flavin, given intramuscularly to patients with pernicious anemia does not exert an hematopoietic response.—F. J. STARE and L. D. THOMPSON. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 64. (A. E. M.)

Histamine Poisoning—Effect of Anterior Hypophysis Emulsion on Natural Resistance of Hypophysectomized and Normal Rat to. The natural resistance of hypophysectomized rats treated with an emulsion of fresh anterior hypophysis to injections of histamine is increased almost to the normal level. The resistance of normal rats could not be increased.—DAVID PERLA. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 121. (A. E. M.)

Insulin—Effect of Zinc Salts on the Action of. The admixture of zinc with insulin tends to give assay values of 40% of the estimated activity according to the mouse method. When tested upon rabbits, there was a much delayed effect upon blood sugar, although the quantity of sugar metabolized, following the administration of the zinc-insulin solutions, was approximately equivalent to that observed with standard solutions of insulin. Attention is called to the care necessary in determining the potency of insulin, and it is suggested that insulin products be assayed both by the mouse and the rabbit methods.—D. A. SCOTT and A. M. FISHER. *J. Pharmacol.*, 55 (1935), 206. (H. B. H.)

Iron—Effect of, on Hemoglobin Regeneration in Gastrectomized Dogs. The anemia caused by gastrectomy is not of the pernicious type. It does not respond to liver therapy but improves on iron administration. The color index increases but the small size of the corpuscles changes only slowly.—CARL A. DRAGSTEDT, JAMES D. BRADLEY and FRANKLIN B. MEAD. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 58. (A. E. M.)

Magnesium and Potassium—Variations in Plasma, in Epilepsy. Low plasma magnesium and high potassium are very frequent in epileptic convulsions, and a high K/Mg ratio is the most frequent deviation from normal. The ultrafiltrable K/Mg ratio rises much more than the total value. Severity of convulsions and degree of deviation were in proportion. Administration of magnesium did not lessen, nor did potassium increase the frequency of attacks.—ARTHUR D. HIRSCHFELDER and VICTOR G. HAURY. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 40. (A. E. M.)

Male Sexual Hormone (Androsterone)—Assay of Crystalline. Pure crystalline testicular hormone prepared by Ruzicka was dissolved in alcohol and poured into warm olive oil. Traces of alcohol were then removed as completely as possible *in vacuo* at 80–85°. The oily solution of androsterone was filled into ampuls and sterilized in the steamer for 30 minutes on 3 consecutive days. Two-tenths cc. per day of oily solution of different strengths was injected subcutaneously into rats castrated 28–42 days previously, 0.1 mg. being injected twice a day for 7 consecutive days and the rats killed on the 8th day. Doses of 67, 200, 450, 600, 900, 1350 and 1800γ per day were used. A relation was found to exist between the dose and the effect of androsterone on the secondary sexual organs, this relation being investigated statistically and represented graphically in the case of the prostate and the prostate with seminal vesicles. One rat unit of both "comb growth" activity and "whole male sexual" activity (40% increase in wt., actual or per unit of body

wt.) was found on the average to be contained in approximately 170γ which is also approximately the same amount as that found by other workers for the capon unit. This figure, or the round number 150 or 200γ is suggested as one international unit of androsterone, being suitable both for the assay by the capon method and the described rat method. The experimental error is less than ±5%, if all 11 litters injected with assayable doses are taken into consideration. With 3 litters of at least 2 animals each, the probable error would be less than ±12% which for practical purposes is quite satisfactory. In making an assay, the results obtained from the actual weights should be checked by those calculated per unit of body weight and the 2 results should be in close agreement, when expressed as % changes in the weight of the organs.—VLADIMIR KORENCHEVSKY and MARJORIE DENNISON. *Biochem. J.*, 29 (1935), 1720; through *Squibb Abstract Bull.*, 8 (1935), A-1278.

Morphine, Codeine and Their Derivatives—Studies of. IX. Methyl Esters. Five closely related pairs of compounds of the morphine series, in each of which one member differs from the other by the "muzzling" of the alcoholic hydroxyl by methylation, were compared. Toxicity studies were made upon white mice by subcutaneous administration. The minimal effective depression dose, as judged by the effect upon the righting reflex in rats, was established as well as the analgesic and emetic effect upon cats. Constipating effects of these compounds were studied upon rabbits. Methylation of the alcoholic hydroxyl increases the toxicity and convulsion action, and decreases the emetic effect. This chemical change increases the analgesic and exciting effects on the cat and the depressing effect on the rat.—NATHAN B. EDDY. *J. Pharmacol.*, 55 (1935), 127. (H. B. H.)

Morphine, Codeine and Their Derivatives—Studies of. X. Desoxymorphine-C, Desoxycodeine-C and Their Hydrogenated Derivatives. Of the compounds in this series studied, the most powerful and most interesting was dihydrodesoxymorphine-D ("Desomorphine"). As compared with morphine, it is ten times as analgesic for cats and fifteen times as depressant for rats, but only three times as toxic. No emetic action was noted, and it appeared to have only a slight convulsive action. Its effects ensue rapidly but are of brief duration. Observations upon its tolerance and its addiction properties are promised in a later report.—NATHAN B. EDDY and HOMER A. HOWES. *J. Pharmacol.*, 55 (1935), 257. (H. B. H.)

Nicotinism—Effect of, in the Albino Rat. The subcutaneous injections of nicotine in doses of from 0.005 to 0.0075 mg. per Gm. body weight were administered daily for forty days, with the result of lowering the voluntary activity of the rat. Upon stopping the nicotine injections, there was an immediate increase in voluntary activity. No effect was noted in the œstrus cycle as manifested by voluntary activity. Nicotinization did not appreciably affect the weight curve. Studies upon the effect of nicotine upon the composition of the body of the white rat showed that chronic nicotinization tended to decrease the fat content and increase the moisture content. The ash and nitrogen contents remained unaffected.—CLAYTON S. SMITH, SAM ROSENFELD, JR., and LEON J. SACKS. *J. Pharmacol.*, 55 (1935), 274. (H. B. H.)

Œstrin and the Male Hormone—Standardization of. A new method of estimating œstrin is described. This method depends on the increase produced in the size of the uterus. This new method has the great advantage over the smear method in that results are obtained in a much shorter time. The male hormone, which is not obtained by preparing an extract of testicles but by extracting urine, is usually standardized by the growth of the comb produced in the castrated cock. It can also be standardized by the growth of the prostate and seminal vessels in the castrated rat. A table shows that after injections of the hormone for three days there is a considerable increase in the weight of the organs of the injected animals, although much less than after injections for seven days.—J. H. BURN and E. BÜLBRING. *Pharm. J.*, 135 (1935), 210. (W. B. B.)

Phlorizin—The Effect of, upon Glomerular Filtration. In rabbits anesthetized with morphine-urethane in which the renal activity was maintained in a constant state by the continuous infusion of either dextrose or sucrose, the intravenous injection of phlorizin in amounts of 200 mg. per Kg. produces a diminution in urine secretion. Calculation of the glomerular filtration indicates a marked reduction following phlorizin. These observations indicate that phlorizin manifests a renal activity other than the classical and well-known blocking of the tubular reabsorption of glucose.—ERWIN E. NELSON. *J. Pharmacol.*, 55 (1935), 372. (H. B. H.)

Psyllium—Mechanism of Action of, on Intestines. The laxative action of psyllium seeds is

due to the mechanical stimulation of intestinal walls produced by swelling of the mucilaginous constituents of the seeds in water and to synergistic oils and other extractives freed by diluted alcohol which definitely stimulate contractions of isolated surviving intestinal loops *in vitro*.—DAVID I. MACHT. *Am. Physiol. Soc. Proceedings*, (Apr. 10–13, 1935); through *Squibb Abstract Bull.*, 8 (1935), A-1348.

Sensibamine—Pharmacology of. Pharmacological testing of sensibamine, *i. e.*, toxicity for white mice, actions in the cock and cat, effect on body temperature in rabbits, effect on adrenaline blood pressure and uterine action and effect on the isolated and *in situ* puerperal guinea-pig uterus showed that it has all the specific actions of known ergot alkaloids from which it does not differ significantly quantitatively in toxicity and activity. As regards body temperature in rabbits, sensibamine is nearer ergotoxine than ergotamine. It is expected that sensibamine will prove of therapeutic value like the other ergot alkaloids already tested. While the latest ergot alkaloid to be isolated, ergotmetrine, is claimed to be superior to other ergot alkaloids because it produces its uterine effect on oral administration, its action is very short. For prolonged ergot action in puerperium, it is better to use ergotoxine, ergotamine, ergoclavine and sensibamine.—RICHARD ROSSLER and KLAUS UNNA. *Arch. exptl. Path. Pharmakol.*, 179 (1935), 115; through *Squibb Abstract Bull.*, 8 (1935), A-1309.

Sodium Amytal—Effect of, on Leucocytes of the Albino Rat. Injection of a single dose of sodium amytal caused a slight leucopenia 2 hours later, followed by a decided leucocytosis whose peak was reached at from 5 to 11 hours after injection. The leucocytosis was caused by an increase in polymorphonuclear neutrophils. Return to normal followed within 11 to 19 hours.—DOUGLAS WARNER. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 99. (A. E. M.)

Sympathomimetic Compounds—Comparative Actions of. Using the Jackson technique for observing the changes in caliber of bronchial, the authors studied the effects of fourteen sympathomimetic amines and atropine. Arecoline hydrobromide was used to produce bronchoconstriction. The drugs were all give intravenously. Epinephrine, arterenol and epinine were found to be effective bronchodilators; 3-4-dioxyephedrine, ethylnorsuprarenin and ephedrine, moderately effective; and phenylisopropylamine, neosynephrine, 1-metaoxyephedrine and ephetonal, poor. 3-Methyl-4-oxyphenyl-1-amino-2-propanol-1, 3-oxyphenyl-1-amino-2-propanol-1, 2-methoxyphenyl-1-amino-2-propanol-1 and 3-methylphenyl-1-amino-2-propanol-1 were ineffective. Atropine relaxed promptly and completely bronchi previously constricted by arecoline. No consistent relationship was found to exist between the bronchodilator action and the pressor effect of these amines. These results demonstrate again the importance of the catechol nucleus in sympathomimetic amines for effective bronchodilator action.—J. R. PEDDEN, M. L. TAINTER and W. M. CAMERON. *J. Pharmacol.*, 55 (1935), 242. (H. B. H.)

Toddalea Aculeata—Chemistry and Pharmacologic Action of. The root-bark of *Toddalea aculeata* (a climbing shrub of the Rutaceæ order found in the lower Himalayas and western and southern India) was examined chemically and pharmacologically. From the bark were obtained 2 alkaloids, toddaline (I) and toddalinine (II); a lactonic non-nitrogenous principle; and a glucoside. Berberine (III) previously reported to have been obtained from the bark, was shown to be absent. It is probable that I-HCl was mistaken for III-HCl, both having similar properties. I is a tertiary monoacidic base, $C_{20}H_{21}NO_4$, m. 269–270°, completely soluble in hot water and nearly insoluble in absolute alcohol. Like III, I contains 2 MeO groups but only one *n*-methyl. I-HCl m. 205–206°: I-platinichloride m. 254–256°; I-aurichloride m. 201–202°; I-nitrate m. 239° (decomposed); I-picrate m. 237–238° and I-sulphate m. 236–239° (decomposed). II, $C_{18}H_{18}NO_4$, is a very strong base. I is very irritating to the mucous membranes and subcutaneous tissues. A 2.5% solution injected subcutaneously into rabbits produced irritation and a sloughing open ulcer. Intravenous injection of small doses (2 mg.) invariably caused a temporary arrest of respiration followed by spasmodic breathing, probably due to bronchial constriction; marked salivation; and a slight rise in carotid blood pressure, which disappeared on repeated injections. I had no antipyretic effect and no appreciable effect on the heart *in situ* or isolated. I markedly increased the tone of the skeletal muscles and contracted the plain muscle of the blood vessels, intestines, spleen and bladder. Subcutaneous injection of 100 mg. of I per Kg. caused the death of frogs in several hrs.—B. B. DEY, P. P. PILLAY, J. C. DAVID and N. RAJAMANIKAM. *Indian J. Med. Research*, 22 (1935), 4; through *Squibb Abstract Bull.*, 8 (1935), A-908.

Vitamin A—The Estimation of, by Means of Its Influence on the Vaginal Contents of the

Rat. A curve of response to graded doses of vitamin-A has been obtained relating the dose to the number of days required to bring about the disappearance of keratinized cells from the rat's vagina in which, on a diet deficient in vitamin-A, they had been found continuously for 10 days. One dose only of cod liver oil was given to each rat. The curve of response was logarithmic. A further curve was obtained relating duration of cure to the single dose given. This was not logarithmic. It is doubtful whether this method of estimation of vitamin-A (under the conditions investigated) is any more accurate than the growth method.—K. H. COWARD, M. R. CAMBDEN and E. LEE. *J. Soc. Chem. Ind.*, 54 (1935), 928. (E. G. V.)

TOXICOLOGY

Atebrin Mussonate—Death after Injection of. Atebrin Mussonate has proved its value in the treatment of malaria; but like most other powerful drugs it must be used judiciously if toxic effects are to be avoided. The high concentration of atebrin in the tissues and tissue fluids, as found at autopsy, is in striking contrast with the absence of even a trace of atebrin in the urine, either before or after death. It seems difficult to be certain beforehand whether a patient will react badly to atebrin, and also difficult to increase its excretion once a full therapeutic dose has been injected P. B. FERNANDO and E. M. WIJERAMA. *Lancet*, 229 (1935), 1056. (W. H. H.)

Lolium Temulentum—Mass Poisoning by Wheat Infected with. Workers reporting cases of poisoning by wheat so infected are mentioned. It is found that uninfected wheat (sp. gr. 0.70–0.80) may be separated from infected wheat (sp. gr. 0.67) by flotation in water. Of wheat and oat samples collected in 7 localities 8.3–28% and 22–56%, respectively, were found to be infected. The chemistry, reactions, symptoms and treatment in case of poisoning are discussed.—J. ORIENT. *Pharm. Monatshefte*, 16 (1935), 191–193. (H. M. B.)

Mercurial Intoxication, Acute—Treatment of. Massive alkalinization has given good results during 8 years of trial. This condition is obtained by daily use of: (1) Intravenous injection of Fischer's serum: sodium carbonate, crystalline 10 Gm. or anhydrous 4.2 Gm., sodium chloride 15 Gm., sterilized distilled water enough to make 1,000 cc. Daily dose 400–1,000 cc. (2) Potassium bitartrate 4 Gm., sodium citrate 2 Gm., sugar 2 Gm., water 240 cc. Six to eight doses in 24 hours. The latter may also be prepared as follows: Dissolve in a glass of water 1 teaspoonful potassium bitartrate, 0.5 teaspoonful sodium citrate and add a little syrup of citron or orange.—NANU-MUSCEL, V. CIOCALTEU and C. CIOCALTEU. *J. Practiciens* (April 16, 1935); through *J. pharm. Belg.*, 17 (1935), 880. (S. W. G.)

Strychnine—Detoxification of, by Pentobarbital Sodium. Reference is made to results of previous work that has shown that sodium amytal and other barbituric acid derivatives have antidotal action in strychnine poisoning. The purpose of the present investigation was to determine whether pentobarbital sodium in single, equivalent effective doses detoxifies strychnine the same as sodium amytal. Rabbits were used in the experiments. The poison was injected subcutaneously and a minimal anesthetic dose of the barbiturate was given simultaneously by vein or mouth. Results are tabulated and discussed. It was found that pentobarbital sodium has an antidotal action in strychnine poisoning but it is less effective than sodium amytal.—EDWARD E. SWANSON. *J. Am. Pharm. Assoc.*, 24 (1935), 959. (Z. M. C.)

THERAPEUTICS

Arsphenamine—A Method of Avoiding Intolerance to Large and Frequently Repeated Doses of. S. has adopted a method of giving arsphenamine (Salvarsan) that prevents the development of signs of intolerance, particularly the nitritoid crises which are so much dreaded in the therapy of syphilis. He dissolves the drug in 1–2 cc. of a solution of liver amino-acid. By using this method he can give doses of 0.3–0.90 Gm. of the drug, on alternate days up to total doses of 10–20 Gm. without any signs of intolerance, and it is possible to begin or continue treatment in cases in which it has heretofore been contraindicated on account of icterus and hepatitis. It is also possible to study the usefulness of massive doses in tabes and progressive paralysis.—A. SEBASTIANELLI. *Policlinico (sez. prat.)*, 42 (1935), 749; through *Squibb Abstract Bull.*, 8 (1935), A-1319.

Arsphenamine—Administration of, in Glycine Solutions. Reports on numerous cases showed that arsphenamine (salvarsan) dissolved in glycine gave very favorable results.—BENECH. *Bull. soc. franc. dermat. syph.*, 57 (1935), 1; through *Squibb Abstract Bull.*, 8 (1935), A-1207.

Castor Oil in Infancy and Childhood. An attempt was made to compare the action of a highly refined castor oil with that of ordinary castor oil found in stores. Ordinary oil was given eleven patients, of whom nine vomited and six had cramps or colic. Highly refined oil was given forty-six patients, of whom three vomited and two had colic. An important advantage of the highly refined oil was the absence of taste and the ease with which it was taken, even by those who had previously been unable to take castor oil. Untoward effects from castor oil is probably due to rancidity and impurities.—B. W. JARVIS. *Med. Rec.*, 142 (1935), 513. (W. H. H.)

Chronic Arthritis—Vaccine Therapy in. Intravenous injections of streptococci can safely be administered to patients. Such injections, in a series of 301 cases, resulted in definite clinical improvement in about 80%. The organism used in the vaccine was from a case of acute rheumatic fever, which had been cultured for nine years. The initial dose was 100 million organisms; this was increased by 100 millions at weekly intervals. The intravenous method is indicated rather than the subcutaneous because the intravenous method does not produce hypersensitiveness; and because subcutaneous injections of streptococci produce only a slight degree of protection, while the intravenous injection results in a high resistance.—B. J. CLAWSON and M. WETHERBY. *Ann. Intern. Med.* (June 1935); through *Clin. Med. Surgery*, 42 (1935), 569. (W. H. H.)

Digitalis Medication—Visual Disturbances with. Digitalis may be given when necessary, at the rate of 1 gr. for every 10 lbs. of body wt. but in many cases about 4.5–6 gr. in 24 hrs. will produce results in 1–2 days, after which a maintenance dose must be given. At any stage in digitalization toxic symptoms indicate cessation of the drug. Such symptoms include nausea, vomiting and occasionally diarrhea; a cardiac rate below or a sudden slowing of the rate; the onset of extrasystoles or coupled beats; the change of regular rhythm to arrythmia; complaint of headache, dizziness or disturbed vision. Two cases are reported in which white vision occurred after taking digitalis. In both cases enough digitalis could be taken before the onset of white vision to produce a considerable effect upon the heart, and that effect could be maintained by small doses taken and omitted for similar periods of time. In the first case digitalis was prescribed in doses of 0.5 gr. 3 times daily, and this was discontinued after two weeks because of the visual abnormality. Later it was given in doses of 1 gr. 5 times daily after an attack of tachycardia but again discontinued. In the second case, 0.5 gr. digitalis was prescribed daily but discontinued after ten days. Control was accomplished with 0.5 gr. daily for four days followed by a similar period of omission.—WILLIAM H. ROBEY. *New England J. Med.*, 213 (1935), 248; through *Squibb Abstract Bull.*, 8 (1935), A-1220.

Digitalis Therapy—Pharmacological Aspect of. The author presents a short review of the history, routes of administration, specificity of action and therapeutic and toxic cumulation of digitalis and strophanthus. By adequate explanation, he points out the principles of strophanthin therapy and its advantages and limitations as compared to digitalis. He finally shows that the intravenous method of administration is the only accurate and reliable method known to obtain the complete effect of a regulated dose of digitalis or strophanthin.—A. FRAENKEL. *Lancet*, 229 (1935), 1101. (W. H. H.)

Divinylether and Vinethen. E. Merck, Darmstadt, has put out a preparation for anesthesia under the name of "Vinethen," which consists principally of divinylether with 3.5% alcohol to prevent moisture from freezing on the anesthesia mask. The advantages of the preparation as compared to ether are mentioned. It is a light, volatile liquid, difficultly soluble in water, having an odor suggesting garlic or mustard oil. It is not so stable. The contents of containers opened for 12 hours should not be used. The decomposition is the result of polymerization and autooxidation.—L. ROSENTHALER. *Schweiz. Apoth.-Ztg.*, 73 (1935), 633. (M. F. W. D.)

Drugs Used for the Treatment of Vomiting. A review in which H. classifies these drugs as follows: (1) Alkaloidal drugs such as cocaine hydrochloride, papaverine hydrochloride, strychnine as the extract and tincture, atropine, scopolamine-hyoscyamine combination, quinine hydrobromide and columbo, (2) narcotic drugs as diethylbarbituric acid and its sodium salt, ethylphenylbarbituric acid and its sodium salt, chloroform, chloreton, trichlorisobutylalcohol, caffeine, anæsthesin cycloform, novocaine, alkali bromides, strontium bromide, bromural, menthol valerianate, (3) alkaloids and drugs free from narcotic action as tincture of iodine, iodic acid, sulphurous acid and sodium sulphite, bismuth subcarbonate, oil of peppermint, creosote and cerium salts.—E. HERRMANN. *Apoth.-Ztg.*, 50 (1935), 1167–1169. (H. M. B.)

Fenugreek—Use of, as a Drug. Notes on the use of fenugreek in Holland.—ANDREAS OTTO. *Pharm. Weekblad*, 72 (1935), 1294. (E. H. W.)

Fenugreek—Uses of the Infusion of. Four case reports on the use and therapeutics of fenugreek.—G. K. A. NONHEEL. *Pharm. Weekblad*, 72 (1935), 1241. (E. H. W.)

Histidine—Use of, in Treatment of Gastro-Duodenal Ulcer. As to the result of animal experiments, the author employed histidine in the treatment of gastro-duodenal ulcer and other ulcerous conditions, and cites twenty-one cases to illustrate the benefits of this treatment. Rapid and complete disappearance or marked amelioration of the painful symptoms and radiological signs are rare, and slight recurrences are claimed. The drug causes no ill effects beyond a little pain at the injection site, and in occasional cases a slight, but transitory exaggeration of the painful symptoms. A series of twenty-one daily subcutaneous or intramuscular injections of 5 cc. of a 4% solution of histidine are given. After an interval of six weeks a second similar series is given. Following this intensive treatment further series are advised every three to six months, according to the case, in order to maintain clinical care and obviate the necessity of operation.—E. ARON. *Presse Med.* (July 27, 1935), 1195; through *Brit. Med. J.*, 3903 (1935), 828B. (W. H. H.)

Iron—The Therapeutic Action of. The factors which affect the requirement, absorption, and the utilization of iron are discussed. The absorption of the iron contained in food or drugs is proportional to the ease with which ferrous ions are liberated. Iron acts as a nutrient and not as a stimulant for the blood-forming organs.—L. J. WITTS. *Lancet*, 230 (1936), 1. (W. H. H.)

Leech—Its Handling and Medicinal Uses. The preservation and care of the leech, the technique of application, the removal and after-bleeding, hirudin and uses are discussed.—K. SCHULZE. *Apoth.-Ztg.*, 50 (1935), 1057–1058. (H. M. B.)

Medicaments and Remedies of Tahiti. A classification of the Tahitian materia medica according to therapeutic activity. Methods of application and administration are discussed.—R. GIRARD and A. BRANCOURT. *Bull. soc. pharm. Bordeaux*, 73 (1935), 202–210. (S. W. G.)

Novarsenobenzene—Human Anthrax Treated with. Nine patients with pustular anthrax were treated with novarsenobenzene (neoarsphenamine) only. Seven of them made remarkable recoveries; the other two aged 1 year and 5 years, died. The number of cases is too small to allow of comparison with other methods of treatment, but the results suggest that neoarsenobenzene, if given within four days of the appearance of the pustule, will almost certainly cure the disease.—F. W. GILBERT. *Lancet*, 229 (1935), 1283. (W. H. H.)

Octyl Alcohol—Treatment of Arterial Hypertension with. Intravenous injections of 10 to 20 cc. of a solution 1:10,000 of octyl alcohol were given. The effect is a slight hydremia with decrease of urea and chlorine in the blood. The influence on the blood pressure was not very significant; subjective symptoms were relieved but occasionally fever was observed.—CARLOS ROSSI BELGRANO. *Semana méd. (Buenos Aires)*, 42 (1935), 1073. (A. E. M.)

Phenylethyl Hydnocarpate—Value of, in the Treatment of Lupus Vulgaris. A new method of treatment of *lupus vulgaris* is described, consisting of intradermal injection of phenylethyl hydnocarpate into the lesions. The results of treatment in eleven cases are recorded. In seven cases clinical cure of affected patches was obtained. The other four cases were still under treatment, and were making satisfactory progress. Comparatively little pain is experienced by the patient. It is suggested that these results indicate that a more extensive trial of the method should be made.—N. BURGESS. *Brit. Med. J.*, 3904 (1935), 835. (W. H. H.)

Procaine Hydrochloride—Extemporaneous Preparation of a Buffered Solution of. The relationship among the p_H, the efficacy and the occurrence of after-effects with procaine-hydrochloride (I) solution is discussed. When I-solution is buffered to the same p_H as procaine-borate-solution, it is equally or more effective. The alkalinization of I-solution insures its hydrolytic dissociation thus liberating the anesthetic base. B. has obtained very good results with a solution prepared as follows: 5 cc. of a sterile buffered isotonic solution of p_H approximately that of the body fluids (*e. g.*, sodium chlorode-A. R. 7 Gm.; sodium phosphate-A. R. 1.7 Gm.; potassium phosphate; double distilled water *q. s.* 1000 cc.) are added to the required amount of sterile dry I in a sterile ampul with a latex stopper and penetrable diaphragm. The ampul is rotated to dissolve I. One minim of epinephrine 1:1000 may be added. A sterile buffered isotonic 2% solution of I, p_H 7.3–7.6 is obtained for immediate use. Anesthesia begins in one minute, is profound in four minutes and lasts the greater part of an hour. There are no after-pains or edema; healing is

spontaneous.—C. H. BURMEISTER. *J. Am. Dental Assoc.*, 22 (1935), 1514; through *Squibb Abstract Bull.*, 8 (1935), A-1480.

Quassia Tincture—Treatment of Head Lice with. A quassia preparation has been described for treatment of infestations of the head louse. (G. Goergensen, *Nordisk Hygienisk Tidsskr.*, 6 (1935), 128). This is used in the common schools of Copenhagen. 150 Gm. of minced *Cortex Quassiæ* is added to 1 liter of *Spiritus concentratus*. The preparation was originally described as permissibly made with a "hospital spirit" containing 3% chloroform (for low cost). Recommendation against this has been made by the Danish Apothecaries Society, which holds that pure, undenatured spirit should be used. The author suggests as an inexpensive alternative use of dilute alcohol, since the insecticide principle of quassia is about as soluble in water as in alcohol.—A. HOLM. *Arch. Pharm. og Chemi*, 42 (1935), 543. (C. S. L.)

Sinicuichi. The Magic Drink Causing Oblivion. This Mexican drink is identified with 3 distinct plants: (1) *Heimia salicifolia* (var. *Mex.*, Link) which grows in the highlands especially in the region of Tenantzingo (at Toluca); it is found occasionally in Coahuila, Veracruz, Oaxaca, Boja and California but in these regions its stimulating and intoxicating properties are not known. It appears as if these properties are lost when the plant is cultivated. The method of preparing the drink is described. The leaves contain chlorophyll, fats, tannins, dyestuffs, gums, glucose, starch, traces of a volatile oil and the usual salts, but apparently no ingredients which give the characteristic reactions of the drug; these seem to be formed in the drug after fermentation, (2) the kidney-shaped seeds of *Rhynchosia praecatoria* D. C. called Xenecuichi in Cuernavaca, (3) the root-bark of *Piscidia erythrina*, L. sold as Senucuilin Guerro in the form of rolls. When 1–3 Gm. are taken as a tea it serves as a good diaphoretic; larger amounts produce a deep sleep. In Yucatan it has been used to relieve toothache. The seeds contain besides resins, fats and a glycoside, a substance called Piscidin, which is not an alkaloid and is responsible for the action of the drug, and which is insoluble in water. The drug when powdered and scattered on water, stuns fishes. Other properties of the drink are described.—V. A. REKO. *Pharm. Monatshefte*, 16 (1935), 155–157. (H. M. B.)

Sodium Thiosulphate—Use of, in the Treatment of Streptothricosis. It is believed that the therapy proposed in this article is based upon sound therapeutic principles. The chemotherapeutic action of potassium iodide, systematically, and sodium thiosulphate, locally, causes the destruction of the infectuous agent and the erection and mobilization of local tissue defenses after early excision with electrocautery and, for this reason, makes for a feasible therapeutic measure worthy of extensive clinical trial.—W. F. DUTTON and E. E. REEVES. *Clin. Med. Surgery*, 42 (1935), 543. (W. H. H.)

Typhoid Fever—Vaccine Treatment of. The author records his observations of 93 cases of typhoid fever treated by intravenous injections of vaccine lysates, with only one death. All but three showed a well marked febrile reaction from half an hour to two hours after the injections, followed in one or two days by a considerable fall in temperature and general improvement.—R. FRANZA. *Riforma Med.* (July 6, 1935), 1017: through *Brit. Med. J.*, 3904 (1935), 884B. (W. H. H.)

Undulant Fever—Treatment of, by Protein Shock. The intravenous injection of T. A. B. (typhoid and paratyphoid organisms) produced successful results. Although in some cases, the severity of the reaction from the protein shock therapy might render it dangerous in the presence of cardio-vascular degeneration.—G. E. BEAUMONT and A. P. M. PAGE. *Lancet*, 229 (1935), 940. (W. H. H.)

Ureas, Unsymmetrical Alkylaryl—Preparation, Physical Properties and Hypnotic Effects of. Twenty-nine unsymmetrical alkylaryl ureas were synthesized, and their toxicities and hypnotic activities determined by intraperitoneal injection into white mice.—A. M. HJORT, E. J. DE BEER, J. S. BUCK and W. S. IDE. *J. Pharmacol.*, 55 (1935), 152. (H. B. H.)

Vitamin B, Crystalline—The Treatment of Human Beriberi with. Crystalline vitamin B, hydrochloride prepared from rice polishings was given by intramuscular injections, concentration 1 mg. per cc. Twelve cases are reported. Usual dosage 1 mg. daily. Seven cases gave very promising indications of a cure. Three cases partially cured. Two cases cured in conjunction with tikitiki extract.—A. J. HERMANO and FROILAN EUBANAS. *Philippine J. Sci.*, 56 (1935), 277. (P. A. F.)

NEW REMEDIES

Synthetics

Cholepulvis (General Electric X-Ray Co., Chicago) is marketed as 4-Gm. packages consisting of 33⅓% tetraiodophenolphthalein-sodium.—*Pharm. Post*, 68 (1935), 487. (H. M. B.)

Phenylquinolincarbonic Acid-Normetten (F. Kwizda, Korneuburg) contain in each 0.50 Gm. phenylquinolincarbonic acid; packages of 10.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Specialties

A. T. 10 D Oil (I. G. Farbenindustrie A. G., Leverkusen) is irradiated ergosterol put up in 15-cc. packages.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Adepdelen (A. Erdmann, Berlin-Schönberg) is a reducing preparation. It is a combination of urea borate, magnesium- and sodium-sulphate and a flavor.—*Pharm. Weekblad*, 72 (1935), 1225. (E. H. W.)

Adrenalin Tablets (I. G. Farbenindustrie A. G., Leverkusen) contain in each tablet 0.001 Gm. of crystalline synthetic suprarenin, in packages of 20.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Alaidol (Roland A. G. Chem. Fabrik, Essen) for head- and toothaches and dysmenorhea, are powders of phenyldimethylpyrazolon 0.86, concentrated extract of maté 0.08, phenacetin 0.05 and iodine in organic combination 0.01.—*Pharm. Monatshefte*, 16 (1935), 176. (H. M. B.)

Antagosine (Behringswerke I. G. Farbenindustrie) is a lactic-acid bacterial preparation It contains antagonistic lactic-acid bacteria which biologically prevent the growth of pathogenic organisms. The simultaneous use of astringents and disinfectants is contraindicated. It is packed in bottles which must be kept in the dark, and shaken before using.—*Pharm. Weekblad*, 72 (1935), 1225. (E. H. W.)

Antipiol Salve (Laboratoriums für mediz. Chemie and angew. Biologie G. m. b. H., Berlin-Grunewald) consists of 12.5% of a sterile bouillon filtrate of streptococci, staphylococci, pyocyaneus, 28.7% zinc oxide, 3.7% Isarol, 15% petrolatum and 30.1% adeps lanæ and is used for infections of the skin and mucous membrane.—*Pharm. Monatshefte*, 16 (1935), 176. (H. M. B.)

Aolan-Ampuls (P. Beiersdorf & Co., Hamburg) contain a sterile and toxin-free solution of milk albumin; packages of one 10-cc., one 5-cc. and five 1-cc. ampuls.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Apothyrin-Dragees (Dr. Wander G. m. b. H., Vienna, 21st dist.) contain 0.05 Gm. diiodothyrosin per tablet; packages of 30.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Aulinogen Salve (Fa. C. Böhringer and Söhne, Mannheim) consists of 4% *bis*-ethylxanthogen in vaseline in packages of 13 Gm.—*Pharm. Post*, 68 (1935), 488. (H. M. B.)

Balsamic Pills I (L. Heumann, Nürnberg) contain cascara sagrada bark, calamus, gentian root, frangula, extract of frangula, sarsaparilla root, peppermint leaves, absynthia, aloe, phenolphthalein and saccharated ferrous oxide; put up in bottles of 100 pills.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Balsamic Pills II (L. Heumann, Nürnberg) contain phenolphthalein, extracts of rhubarb, cascara sagrada, and frangula, gentian root, calamus, valerian root, aloe, frangula bark, cinchona bark and extract of yeast; put up in bottles of 100 pills.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Bathyphan Tablets (Fabrik Eggochemia, Vienna) is sold in packages of 10 tablets, each containing 0.1 Gm. cyclopentenylallylbarbituric acid.—*Pharm. Post*, 68 (1935), 390. (H. M. B.)

Bronchovydrin (Dr. Weil, Frankfurt a. M.) is put up in 12-Gm. packages containing the hormone of the anterior and median lobes of pituitary, the hormone of the suprarenals, papavydrin and inert material.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Calcium-injecta (Gehe & Co., Dresden) is a stabilized solution of calcium gluconate found on the market in two strengths, 10% and 20%.—*Pharm. Weekblad*, 72 (1935), 1225. (E. H. W.)

Camphenol (Fa. Pharmadenta, Teplitz-Schönau) is sold in packages containing 12 Gm. of a mixture of phenol 35%, chlorphenol 8.5%, camphor 56.35%, iodoform 0.15%.—*Pharm. Post*, 68 (1935), 488. (H. M. B.)

Cantan Ampuls (I. G. Farbenindustrie A. G., Leverkusen) contains in each ampul of 1 cc., 0.025 Gm. l-ascorbic acid; packages of 5 ampuls.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Cantan Tablets (I. G. Farbenindustrie A. G., Leverkusen) put up in packages of 10 tablets containing in each 0.025 Gm. of l-ascorbic acid.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Cholotonon-Ampuls (Chem. Fabrik Promonta, Hamburg) contain an extract of the combined liver and gall; packages of 3 and 10 ampuls.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Chromopur-Dragees (F. J. Kwizda, Korneuburg) contain in each 0.005 Gm. methyleneblue, 0.0075 Gm. phenylethylbarbituric acid, 0.05 Gm. amidopyrine, 0.10 Gm. uropurat, and 0.05 Gm. hexamethylenetetramine; put up in packages of 30 and 60.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Comallysatum Bürger Dragees (J. Bürger, Ysatfabrik, G. m. b. H., Wernigerode) contain the dialysate of Allium ursinum; packages of 50 dragees.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Comallysatum Bürger Liquid (J. Bürger, Ysatfabrik, G. m. b. H., Wernigerode) contains the dialysate of Allium ursinum in packages of 30 and 60 cc.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Cortidyn (Promonta G. m. b. H., Hamburg) is a standardized preparation made from the cortex of the adrenals of freshly killed animals by a special process. One cc. contains 5 corticodynamic units. This unit is the dose of an extract which if administered daily for seven days to an infantile mouse, without adrenals and weighing 9–11 Gm. (the experiment to be run on several animals) will keep 80% of them alive. It is used in Addison's disease, infectious diseases, Grave's disease and psoriasis.—*Pharm. Weekblad*, 72 (1935), 1225. (E. H. W.)

Cortin-Degewop-Ampuls (Degewop A. G., Berlin) represent in each cc. the extract of 50 Gm. of fresh suprarenals; put up in 10-cc. ampuls.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Desitine-instillatie (Desitin Works, Carl Linke, Hamburg) is a thick liquid mass containing cod liver oil, hydrous lanolin and 0.1% percaine. It is used in inflammation of the bladder, catarrhal cystitis, etc. It is found on the market in packages of 250 and 500 Gm.—*Pharm. Weekblad*, 72 (1935), 1226. (E. H. W.)

Diplosal-zalf (C. F. Boehringer & Sons) contains 5% diplosal in ointment form and is used for muscular rheumatism.—*Pharm. Weekblad*, 72 (1935), 1226. (E. H. W.)

Duroxyt-Tablets (Kronik and Edels, Vienna, 7th dist.) contain hydrogen peroxide in a stable form (carbamide + 30% H_2O_2), and are put up in packages of 10 tablets.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Efryl (Therapix) is a syrup containing ephedrine hydrochloride 0.1 Gm., dionine 0.08 Gm., sodium benzoate 0.1 Gm., sodium salicylate 0.1 Gm., tincture of drosera 2 Gm. and syrup of wild thyme enough to make 100 Gm. Dosage: Adults—1–4 tablespoonfuls in 24 hours; Children—1–4 teaspoonfuls in 24 hours.—*Bull. Ch. Synd. Pharm. Seine* (Aug. 1934); through *J. pharm. Belg.*, 17 (1935), 862. (S. W. G.)

Ekzemyl (Dr. G. Henning, Berlin) is a light brown-colored liquid containing *Liquor Lith. saponin.* 10%, resorcin 1%, lard 1.5%, *Æther chloratus* 85.5%. It is dispensed in atomizers and is used in dermatology, for chronic eczema, acne, psoriasis, etc.—*Pharm. Weekblad*, 72 (1935), 1226. (E. H. W.)

Enatin Capsules (Chem. Fabrik Helfenberg bei Dresden) contain oils of juniper, turpentine, peppermint and olive, and sulphur; put up in packages of 12 gelatin capsules.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Enterosolvens with Acetylsalicylic Acid (Medichemie, Budapest) contain 0.50 Gm. aspirin in each; put up in packages of 20.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Ammonium Chlorate (Medichemie, Budapest) are put up in packages of 20 containing in each 0.30 and 0.50 Gm. ammonium chlorate.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Chloralotensis (Medichemie, Budapest) are put up in packages of 30 containing in each 0.20 Gm. chloral hydrate.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Diethylbarbituric Acid (Medichemie, Budapest) contain in each 0.25 Gm. of diethylbarbituric acid; packages of 20.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Digitalis Leaves (Medichemie, Budapest) are put up in packages of 20 containing in each 0.05 Gm. digitalis leaves.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Najoperin (Medichemie, Budapest) are put up in packages of 20 containing in each 0.20 Gm. najoperin.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Phenylquinolincarbonic Acid (Medichemie, Budapest) contain in each 0.50 Gm. phenylquinolincarbonic acid; packages of 20.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Potassium Iodate (Medichemie, Budapest) put up in packages of 30 containing in each 0.20 Gm. potassium iodate.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Purified Theophyllin (Medichemie, Budapest) are put up in packages of 30 containing in each 0.10 Gm. purified theophyllin.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Sodium Salicylate (Medichemie, Budapest) are put up in packages of 20 containing in each 0.50 Gm. sodium salicylate.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Enterosolvens with Theobromine Sodium Salicylate (Medichemie, Budapest) are put up in packages of 20 containing in each 0.50 Gm. theobromine sodium salicylate.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Epokan Merck is used for asthma and asthmatic conditions. It contains per tablet or per ampul, 0.03 Gm. pyrazinecarbonic acid hydracide, 0.03 Gm. ephedrine cumarincarbonic acid and 0.0002 Gm. pseudotropinebenzylacidester-hydrochloride. The dose is 2–3 tablets or 1–2 ampuls intravenously or subcutaneously.—*Pharm. Weekblad*, 72 (1935), 1226. (E. H. W.)

Erugon Dragees (I. G. Farbenindustrie A. G., Leverkusen) contain in dragee 0.25-rooster units of standard testicular hormone; put up in packages of 30.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Eulysin Ampuls (Dr. Wander, G. m. b. H., Vienna, 21st dist.) contain iodized sesame oil, ether and camphor, in packages of 10 ampuls of 1.10 cc., 10 of 2.20 cc. or 4 of 2.20 cc.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Expectorzon Tablets (Admiral Apotheke, Berlin), an expectorant and mouth disinfectant with the action of oxygen, consists of benzoic acid, sodium perborate, terpin hydrate, antimony sulphide, ethyl ester para-amidobenzoic acid, menthol and volatile oils, and is used by dissolving a tablet slowly in the mouth every 1–2 hours.—*Pharm. Monatshefte*, 16 (1935), 177. (H. M. B.)

Folliculin-Menoform-Ampuls (Degewop A. G., Berlin) contain in each cc. of solution 1 mg. crystalline follicular hormone equivalent to 10,000 international units and are put up in 5-cc. ampuls.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Gelastoid Globules Vaginal with 1% Lactic Acid. (Chem. Pharm. Labor., Vienna, 9th dist.) contain 1% lactic acid in a glycerinated gelatin mass; put up in packages of 10.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Genistenal (Clin-Comar and Co.) is marketed in the form of tablets containing 0.00035 Gm. ethylbarbiturate and 0.00015 Gm. sparteine. It is used as a neurosedative and hypnotic.—*Bull. Ch. Synd. Pharm. Seine* (Aug. 1934); through *J. pharm. Belg.*, 17 (1935), 862. (S. W. G.)

Georadium Ointment I (greasy or greaseless) (Treibacher Chemische Werke, Treibach) is put up in packages of 20, 30, 50 or 100 Gm. containing radium- and mesothorium-containing barium sulphate in an ointment base.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Georadium Ointment II (greasy or greaseless) (Treibacher Chemische Werke, Treibach) is a more concentrated preparation than ointment I and is packaged in 20-, 30-, 50- or 100-Gm. containers.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Gonacrine-Ampuls (Societe Parisienne d'Expansion Chimique Specia, Paris) contain a 0.50% or a 2% aqueous solution of 3,6-diamino-10-methylacridinchlorhydrate; packages contain 3 ampuls of 5 cc. of 2% and 6 ampuls of 5 cc. of 0.5%.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Guphen-Ampuls (Chem. Fabrik Heyl & Co., Berlin) contain 10% phenylquinolincarbonic acid and 5% purified guaiacol; packages of 5 ampuls.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Guphen-Tabletten (Chem. Fabrik Heyl & Co., Berlin) are put up in packages of 18 tablets containing in each 0.50 Gm. guaiacolphenylcinchonate.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Hepatopson Ampuls, Strong (Chem. Fabrik Promonta, Hamburg) represent in each 2-cc. ampul the extract of 5000 Gm. fresh liver; 3 or 10 ampuls to the package.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Hombreol-Ampuls (Degewop A. G., Berlin) contain in each cc. of oil solution 4-rooster units of masculin hormone; packages of 3 ampuls of 1 cc.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Isapogen Vaginal Globules (Chem. Fabrik Schürholz G. m. b. H., Köln) contain iodine, camphor and shale oil in a glycerinated gelatin base; packages of 10 and 50.—*Pharm. Presse*, 40 (1935), 505. (M. F. W. D.)

Ischiasol (R. and W. Bellak, G. m. b. H., Vienna, 16th dist.) contains castor oil, irradiated olive oil, camphor, salicylic acid and ether, put up in packages of 100 Gm.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Isopur Tablets (F. J. Kwizda, Korneuburg) contain 0.15 Gm. dioxyanthraquinone; packages of 10 tablets.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Jestrodilan (J. E. Stroschein, Berlin) appears in dragees (0.1 Gm.). These yellow-colored dragees contain the active constituents of *Folia Digitalis lanatæ*, with *Folia Rubi fruticosi* and *Radix Saponariæ*. The addition of these drugs hasten the absorption of the digitalis in the intestines. It is a heart tonic. It is found on the market in vials of 20 and can only be dispensed on prescription.—*Pharm. Weekblad*, 72 (1935), 1226. (E. H. W.)

Kresalcin Syrup (Apotheke Waldheim, Korneuburg) consists of 3 Gm. tricresol calcium sulphonate in 100 Gm. Syrup of Coffeæ.—*Pharm. Post*, 68 (1935), 488. (H. M. B.)

Levergranulat (Merck, Darmstadt) is a liver preparation whose activity is enhanced by a fermentative process, so that the same result can be obtained from small doses as from large doses of fresh or dried liver. The small doses are easier to take and therefore do not create antipathy through extended usage.—*Pharm. Weekblad*, 72 (1935), 1226. (E. H. W.)

Litholysin (F. J. Kwizda, Korneuburg) contains sodium sulphate, sodium chlorate, sodium carbonate, citric acid, lithium citrate and oil of lemon put up in packages of 50 and 100 Gm. of granules.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Lu-Ma-Salubretten ("Pharmacist to Leopold," Gloggnitz) contains diaminomethylacridinium chloride, yellow pyoctannin, thymol and ethereal oil; put up in packages of 30 tablets.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Lutren Ampuls (I. G. Farbenindustrie A. G., Leverkusen) put up in packages of 1 ampul of 1 cc. containing 2 canine units of corpus luteum hormone.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Luvasyl (Dr. Georg Henning, Berlin) appears on the market in dragees, which according to the manufacturer contains a combination of phenylethylbarbituric acid and ethylenediamine. Each dragee contains 0.1 Gm. of phenylethylbarbituric acid.—*Pharm. Weekblad*, 72 (1935), 1226. (E. H. W.)

Menothesan-Dragees (Dr. Wander, G. m. b. H., Vienna, 21st dist.) contain 0.10 Gm. bromcalciumtheosan, 0.02 Gm. sodium nitrite, phenobarbital, papaverine, dioxyanthraquinone and ovarian substance in packages of 60 dragees.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Methylene Blue-Urosept Dragees (Fa. Eggochemia, Vienna) sold in packages of 30 and 100 pieces consists of Urosept, amidopyrine, methylene blue and Agrypnal.—*Pharm. Post*, 68 (1935), 487. (H. M. B.)

Metricure (Antoine, Paris) is a vaginal antiseptic containing trioxymethylene, 0.1 Gm., essence of lavender 0.1 Gm., essence of geranium 0.1 Gm., tannin 2 Gm., sodium tetraborate 40 Gm. and sodium bicarbonate 57.7 Gm. Dissolve one teaspoonful in enough water to make 2 liters.—*Drug and Cosmetic Ind.*, 37 (1935), 535. (H. M. B.)

Mixiod (Société Parisienne d'Expansion chimique) is iodoöxyquinoline sulphonic acid mixed with 20% sodium bicarbonate to improve its solubility. It is found on the market in powder form, in bottles of 15 and 30 Gm. and in pills containing 0.25 Gm. of Mixiod per pill. The dose is 2–4 pills, three times a day before meals.—*Pharm. Weekblad*, 72 (1935), 1227. (E. H. W.)

Monotrean (Luitpold Werk, Munich) is a combination of methoxycinchonine with tetramethoxybenzylisoquinoline. It is recommended for use in the treatment of otogenic vertigo and is administered in the form of tablets, one tablet 3 times a day reduced to twice and then once

daily. It is sold in containers of 10, 30 or 100 tablets of 0.2 Gm.—*Drug and Cosmetic Ind.*, 37 (1935), 679. (H. M. B.)

Naturval-Nerven-Bonbons (Apotheke "Zum heil. Leopold," Gloggnitz) contains fluidextract of melissa herb, valerian root, kola-nuts and chamomile flowers; packages of 40 pieces.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Neogel Cosmetic Pencil (Kremel, Vienna, 14th dist.) contains a camomile-sage extract in a glycerinated gelatin base; packages of 10.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Neogel with Silver Nitrate Pencil (Kremel, Vienna, 14th dist.) contains 1 or 2% of silver nitrate in a glycerinated gelatin base; packages of 10.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Novalgin-Quinine-Dragees (I. G. Farbenindustrie A. G., Leverkusen) contain in each, 0.15 Gm. novalgin and 0.10 Gm. quinine phenyldimethylpyrazolonmethylaminomethanesulphonic acid, in packages of 15 dragees.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Novophylline (Desitin Works, Carl Linke, Hamburg) is a combination of phenylethylbarbituric acid with theophylline-ethylenediamine. It is used in angina pectoris and other heart conditions and can be used orally, rectally, intravenously or intramuscularly. It may be diluted with water or glucose solution for intravenous injection, but glucose must not be used for intramuscular injection. It is found on the market in ampuls of 0.5 Gm., in suppositories of 0.4 Gm. and in tablets of 0.11 Gm.—*Pharm. Weekblad*, 72 (1935), 1227. (E. H. W.)

Optonicum Merck is a blood-forming tonic containing concentrated liver extract and possessing a pleasant taste. It contains 2.5 Gm. liver extract in concentrated form, 0.57 Gm. iron, manganese and copper salts, 2.6 Gm. of a 50% solution of sodium glycerophosphate and 0.25 Gm. caffeine per 100 Gm., as well as appetizing agents and stomachics.—*Pharm. Weekblad*, 72 (1935), 1227. (E. H. W.)

Oxyascarin Tablets (Dr. Brandt & Co., Halle) contain 0.0075 Gm. aluminum subsantoninate triacetyldiphenolisatin and aluminum subacetate; in packages of 10 tablets.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Pandigal Suppositories (Beiersdorf & Co., Vienna, 14th dist.) contain in each, 0.30 mg. lanadigin glycoside obtained from *Digitalis lanata;* put up in packages of 3, 6 and 12.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Paspat (Luitpold-Werke, München) contains a polyvalent antigen mixture along with posterior lobe pituitary substance in packages of 1, 3 and 5 tubes.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Pectovit Granulat (Chem. Fabriken Dr. Joachim Wiernik and Co. A. G., Berlin) is a cough remedy in granulated form and consists of synthetic ammonium trichlorbutyladipinic acid ester.—*Pharm. Monatshefte*, 16 (1935), 179. (H. M. B.)

Peregenol Medicinale Tablets (Byk-Guldenwerke A. G., Berlin) contain sodium perborate, sodium bitartrate and sodium bicarbonate; put up in packages of 25 tablets.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Pernoctan Tablets (I. D. Riedel-E. de Haen A. G., Berlin) contain 0.20 Gm. sec.-butyl-*s*-bromallylmalonylurea; packages of 4, 10 and 200 tablets.—*Pharm. Presse*, 40 (1935), 505. (M. F. W. D.)

Philonin Cones (Fa. Promonta, Hamburg) contain copper iodo-*o*-oxychinolinsulphonate, silver nitrate, boric acid, balsam peru, novocaine, zinc oxide, etc., and is sold in packages of 10 pieces.—*Pharm. Post*, 68 (1935), 488. (H. M. B.)

Progestin Ampuls (Degewop A. G., Berlin), each cc. contains one canine unit of corpus luteum hormone.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Proviron Ampuls (Schering Kahlbaum, Berlin) contain in each ampul 25 rooster units of standard male sex hormone; in packages of 2 or 4 ampuls.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Pyraverin-Tablets (Fa. E. Silten, Berlin) put up in packages of 4 and 10 containing in each 0.10 Gm. dimethylamidophenyldimethylpyrazolon, 0.20 Gm. phenacetin, 0.05 Gm. caffeine and 0.05 Gm. amidophenazon ethylbutylbarbiturate.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Reflexan (Dr. Chr. Brunnengräber, Lübeck) is a liver preparation used for the treatment of angina pectoris, migraine, tropical ulcers, beginning gangrene, etc.—*Pharm. Weekblad*, 72 (1935), 1227. (E. H. W.)

Rivoren (I. G. Farbenindustrie A. G., Leverkusen) contains in each ampul 0.02 Gm. ammonium heptinchlorarsonate (Solarson) and 0.4 Gm. hexamethylenediaminoisopropanaldiiodide (Endoiodin) in 2 cc., and is used for treatment of inoperable tumors.—*Pharm. Monatshefte*, 16 (1935), 179. (H. M. B.)

Sangostop (Brocades & Steheman and Pharmacia, Netherlands) is a hemicellulose used as a styptic. It is used per os, per clysma and as tamponage, and is obtainable in 5% solution in bottles of 30 cc. and in ampuls containing a 1½% solution.—*Pharm. Weekblad*, 72 (1935), 1227. (E. H. W.)

Scottine (Scott and Browne) is a standardized vitamin product made from halibut liver oil having the vitamin content increased. It is made by the same firm which makes Scott's Emulsion. Scottine-pills contain 4250 vitamin-A units and 250 vitamin-D units; Scottine-drops contain 1190 vitamin-A and 70 vitamin-D units, per drop.—*Pharm. Weekblad*, 72 (1935), 1227. (E. H. W.)

Securodorm-Tablets (Fa. E. Silten, Berlin) put up in packages of 6 and 10 containing in each 0.10 Gm. chloral, 0.10 Gm. butylethylbarbituric acid, 0.03 Gm. theophylline, and phenacetin.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Selvoral (I. G. Bayer, Leverkusen) is a calcium preparation for internal use described chemically as the calcium salt of glucohexietcitric acid. It is easily soluble in water and almost tasteless. The calcium content is 8.5%. It may be used in all cases requiring calcium therapy, allergic eczema, rachitis, Grave's disease, gynacological hemorrhage, etc. The dose for adults is one dessertspoonful 2–3 times a day.—*Pharm. Weekblad*, 72 (1935), 1227. (E. H. W.)

Seman-Tablets (B. Rothziegel, Vienna, 1st dist.) put up in packages of 24 tablets each containing seed albumin from French and English rye, yellow oats, couch grass, rye or meadow grass.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Spasmolax Granulation (A. Kremel, Vienna, 14th dist.) contains powdered rhubarb root, compound licorice powder, extract belladonna, kamillosan and oil of peppermint; sold in packages of 40 Gm.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Suprarenin-Tablets (I. G. Farben. A. G., Leverkusen) contain in each tablet 0.001 Gm. crystalline synthetic suprarennin; put up in packages of 20.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Surretal-Ampuls (Fa. Instituto Opoterapico Nazionale, Pisa) contain extract of whole suprarenal gland; packages of 12 ampuls of 2 cc.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Testosan in Oil, Strong-Ampuls (Sanabo-Chinoin, Vienna, 12th dist.) contain in each cc. testes-lipoid extract equivalent to 2 cock's comb units; packages of 5 and 10 ampules.—*Pharm. Presse*, 40 (1935), 505. (M. F. W. D.)

Tiroidal-Ampuls (Fa. Instituto Opoterapico Nazionale, Pisa) is put up in packages of 12 ampuls containing 1 cc. of extract of fresh thyroid glands.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Tiroidal-Fluid (Fa. Instituto Opoterapico Nazionale, Pisa) is an extract of fresh thyroid glands put up in bottles of 40 cc.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Tonicum Waldheim (A. Waldheim, Vienna, 1st dist.) contains sodium glycerinophosphate, sodium methylarsenate, manganic chloride and strychnine nitrate, put up in 100-cc. bottles.—*Pharm. Presse*, 40 (1935), 343. (M. F. W. D.)

Unden-Capsules (I. G. Farbenindustrie A. G., Leverkusen) contain in each capsule 500 mouse units of standardized follicular hormone; packages of 5 capsules.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

Ventræmon Powder (Degewop A. G., Berlin) is dried, defatted and powdered hog stomach put up in packages of 150 Gm.—*Pharm. Presse*, 40 (1935), 449. (M. F. W. D.)

Verodigen Ampuls (Boehringer & Sons, G. m. b. H., Mannheim) are put up in packages of 3 and 6 ampuls containing 0.8 mg. verodigen and 0.10 Gm. glucose in 1 cc. sterile double distilled water.—*Pharm. Presse*, 40 (1935), 344. (M. F. W. D.)

BACTERIOLOGY

Antibodies—The Antigenic Properties of Bacteria Combined with. By maximal saturation of bacteria with agglutinins, confirmed by absorption-test *in vitro*, it is impossible to deprive them of their antibody producing properties. Only by first saturating *in vitro* and then injecting further quantities of antibody before or after inoculation of antigen was it possible to deprive the bacteria

completely of their antibody-producing properties. By lysing bacteria with phage it is possible to obtain complete inactivation by sensitization *in vitro*.—Leo Olitizke. *J. Immunol.*, 29 (1936), 464. (A. H. B.)

Antipneumococcic Serum—Monkey Test for Chill-Producing Activity of Concentrated. The incidence of chills in patients undergoing serum therapy for pneumonia is reduced at least 50% by determining the chill-producing activity of concentrated antipneumococcic serum on monkeys.—L. A. Barnes and Elliott S. Robinson. *Am. J. Public Health*, 26 (1936), 51. (A. H. B.)

Atypical Acid-Fast Micro-organisms. The author records the isolation of fifteen strains of chromogenic acid-fast bacilli from human material which was being examined by culture for the tubercle bacillus. The material included sputum, urine, stools, blood, pus and gastric washings; seven of the strains were derived from urine. Their general cultural characteristics were similar to those of the well-known saprophytic acid-fast bacilli. Inoculation in small doses into laboratory animals was without effect, but the injection of 10 mg. subcutaneously into guinea pigs or intravenously into rabbits and chickens sometimes gave rise to lesions in the internal organs, which were, however, easily distinguishable from those of tuberculosis. A warning is issued to those engaged in the diagnosis of tuberculosis by cultural methods.—M. Pinner. *Amer. Rev. of Tuberculosis* (Oct. 1935), 424; through *Brit. Med. J.*, 3908 (1935), 1082D. (W. H. H.)

Bacterial Content of the Mouth—A Method for Estimating, by Direct Count. The number of bacteria in sprayed washings increased appreciably (at least 36%) over the unsprayed material. Counts taken at different times of the day and on different days varied greatly in the same individual.—Mary C. Crowley and V. G. Rickert. *J. Bact.* (1935), 400. (A. H. B.)

Bacteriophage—Neutralization of the. The neutralization of *Esch. coli* phage over a wide range of concentrations of phage and of antiserum, goes almost to completion within a few minutes with the adsorption and preliminary union between phage and antiphage coli.—C. E. Clifton, Elizabeth Mueller and W. Rogers. *J. Immunol.*, 29 (1935), 377. (A. H. B.)

Diphtheriæ B.—Strains of. The serological relationships of the gravis, mitis and "intermediate" types of *B. diphtheriæ* are serologically distinct from one another; numerous subgroups exist within each type with 70 mitis strains and 78 gravis strains.—J. F. Murray. *J. Path. Bact.*, 41 (1935), 439. (A. H. B.)

Hæmolytic Streptococci—Classification of, from the Nose and Throat of Normal Human Beings by Means of Precipitin and Biochemical Tests. The normal individuals examined with the nose swabs yielded hæmolytic streptococci on very few occasions. Of over 500 swabbings of the nose and throat (tonsils) of doctors, nurses and attendants on parturient women, hæmolytic streptococci were present in the nose of 5.4%, whereas they were present in the throat of 20.3%.—Ronald Hare. *J. Path. Bact.*, 41 (1935), 499. (A. H. B.)

Infective Endocarditis—Four Cases of, Due to Organisms Similar to Hæmophilus Para-Influenzæ, and One Case Due to a Pleomorphic Streptobacillus. Four organisms, isolated from cases of infective endocarditis, appear to be closely related to *Hæmophilus para-influenzæ* Rivers. The fifth is an organism which in young cultures simulates a Gm.-positive streptococcus, but which later develops into a highly pleomorphic Gm.-negative strepto- and leptobacillus.—C. H. Stuart-Harris, A. Q. Wells, A. B. Rosher, F. P. Machie and G. S. Wilson. *J. Path. Bact.*, 41 (1935), 407. (A. H. B.)

Iodine Trichloride. Resistance of Bacteria and Embryonic Tissue to Germicidal Substances. VI. The highest dilution preventing tissue growth was 1:2,400 (phenol 840), preventing growth of *Staphylococcus aureus* 1–6,000 (phenol 1–65). The toxicity index is 0.4 as compared with 12.9 for phenol.—A. J. Salle and A. S. Lazarus. *Proc. Soc. Exptl. Biol. Med.*, 33 (1935), 8. (A. E. M.)

Listerella—Characteristics of a New Species of the, from Human Sources. A new species of the genus Listerella is a small non-spore-forming Gm.-positive bacillus that has a tendency to form short chains and small clumps in broth. A clear beta zone of hemolysis is produced in blood agar plates which is pathogenic for rabbits, guinea pigs, mice, monkeys and man. Predilection of the organism is in the central nervous system of rabbits and monkeys when it is inoculated into the venous blood system, while intravenous inoculations into guinea pigs cause multiple myocardial abscesses instead of meningitis.—Caspar G. Burn. *J. Bact.*, 30 (1935), 573. (A. H. B.)

Pertussis Immunization—Progress Report on. This paper attempts to answer the ques-

tion, "Does *B. pertussis* vaccine actually protect?" In 1,592 children, 712 in the test group, and 880 in the control group, there were 67 cases of whooping cough, of which 63 occurred among controls, and suggest that an active immunity has followed the injection of *B. pertussis* vaccine under the conditions described.—PEARL KENDRICK and GRACE ELDERING. *Am. J. Public Health*, 26 (1936), 8. (A. H. B.)

Pirquet Test with Tuberculin Containing Adrenalin. The author compared the Pirquet action of plain tuberculin with that of tuberculin to 7 minims of which 1 minim of a 1:1000 solution of adrenaline had been added. These comparative tests were undertaken on 624 students who had not previously been vaccinated with B. C. G. and on ninety-four B. C. G. vaccinated students. The adrenaline-treated tuberculin gave a somewhat higher proportion of positive Pirquet reactions than did the plain tuberculin; this difference was most marked among the students previously vaccinated with B. C. G. The author suggests that the comparative superiority of the adrenaline-tuberculin test may be due to the anæmic zone which develops about the Pirquet scratch, and which may imply retention of the tuberculin for some time in the neighborhood of the scratch before it escapes into the general circulation. If this explanation is correct the risk of a general reaction from a tuberculosis focus to a Pirquet test should be reduced by the addition of adrenaline to tuberculin.—J. KLOSTER. *Nord. Med. Tidsskrift* (Sept. 7, 1935), 1364; through *Brit. Med. J.*, 3909 (1935), 1138A. (W. H. H.)

Psittacosis—The Complement-Fixation Reaction in. The evidence shows that the complement-fixation reaction, when suitably carried out, gives valuable assistance in the diagnosis of psittacosis in man. The reaction has been found positive as early as the twelfth day of disease and as late as the fifth week. It must be emphasized that the specific complement-fixing power of these human psittacosis sera is of a low order and that in order to detect it a finely balanced test is essential. For this reason rigorous control of the test is absolutely necessary if erroneous results are to be avoided. The author thoroughly discusses the technique of the test and cites many cases diagnosed as psittacosis on clinical grounds.—S. P. BEDSON. *Lancet*, 229 (1935), 1277. (W. H. H.)

Radiation in the Extreme Ultraviolet. The Action on Bacillus Subtilis Spores. This is the first specific proof of the antiseptic or germicidal action of this region of the ultraviolet.—IRVIN H. BLANK and WILLIAM ARNOLD. *J. Bact.*, 30 (1935), 503. (A. H. B.)

Scarlet Fever Toxin. A purified and concentrated scarlatinal toxin containing 20,000,000 or more skin test doses per Gm. and of low nitrogen content has been prepared by a combination of fractional precipitation with ammonium sulphate, treatment with an aluminum hydroxide preparation, dialysis and evaporation.—GEORGE F. DICK and ALDEN K. BOOR. *J. Infect. Diseases*, 57 (1935), 164. (A. H. B.)

Streptococci—Classification of Hæmolytic from the Stools of Normal Pregnant Women and of Cases of Scarlet Fever by Means of Precipitin and Biochemical Tests. (1) Twenty per cent of cases of scarlet fever have hæmolytic streptococci belonging to group A in the fæces.—RONALD HARE and W. R. MAXTED. *J. Path. Bact.*, 41 (1935), 513. (A. H. B.)

Yellow Fever Virus. The essential neurotropism of the viscerotropic yellow fever virus instilled intranasally into rhesus monkeys produces ordinary yellow fever but inoculated by the same route into mice gives rise to encephalomyelitis. In rhesus monkeys dying of encephalitis as a result of an intracerebral inoculation of viscerotropic virus, virus at death is often found only in the brain, and not in the blood and liver, where it, viscerotropic virus, has apparently been neutralized by the subcutaneous injection of immune serum.—G. M. FINDLAY and RUBY O. STERN. *J. Path. Bact.*, 41 (1935), 431. (A. H. B.)

BOTANY

Angiosperm Phylogeny on a Chemical Basis. A lengthy discussion of the relationship between phylogeny and chemical constituents of the plants. Under similar climatic conditions average iodine numbers of the glycerides increase with the evolution of plant orders and families; molecular weights of alkaloids increase; specific gravities of volatile oils increase, refractive indices decrease. Likewise a similar change is noted from tropic to temperate climatic regions. From the evidence of these constituents, the author finds that the following may be phylogenitic processions: herbs from trees; monocotyledons from dicotyledons; gamopetaly from polypetaly; polycarpy from oligocarpy (few carpels); syncarpy (or gamocarpy) from apocarpy. Several plant orders

appear to be out of place in the systems of either Engler and Gilg or Bessey.—JAMES B. MCNAIR. *Bull. Torrey Botan. Club*, 62 (1935), 515–532. (G. W. F.)

Capsicum Frutescens—Morphology of an Internal Type of Abnormality. An internal type of abnormality frequently occurring in the fruit was found to be of hypodermal origin and is initiated when the bud ranges from 1 to 3 mm. in diameter. These fruits are described.—H. L. COCHRAN. *Botan. Gaz.*, 97 (1935), 408–415. (G. W. F.)

CHEMISTRY

GENERAL AND PHYSICAL

Copper-Pyridine-Saccharine Complex—Crystallography of. This article discusses the crystallography of the Copper-Pyridine-Saccharine complex Cu Py_2 $(H_2O)_2$ Sa_2. The crystals are bipyramidal rhomboids where $a:bc$ = *p.* 4404–*1* 0.614. Various constants are given as well as the results of a röntgenographic study. The molecular structure of the crystals is discussed and four figures are given.—J. BEINTEMA, P. TERPSTRA and J. J. DE VRIEZE. *Pharm. Weekblad*, 72 (1935), 1287. (E. H. W.)

Heterogeneous Equilibria in Two Component Systems with Thymol as a Component. The eutectic points with their corresponding weight per cents of thymol for the two-component systems studied are respectively as follows: (1) thymol–urea, 43.0° and 95.5%; (2) thymol–acetanilide, 16.5° and 65%; (3) thymol–phenol, 6.7° and 48.2%; (4) thymol–salicylic acid, 46.2° and 96.2%; (5) thymol–salol, 15.6° and 37.5%; thymol–antipyrine, data not obtained because of tendency to super-cooling; thymol–camphor, liquid to −15° over a concentration range of 30% to 70%.—K. HRYNKOWSKI and M. SZMYT. *Arch. Pharm.*, 273 (1935), 418.

ORGANIC

Alkaloids

"Chin-Shih-Hu"—Alkaloids of the Chinese Drug. Dendrobine II. Further analyses have given preference to formula $C_{16}H_{25}NO_2$. Additional experiments indicated that 2 oxygen atoms constitute a γ-lactone structure: saponification leads to the free oxyamino-acid, dendrobic acid $C_{16}H_{27}NO_3$: dec. 227°; freely soluble in water, methanol, ethanol; slightly sol. in acetone and petrol; insol. in ether; $[\alpha]_D^{31}$ −27.5° in abs. ethanol; $HAuCl_4$-salt, dec. 85°; methiodide, dec. 211°; diazo-methane yields Me-ester, m. p. 94°, sol. in alcohol and ether but insol. in water and alkali, $[\alpha]_D^{14.5}$ −17.5° in abs. ethanol, $HAuCl_4$ salt m. p. 169°, acetyl-Me-ester m. p. 75°. Oxidation of either dendrobic acid or its Me-ester with permanganate or chromate were unsatisfactory. However, the fact of acetylation shows that—OH is either primary or secondary in type. Hydrogen peroxide reacts with dendrobine to form the N-oxide $C_{16}H_{25}NO_3 + H_2O_2$: colorless, granular crystals; dec. 150°C; $[\alpha]_D^{25}$ −37.76° (abs. ethanol); sol. in water, ethanol, insol. in ether; $C_{16}H_{25}NO_3 + HAuCl_3$, dec. 184°; acetic anhydride did not react to form acetyl-base from N-oxide. Formation of this N-oxide indicated tertiary N. Dendrobin-methylhydroxide subjected to 35 hours refluxing with 20% potassium hydroxide in ethanol yielded large amounts of dendrobic-acid; methyl-hydroxide, but no methine base: dendrobin-methylhydroxide, colorless crystals dec. 251°-clor-methyl-base-$AuCl_3$, dec. 237–239°; dendrobic-acid-$ClCH_3.AuCl_3 + H_2O$, dec. 107° (ex. ethanol), anhydrous salt, dec. about 200°. Failure of Hoffmann Abbau reaction was interpreted to indicate a hydroquinoline ring. Hydrochloric acid (10%) converted cyan-nordendrobine heated on a water-bath to nordendrobine-carbamide $C_{15}H_{22}O_2N$—CO—NH_2: $[\alpha]_D^{13}$ −128° (ethanol); $HAuCl_4$ salt, dec. 175–176°. At 140–150° 30% hydrochloric acid yielded in addition at least 2 acids. Potassium hydroxide in ethanol converted the carbamide into nordendrobic acid; not obtained ash-free; $HAuCl_4$ salt dec. 197°. Nitrous acid reacted with the carbamide giving as lesser product a carbamic acid $C_{15}H_{22}O_2NCOOH$, m. p. 135°, and as major product nordendrobin: analysis and mol. wt., $C_{15}H_{22}O_2NH$; m. p. 117–118°; $[\alpha]_D^{19}$ −21.6° (ethanol); soluble in usual organic solvents and water; sublimes; $HAuCl_4$ salt, m. p. 181°; acetyl derivative by acetic anhydride, m. p. 114.5°, $[\alpha]_D^{17}$ −149.5° (ethanol), not basic; nitroso-nordendrobin by action of cold nitrous acid, m. p. 172°, colorless, not basic. In summary, these results indicated: (1) that dendrobine contained a lactone group derived from a carboxyl group and a primary or secondary alcohol; (2) that the nitrogen atom was tertiary, carried 1 CH_3 group and was present in a tetrahydroquinoline

nucleus. The genetic relationships were pictured in a diagram.—H. SUZUKI, I. KEIMATSU and K. ITO. *J. Pharm. Soc. Japan*, 54 (1934), 138–145. (R. E. K.)

"Chin-Shih-Hu." Supplementary Data. The following observations have been made since the first publication which dealt with the "Chin-Shih-Hu," **Dendrobium** species, currently available in the Chinese markets. (1) **Dendrobium Linawianum** Reichb., from Formosa: in length, no. of nodes, form of leaves, and especially in curvature and flatness of stems this species is much more like the Chinese "Chin-Shih-Hu" than **D. nobile**; alkaloids, 0.18–0.47% on dry basis; crystalline dendrobine was extracted. (2) **D. flaviflorum** Hayata: popularly known in Formosa as "Bok-Hak," not bitter, in contrast to first report only 0.007% alkaloids. Apparently the "Bok-Hak" of the 1st paper was derived from **D. nobile** and **D. Linawianum.** In ancient times "Sekikoku" (**D. nobile**) was a much prized medicinal in China, whereas "Bok-Hak," the "Chin-Shih-Hu" of to-day, was rejected. However, through an unnoticed change Bok-Hak has come to be used exclusively. (3) **D. longicalcaratum** Hayata is morphologically entirely different from Sekikoku. It does not contain any alkaloid. (4) The samples of Sekikoku native to Kyushu obtained by the authors were collected at the flowering stage. All had yellow blossoms and were derived accordingly from **D. tosaensis** Makino. At most only traces of alkaloids were present. A variety from the same province with pink blossoms is **D. nobile.** (5) Lots of "Chin-Shih-Hu" purchased after the 2nd publication were found to contain less than $^1/_3$ of the quantity of alkaloids previously reported. At the authors' request K. F. Tseng (of the Shizen Kagaku-Kenyusho, Shanghai) assayed 5 varieties from Szechuan Province and found the alkaloid content to range from 0.06% to 0.50%.—H. SUZUKI, I. KEIMATSU and K. ITO. *J. Pharm. Soc. Japan*, 54 (1934), 146–147. (R. E. K.)

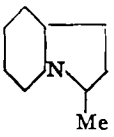
Cinchona Alkaloids, Modified. III. Chlorodihydro-bases. The reaction mixture obtained by treatment of quinine hydrochloride for many weeks with a hydrochloric acid solution saturated with hydrochloric acid at 85° for 50 hours, contained α-chlorodihydroquinine (I), sintering 203° m., 210°, frothing 215°, $[\alpha]_D^{20}$ −251.0°, and α-chlorodihydroquinone (II), sintering at 184°, m. p. 194°, frothing 225°, $[\alpha]_D^{22}$ −168.1°. When cinchonine-hydrochloric acid was heated in a sealed tube at 140–150° with hydrochloric acid as above, α-chlorodihydrocinchonine, sintering at 233°, frothing at 236°, $[\alpha]_D^{20}$ +226.0°, and α-chlorodihydrocinchonine, sintering at 200°, frothing at 223°, $[\alpha]_D^{22}$ +176.0°, were formed. The chlorodihydrocinchonidines were separated by recrystallization of the dihydrobromides from hot alcohol after reacting hydrochloric acid and cinchonidine. α-Chlorodihydrocinchonidine sintered at 229°, frothed at 231°, $[\alpha]_D^{23}$ −135.6°, and α′-chlorodihydrocinchonidine sintered at 244°, frothed at 246°, $[\alpha]_D^{23}$ −62.5°. α-Chlorodihydroquinidine, sintering 198°, m. p. 206°, frothing 225°, $[\alpha]_D^{24}$ +276.3°, was isolated by crystallization of the dihydrobromide of the reaction mixture from alcohol and the α′-base, sintering 195°, m. p. 200°, frothing 229°, $[\alpha]_D^{22}$ +240.7°, was removed from the bases contained in the mother liquor as neutral tartrate. The author concludes that the addition of chlorine takes place on the α-C resulting in two isomerides. I and II in doses of 5 mg. per 20 Gm. of bird were about as active as quinine in bird malaria.—JOHN A. GOODSON. *J. Chem. Soc.*, 1094 (Aug. 1935); through *Squibb Abstract Bull.*, 8 (1935), A-1411.

Cinchona Alkaloids—Ultraviolet Absorption of the Most Important. Some previous work along this line is reviewed. The method of determining absorption, the apparatus used, and the equations involved are explained. Numerous graphs illustrating the absorption of solutions of quinine, quinidine, cinchonine and cinchonidine in 96% alcohol, in 20% alcohol, *N*/10 H_2SO_4, water, etc., are shown. The values obtained are compared with those of other authors. The absorption spectra of quinine and cinchonine as compared to their stereoisomers quinidine and cinchonidine are shown. The type of absorption of the bases represents also that of the aqueous or alcoholic solution of the neutral salts. The addition of water to an alcoholic solution produces very little change in absorption spectrum while the influence of hydrogen-ion concentration is noticeable only in the solutions of acid salts or in solutions in an excess of acid. In all of the solvents examined, there was a wide difference in the absorption spectrum of quinine and cinchonine which was caused by the presence of the —OCH_3 chromophore group in quinine. Quinidine and cinchonidine parallel quinine and cinchonine in absorption spectra, and large differences in the magnitude of the extinction coefficient, as the curves of J. Manta showed, were not found.—L. FUCHS and A. KAMPITSCH. *Scientia Pharm.*, 6 (1935), 113. (M. F. W. D.)

Ergot—The Effect of Hot Solvents on. Note on the Effect of Storage on the Activity of

Ergot. The work is summarized by the authors as follows: (1) The effect of hot solvents on original ergot has been investigated. Ether, dichlorethylene, trichlorethylene and benzene have been found to extract the major portion of the alkaloids; light petroleum does not extract the alkaloids. (2) In the case of dichlorethylene and benzene, quantitative recovery of the alkaloids has been made, proving that the alkaloids are extracted and not destroyed by the solvents. (3) Ergota Præparata has been found to retain its alkaloidal strength over a period of eighteen months.—R. F. CORRAN and F. E. RYMILL. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 337–339. (S. W. G.)

Lupin Alkaloids. Norlupinane (b. p. 74–76°/14 mm., picrate m. p. 194°), previously obtained by elimination of carbon dioxide from lupininic acid was synthesized by reducing the quaternary salt (m. p. 159°) formed from ethyl pyridyl-2-β-propionate (b. p. 98°/1 mm., picrolonate m. p. 141°, picrate m. p. 84°) and ethyl bromoacetate to ethyl piperidyl-1-acetate-2-β-propionate (b. p. 138–140°/1 mm.), performing Dieckmann ring closure on this and reducing the resulting 3-keto-octohydropyridocoline (b. p. 74–76°/1 mm., picrate m. p. 185°) by Clemmensen method. The following structure was indicated for norlupinane:



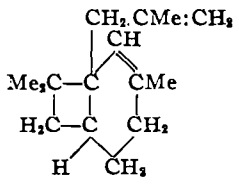
G. R. CLEMO, WM. MORGAN and R. RAPER. *J. Chem. Soc.* (1935), 1743–1745. (G. W. F.)

Quinine Alkaloids—Rearrangement of. Hydrocinchonidine (I) is heated at 160° with 25% hydrochloric acid for 50 hrs., 10% aqueous sodium nitrite is added to complete precipitation of N-nitrosohydrocinchotoxine (II) m. p. 99–100°, $[\alpha]_D^{20}$ −21.0° in alcohol (hydrochloride, m. p. 107–108°), the solution is made alkaline and extracted with alcohol, (I) is eliminated from the extract as tartrate and epihydrocinchonidine (III) m. p. 107–108°, $[\alpha]_D^{18}$ +46.0° in alcohol (picrate, an oil, picrolonate, m. p. 196–198°; methiodide, m. p. 237–238°, $[\alpha]_D^{18}$ +38.0° in water; benzoate, m. p. 137–138°, $[\alpha]_D^{15}$ +71.0° in alcohol), is isolated from the residual solution; epihydrocinchonine (IV), m. p. 128–129° $[\alpha]_D^{20}$ +89.0° in alcohol (picrate, m. p. 212–213°; picrolonate, an oil; methiodide, m. p. 231–232°, $[\alpha]_D^{20}$ +54° in water; benzoate, m. p. 156–157°, $[\alpha]_D^{18}$ +157° in alcohol) is prepared from hydrocinchonine hydrochloride and 25% hydrochloric acid (50 hr. at 160°). Hydrocinchotoxine, obtained by heating (III) or (IV) with 25% aqueous acetic acid at 100° (30 hr.) yields (II) when heated with nitrous acid (cf. *A.* (1932), 759).—J. FIEDZIUSZKO and J. SUSZKO. *Arch. Chem. Farm.*, 2 (1935), 139; and *Bull. Acad. Polonaise A* (1934), 415; through *Brit. Chem. Abstracts, A* (June 1935), 765; through *Squibb Abstract Bull.*, 8 (1935), A-1412.

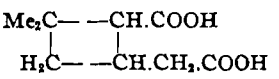
Essential Oils and Related Products

Aromatics—New Procedures in the Chemistry of. A review dealing with the ketones of value in perfumery.—A. LEWINSON. *Riechstoff-Ind. Kosmetik*, 10 (1935), 187–189. (H. M. B.)

Caryophyllene. The following formulæ are suggested for beta-caryophyllene (I) and caryophyllenic acid (II):



I



II

G. R. RAMAGE and J. L. SIMONSEN. *J. Chem. Soc.* (1935), 1581–1584. (G. W. F.)

Heracleum Lehmannianum—Anethol from. The essential oil of the leaves of *Heracleum Lehmannianum* (Fam. *Umbelliferæ*) yields 80% of anethol. The plant grows in the region of the Ghissar range in Tadjikistan (Central Asia), is a perennial attaining the height of 3 to 8 feet, flowers in early June to late August, and fruits ripen in late July to winter. The leaves, in a fresh state, contain 0.25 to 0.40% of volatile oil. An acre yields from 4 to 12 tons of leaves, from which

22 to 88 lbs. of oil may be obtained, equivalent to 17.6 to 70.4 lbs. of anethol; one acre of fennel yields 2.2 to 22 lbs. anethol. The plant is superior to anise or fennel in that it is not subject to infections, develops exuberantly and is good animal fodder. It is also used as a foodstuff in soup.—J. WASSERMANN. *Am. Perfumer*, 31 (1935), No. 5, 65. (G. W. F.)

Methylionones—Use of the, in Perfumery. A discussion with a table showing the amounts of the four methylionones necessary to produce the various odor types.—P. JELLINEK. *Riechstoff-Ind. Kosmetik*, 10 (1935), 177. (H. M. B.)

Oil of Celery. A discussion of the cultivation of celery in southern France. The oil may be obtained from: (1) large, carefully selected seeds, (2) small seeds, (3) wastage of seed, (4) upper branchlets, (5) heavy stalk. Their quality varies in order listed; seeds yield about 2% of oil. The following constants were found: specific gravity (15° C.) 0.885–0.912, optical rotation +49°40′ to +66°36′, refractive index (20°) 1.4823–1.4879, saponification value 43.9–73.7, soluble in 90% alcohol only with turbidity. Rectification of the oil reduced the specific gravity from 0.912 to 0.867 while that of the residue was 1.067; optical rotation +49°40′ to +77°0′; refractive index 1.4879 to 1.4803, residue 1.5148; acid value 2.2 to 2.8, residue 11.2; ester value 71.5 to 9.3, residue 214.7; ester value after acetylation 79.3 to 17.7, residue 226.0; solubility in 90% alcohol turbid to soluble in 6 volumes, residue insoluble. The constituents, as obtained from the literature, are listed.—ERNEST S. GUENTHER. *Am. Perfumer*, 31 (1935), No. 5, 75–78. (G. W. F.)

***dl*-Piperitone—Synthesis of.** β-Chlorethyl methyl ketone, condensed with ethyl sodio-α-isopropyl-acetoacetate in alcoholic solution, yielded ethyl Δ′-*p*-menthen-3-one-4-carboxylate. Alkaline hydrolysis resulted in *dl*-piperitone (*dl*-Δ′-*p*-menthen-3-one), b. p. 107–109°/12 mm., $n_D^{15°}$ 1.4854. The constants agreed with racemized natural product; the oximes were also in agreement.—JAMES WALKER. *J. Chem. Soc.* (1935), 1585–1586. (G. W. F.)

Fixed Oils, Fats and Waxes

Daturic Acid. The history of fatty acids with seventeen carbon atoms and of daturic acid in particular is briefly reviewed. Though it has been the custom to determine the melting point of a fatty acid as important in its characterization, in some instances so many melting points have been reported in the literature that little value can be attached to it. The author prepared curves of fatty acids having an even number of carbon atoms, those having an odd number and of methyl esters of each. The melting point of daturic acid is generally reported as 59.9° but varying from 54° to 60°. This point does not fall on the curve; according to it the melting point should be 61°. The melting point of its methyl ester is reported as 29° to 30° which is above the curve. Experimental work is reported. Negative results point to the need of application of the studies in the identification of synthetic fatty acids by means of other derivatives such as have been used by other workers. X-ray examination could also be used in studying daturic acid.—RALPH W. CLARK. *J. Am. Pharm. Assoc.*, 24 (1935), 843. (Z. M. C.)

Fatty Acids—Esterification of Higher. Four factors are pointed out for esterification: (1) proportion of glycerol to fatty acid, (2) quantity of catalyst (camphor-β-sulphonic acid), (3) temperature, (4) time. Using phenol as a solvent results in better yields of monoglyceride. Increased ratio of glycerol increases yield of monoglyceride. Increased catalyst increases yield of ester, but lowers per cent of monoglyceride; increased temperature increases yield, but lowers per cent of monoglyceride; time prolonged increases yield, but lowers per cent of monoglyceride.—T. P. HILDITCH and J. G. RIGG. *J. Chem. Soc.* (1935), 1774–1778. (G. W. F.)

Licanic Acids, Alpha and Beta. Alpha-licanic acid, $CH_3.(CH_2)_3.(CH:CH)_3.(CH_2)_4.CO.(CH_2)_2.COOH$ (m. p. 74–75°), is normally obtained from commercial oiticica fat and the kernel oil of *Licania rigida* (in addition to stearic and palmitic acids). If these oils are irradiated in the presence of a trace of iodine or sulphur, an isomeride, β-licanic acid (m. p. 99.5°) is produced.—W. B. BROWN and E. H. FARMER. *J. Chem. Soc.* (1935), 1632–1633. (G. W. F.)

Natural Fats—A Note on the Rate of Formation of Fully Saturated Glycerides during Hydrogenation of Different. The total saturated acids originally present in the 6 fats studied increase progressively in the following molecular percentages: rape oil, 3%; olive oil, 14%; cotton-seed oil, 27%; pig back fat, 44%; Cape Palmas palm oil, 41%; Belgian Congo palm oil, 50%. For these fats the proportions of fully saturated glycerides when 50% of the original unsaturated acids have been hydrogenated are: 20, 24, 29, 41, 32 and 37%, respectively. It is believed that the palmitostearoglycerides of animal depot fats have been produced as the result of partial reduction

in situ of preformed palmitoöleo-glycerides.—T. P. HILDITCH and H. PAUL. *J. Soc. Chem. Ind.*, 54 (1935), 336T. (E. G. V.)

Palm Oil—Some Observations on. Palm oil is obtained from the fruit of two species of palm tree, *Elæis Guineœnsis* and *Elæis Melanococea*. The palm yields two oils, the ordinary palm oil obtained from the outer fleshy fruit, and the palm kernel oil derived from the seed. The oil is expressed from the kernel by crushing. Before this is done the nut is dried in the sun, which facilitates the removal of the kernel from the outer shell. The palm tree begins to bear its fruit, which grows in clusters, in its fourth or fifth year, and may continue to do so for seventy years or longer. A discussion of the extraction, composition, purity, refining and transportation of the oil is included.—H. SILMAN. *Perfumery Essent. Oil Record*, 26 (1935), 402. (A. C. DeD.)

Rape Oil—The Component Fatty Acids and Glycerides of Partly Hydrogenated. Rape oil and the methyl esters prepared from the mixed fatty acids of rape oil, have been submitted to progressive hydrogenation. In the mixed esters hydrogenation proceeds selectively, oleate is converted into stearate more readily than erucate into behenate. In the glycerides selectivity is less marked, stearic and behenic glycerides appear at almost the same rate. The proportions and composition of the fully saturated glycerides produced during hydrogenation have been investigated with reference to the general glyceride structure of the original oil. Neither tri-C_{18}-glyceride nor tricrucin is present in rape oil.—T. P. HILDITCH and H. PAUL. *J. Soc. Chem. Ind.*, 54 (1935), 331T. (E. G. V.)

Telfairia Occidentalis—Unsaturated Acid of. Fractional crystallization of the fatty acids of the oil yielded about 10% of highly unsaturated acid (m. p. 70°). It was shown to be β-elæostearic acid. Freshly extrated oil yielded α-elæostearic acid. If exposed to light or ultraviolet radiation, β-elæostearic acid was obtained.—E. H. FARMER and E. S. PAICE. *J. Chem. Soc.* (1935), 1630–1632. (G. W. F.)

Glycosides, Ferments and Carbohydrates

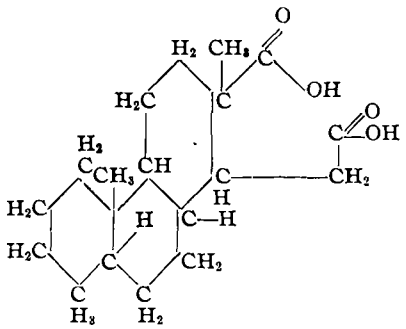
Amylases—Concentration and Properties of Two, of Barley Malt. A method for the separation and concentration of 2 amylases in different fractions obtained from barley malt is given. Both amylases lose their activities on heating in aqueous solution; both are free from carbohydrate but give positive protein reactions; both hydrolyze starch but act in a different manner. The saccharogenic and amyloclastic actions of the amylases in the presence of 0.01 *M* acetate and at 40° are best at p_H values of 4.3–4.6 and 4.3–4.7, respectively.—M. L. CALDWELL and S. E. DOEBELLING. *J. Biol. Chem.*, 110 (1935), 739; through *Squibb Abstract Bull.*, 8 (1935), A-1242.

Digitalis Glucosides. IV. Existence of Two Anhydrodigitoxigenins. Digitoxigenin, 12.5 Gm., was dissolved in 250 cc. hot alcohol and after the addition of 250 cc. 10% sulphuric acid the solution was boiled for two hours. After the addition of 250 cc. water the alcohol was removed by distillation under reduced pressure, the aqueous liquid extracted with chloroform, the chloroform solution dried and evaporated to dryness. The residue was crystallized from acetone and fractionation gave α-anhydro-digitoxigenin (I), m. p. 234°, $[\alpha]^{20}_{Hg\,gr.}$ +43.7°, $[\alpha]^{20}_{D}$ +39.0°, solution in chloroform insoluble in benzene, m. p. of acetate 144°; and β-anhydro-digitoxigenin (II) m. p. 202°, $[\alpha]^{p}_{Hg\,gr.}$ −17.3°, $[\alpha]^{20}_{D}$ −13.3°, acetate, m. p. 185°, I and II give the legal reaction, and therefore retain the double bond in the lactone group, Δ20;21 and both retain the secondary alcoholic group since they form an acetate and on oxidation with chromic acid solution give α- and β-anhydrodigitoxigenone, m. 273° and 281°, respectively.—SYDNEY SMITH. *J. Chem. Soc.* (August 1935), 1050; through *Squibb Abstract Bull.*, 8 (1935), A-1417.

Neutral Saponins. Conversion of Genins into Identical Derivatives. The three principal genins found in *Digitalis purpurea* are: digitogenin, gitogenin and tigogenin. The author wanted to determine the relationship existing between the 3 genins. Digitogenin reacts with chromic acid to give digitogenic acid ($C_{26}H_{35}O_7$); in the same manner gitogenin was converted to gitogenic acid ($C_{26}H_{38}O_8$). The difference between digitogenic acid and gitogenic acid is in the ketone group which the latter had. In reducing digitogenic acid with semi-carbazones and ethyl-sodium the product obtained was gitogenic acid. Another difference is the (OH) group in the second ring for digitogenin. Consequently digitogenin is an oxy compound. Tigogenin has one (OH) group, and 2 oxygen atoms; when reacted with chromic acid, it is converted into gitogenic acid with the formula $C_{26}H_{38}O_8$. Tigogenin has the same basic formula as digitogenin and gitogenin; the (OH) group has the same position in the ring as that of the two former compounds. Tigogenin for this

experiment was obtained from *Digitalis lanata*.—R. TSCHESCHE. *Ber.*, 68 (1935), 1090; through *Chem. Zentr.*, 106 (1935), 1719. (G. B.)

Saponins—Analysis of Genins from. Since sarsasapogenin has a formula containing 72 carbon atoms it was assumed that the rest of the genins might have a similar structure. In order to explain the relation that exists between sarsasapogenin and the rest of the genins, tigogenin was oxidized to a bile acid derivative, *i. e.*, to etioallobilianic acid. The following products were obtained when tigogenin was oxidized with chromic acid: amono-carbonic acid derivative ($C_{27}H_{42}O_5$), and the acetyl derivative of a lactone $C_{22}H_{34}O_3$. Five (C) atoms of trigogenin (probably from the side chain) were split up. The same results were obtained during the oxidation of sarsasapogenin. The lactone $C_{22}H_{34}O_4$ was further acetylated, and the secondary (OH) group was oxidized to a (C:O) group. This in turn was reduced using C_6H_5MgBr for the reaction of the saturated lactone $C_{22}H_{34}O_2$. A new substance diphenylcarbinol ($C_{34}H_{46}O_2$) was obtained; this process opened the lactone ring, and the COOH group changed over to a tertiary carbinol. The (OH) group was set free. In order to obtain a new double bond unsaturated comp. water was removed; consequently a new acid ring formed; the new product tetrahydrofuran derivative possessed no active hydrogen atom. This stability of the lactone ring explains the formation of the five lactone rings and also for the position 1,4, of the two (OH) groups in carbinol. In oxidizing carbinol with chromic acid, two acids were obtained: one with the formula $C_{34}H_{42}O_4$ the other $C_{19}H_{30}O_4$. $C_{19}H_{30}O_4$ was identical with etioallobilianic acid (V). This proves that the neutral saponins of digitalis



V

are closely related to bile acid. Twenty-seven carbon atoms were positively identified. Summing up the results obtained we see that the acid ester has no hydroxy group, that is, no active hydrogen; in oxidizing the acid further no compound of the formula V was obtained. Should the composition of formula IV be correct, it would show that the side chain of tigogenin is attached to C_{17} atom. On account of the formation of formula V from tigogenin we can assume that genins from saponins, as far as their relation to tigogenin is concerned, are fully explained. The changing of the (OH) group of sarsasapogenins in the C ring at the carbon atom eleven is a possible explanation of the isomeric relation between sapogenin and titogenin.—R. TSCHESCHE and A. HAGEDORN. *Ber.*, 68 (1935), 1412; through *Chem. Zentr.*, 106 (1935), 1722. (G. B.)

Thevetin. The Crystalline Glucoside of Thevetia Neriifolia. A criticism of Chen, *et al.* (*A.* (1934), 820). Thevetin is $C_{20}H_{30}O_6$ and is hydrolyzed to glucose and thevetigenin, $C_{14}H_{20}O$, a OH-compound which gives an acyl derivative.—N. GHATAK. *Proc. Acad. Sci., U. P., India*, 4 (1934), 173; through *Brit. Chem. Abstracts, A* (June 1935), 735; through *Squibb Abstract Bull.*, 8 (1935), A-1443.

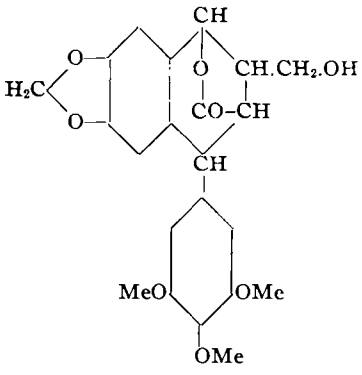
Other Plant Principles

Calumba Root—II Bitter Substances of. In order to determine the molecular structure of the bitter principles of calumba root, calumbin and chasmanthin were dehydrated with zinc dust and selenium, also decomposition by manganese dioxide and sulphuric acid and melted potassium hydroxide was studied. The bitter principles probably contain two or three rings, at least one of which is a carbocyclic six-membered ring with substituents in 1,2,3,4-positions.—K. FEIST,

E. KUNTZ and R. BROCHVOGEL. *Ann.*, 519 (1935), 124; through *Squibb Abstract Bull.*, 8 (1935), A-1454.

Holarrhena Antidysenterica—Resinols of the Latex of. The latex of *Holarrhena antidysenterica* was found to contain no alkaloids. An alcohol solution portion of the latex, when treated with warm acetone, left a residue, lettoresinol-A, m. p. 227–228°, $C_{28}H_{50}O_5$, which was neutral, dextrorotatory and very inert. Lettoresinol-B separated from the hot acetone solution m. p. 136–137°, $C_{22}H_{56}O_2$. The latter was neutral, unaffected by boiling alcohol-potassium hydroxide, dextrorotatory and gave a diacetyl compound. Oxidation with chromic acid gave a mixture of products.—J. C. CHOWDHURY and D. H. PEACOCK. *J. Chem. Soc.* (August 1935), 1129; through *Squibb Abstract Bull.*, 8 (1935), A-1423.

Phenolic Resins, Natural—Constituents of. Evidence in favor of the Borsche-Späthe formula (I) for podophyllotoxin is obtained by the synthesis of a lactone (II), m. p. 288–289°, which differs from the lactone $C_{22}H_{18}O_7$, m. p. 266°, prepared from picropodophyllum.



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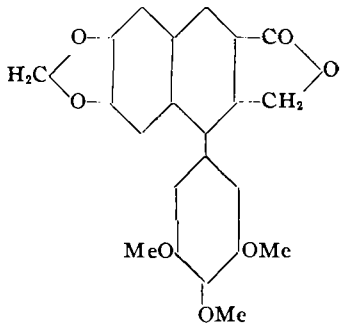

II

R. D. HAWORTH, THOS. RICHARDSON and GEORGE SHELDRICK. *J. Chem. Soc.* (1935), 1576–1581. (G. W. F.)

Pyrethrum Flowers—Constituents of. II. Isolation of Pyrethrin II. A method is described whereby pure pyrethrin II is obtained from a commercial concentrated petroleum ether extract having a total pyrethrin content of about 30%. Pyrethrin II was found to be slightly levorotatory, contrary to the findings of Standinger and Ruzicka for the synthetic compound. Possible reasons for this difference are suggested.—F. B. LAFORGE and H. L. HALLER. *J. Am. Chem. Soc.*, 57 (1935), 1893. (E. B. S.)

Salvia Miltiorrhiza—Chemical Composition of, the Chinese Drug "Tan-shen." While working in the laboratories of the S. Manchuria Railway, Nakao isolated 3 kinds of red crystals from the alcoholic extract, which had been purified by lead acetate. Subsequently Goto described red crystals $C_{20}H_{22}O_3$, m. p. 216°, which he thought to be either an anthracene or flavone derivative. Nakao disagreed with this interpretation and has resumed the study of these materials. The roots of this Chinese drug were extracted with ether, from which solvent the crude crystalline material was recovered. Treatment with acetone dissolved tanshinone brown (III). The insoluble portion was recrystallized from hot xylene; tanshinone green (II) was readily decanted with the mother solution from tanshinone blue (I) which formed a sediment of larger, heavier crystals. Several repetitions of the process yielded pure compounds. I was $C_{18}H_{12}O_3$; m. p. 231°; sl. soluble in ether, ethanol, acetone, soluble in chloroform; blue solution in sulphuric acid, recovered by dilution with water; color reactions similar to crysoquinone; red oxime, m. p. 169–171°. I in acetic acid reacted with *o*-phenylenediamine in ethanol on water-bath to yield a yellow quinoxaline: $C_{24}H_{16}ON_2$; m. p. 218–219° ex. benzene. Acetic anhydride, sodium acetate and zinc reacted with I at 150–160° forming a product, m. p. 204–207°, which analysis indicated to be a mixture of mono- and di-acetyl esters. I was suspended in ethanol saturated with sulphuric dioxide until colorless solution resulted, the solution concentrated under carbon dioxide and a white hydroquinone obtained by addition of water; readily oxidized to the brown quinone. I was treated with sodium and alcohol until color changed; the solution was concentrated under reduced pres-

sure, diluted with water, filtered to remove insoluble matter and acidified. Precipitate was further purified by solution in ether, extraction with sodium bicarbonate and a crude diphenic acid obtained by reacidifying: $C_{18}H_{14}O_5.{}^1/_2H_2O$; m. p. 265° from benzene-alcohol, H_2O = 3.08%, theory 2.82; m. wt. 324 by titration; Ag salt 39.05% Ag, theory for $C_{18}H_{12}O_6Ag_2$ 41.2%; acetic anhydride gave anhydride, m. p. 185°, yellow crystals. 3.2 Gm. diphenic acid in 2% KOH were oxidized with 180 cc. of 5% permanganate solution, extracted with ether and solvent evaporated. Acidification of fraction soluble in warm water yielded dicarboxylic acid $C_{13}H_{10}O_4$: m. p. 193°, yellow needles after sublimation; green phthalein reaction, brownish iron precipitate; m. wt. 236 by titration; Ag salt, 45.4% Ag; acetic anhydride formed anhydride. The water-insoluble oxidation product was a dibasic acid, m. p. 318–319°; lack of material prevented conclusive examination. Tanshinone green (II) was $C_{19}H_{18}O_3$: m. p. 216°; sl. more soluble than I; color reactions similar to retenequinone; yellow quinoxaline, m. p. 206°; crimson oxime, m. p. 198°. Tanshinone brown (III) was $C_{19}H_{20}O_3$: m. p. 182°; more soluble than I and II; yellow quinoxaline, m. p. 149°; red oxime, m. p. 170–172°.—M. NAKAO and T. FUKUSHIMA. *J. Pharm. Soc. Japan*, 54 (1934), 154–162. (R. E. K.)

Strophanthus Kombé Seeds—Chemistry and Pharmacology of Extracts from Different Parts of. The husk extracts reduce Fehling's solution, are least toxic and contain mostly amorphous material. The other extracts are non-reducing and more toxic, the endosperm extracts being largely crystalline. Sulphuric acid gives characteristic colors with all the extracts.—B. SANNA. *Boll. soc. ital biol. sper.*, 9 (1934), 830; through *Squibb Abstract Bull.*, 8 (1935), A-1270.

Unclassified

***p*-Aminobenzoic Acid—Some β-Alkoxyethyl Esters of.** Some physical properties are given for five new β-alkoxy ethyl *p*-nitrobenzoates and eight *p*-aminobenzoates. Their preparations are discussed, but no physiological data is included.—H. V. ASHBURN, A. R. COLLETT and C. L. LAZZELL. *J. Am. Chem. Soc.*, 57 (1935), 1862. (E. B. S.)

Barbituric Acid—Synthesis of Certain Pyridine Derivatives of. The synthesis of 5-(β-picolyl)-5-alkyl barbituric acids, where the alkyl radicals are ethyl, *n*-propyl, *n*-butyl and *i*-amyl, are described. Melting points are also given.—CARL SELLNER KUHN and G. HOLMES RICHTER. *J. Am. Chem. Soc.*, 57 (1935), 1927. (E. B. S.)

Barbiturate Hypnotics—Sulphur-Containing. A series of 5,5-disubstituted 2-thio derivatives of barbituric acid were made by condensing the requisite malonic esters with dry powdered thiourea in alcoholic sodium ethylate at 100–120°. Certain properties and, in a few cases, pharmacological data, *e. g.*, minimum effective dose, minimum lethal dose and sleeping time, are given. Several compounds listed are powerful hypnotics, and produced prompt sleep from which the animal recovered rapidly. The sulphur appears to accelerate the destruction of these compounds in the body.—D. L. TABERN and E. H. VOLWILER. *J. Am. Chem. Soc.*, 57 (1935), 1961. (E. B. S.)

Iodoform and Thymol Iodide—Preparation and Properties of. Comments are made on the various requirements of the Brit. Phar. The method of Schmidt (Ausfuhrliches Lehrbuch der Pharm. Chem., 1911) was investigated. Sufficient sodium hypochlorite solution is added to 50 parts of potassium iodide, 6 parts of acetone and 2 parts of sodium hydroxide in 1000 parts of water. About 95% of the iodide used may be returned as iodoform, the remainder passing for the most part into iodate. Of the factors that influence the nature of the product the following are given as the most important: (*a*) A certain excess of caustic soda is necessary which, if not attained, will result in poor color and low yields. (*b*) Excess of acetone must be avoided because the hypochlorite is capable of reacting with it. (*c*) The concentration of liquor is important in the adjustment of color and particle size of the precipitate. Dilute liquors yield iodoform of pale color and light density, while liquors strong in the by-products of the reaction give precipitates brighter in color and much heavier. (*d*) Temperature is often the deciding factor of color and particle size, and is responsible for the formation of compounds other than iodoform. Working with about 40 gallons of liquor, the heat of reaction causes a temperature rise of 15° to 17° C., and, if the final temperature is much over 30° C., the iodoform tends to be decomposed. A starting temperature of about 15° C. gives precipitates of bright yellow color, rather heavy and inclined to be granular, easily washed and sieved. A much finer product which is harder to work with is obtained if the starting temperature is 10° C. or lower. Two methods of preparation of thymol

iodide have been investigated, and the author finds that the substance resulting from direct iodination is quite different from that produced when hypochlorite is used as the intermediary. With the latter a certain amount of chlorination is also brought about. The B. P. C. sets the standard of 40% iodine content, but some commercial samples fail to meet this requirement. Illustrations of the different crystalline forms of iodoform are given.—NORMAN GLASS. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 351–359. (S. W. G.)

Lecitho-Protein—The Emulsifying Ingredient in Egg Yolk. Egg yolk owes its emulsifying action to an unstable complex containing both lecithin and protein, which is called "lecitho-protein" by the authors; this is left as a residue when salted egg yolk is extracted with hexane-acetone mixtures.—H. M. SELL, A. G. OLSEN and R. E. KREMERS. *Ind. Eng. Chem.*, 27 (1935), 1222. (E. G. V.)

Pharmaceutical and Phytochemical Substances—Procedures for the Preparation of. In a continuation of a series of articles the following are prepared: (1) urea hydrogen peroxide, (2) oxalic acid, (3) uric acid, (4) cetyl alcohol, (5) calcium gluconate, (6) phenolphthalein, (7) sinalbin, (8) potato starch, (9) myristin, (10) urea, (11) potassium guaiacolsulphonate, (12) anisol, (13) phenacetin, (14) antimony trichloride, (15) alga-red (SbOCl) powder, (16) caffeine, (17) acetylsalicylic acid, (18) agaricin, (19) absolute alcohol, (20) edestin, (21) antipyrin, (22) mannit, (23) saccharum album, (24) *d*-glucose, (25) *d*-fructose, (26) hippuric acid, (27) *l*-arabinose, (28) acetic acid anhydride, (29) cinchonine, (30) santonin, (31) citral, (32) suberic acid, (33) azelaic acid, (34) abietic acid, (35) metaldehyde, (36) tannic acid, (37) boric acid, (38) sulphosalicylic acid, (39) sodium sulphosalicylate, (40) chromic acid, (41) tannin albuminate (tannalbin), (42) hydrobromic acid, (43) potassium bitartrate, (44) potassium sodium tartrate, (45) antimony potassium tartrate, (46) phosphoric acid (ortho), (47) ammonium bromide, (48) strychnine, (49) strychnine nitrate, (50) brucine, (51) iron albuminate, (52) reduced iron, (53) pepsin, (54) iron lactate, (55) nitrobenzene, (56) potassium permanganate, (57) sodium salicylate, (58) sodium benzoate, (59) potassium cyanide, (60) methyl salicylate, (61) potassium chloride, (62) hesperidin, (63) potassium chromate, (64) furfural, (65) sodium bicarbonate and sodium carbonate, (66) diastase, (67) calcium hypophosphite, (68) sodium hypophosphite, (69) ferric hypophosphite, (70) monobromated camphor, (71) potassium bromide, (72) ether and water-free ether, (73) arbutin and (74) potassium iodide.—C. A. ROJAHN. *Apoth.-Ztg.*, 50 (1935), 1066, 1095, 1183, 1209, 1260, 1355, 1385, 1419, 1452, 1490 and 1527. (H. M. B.)

Piperazine—Derivatives of. VII. Procaine Analogs. Part I. A method for preparing the di-*p*-aminobenzoate of piperazino-1,4-*bis*-(β-ethanol) in good yield is given. No report is given on its therapeutic properties.—DAVID E. ADELSON, L. G. MACDOWELL and C. B. POLLARD. *J. Am. Chem. Soc.*, 57 (1935), 1988. (E. B. S.)

Toad Poisons—Chemical Studies on. VII. Bufo Arenarum, Bufo Regularis and Xenopus Lævis. Analyses of derivatives of arenobufagin and regularobufagin show these compounds to be isomers of the empirical formula $C_{28}H_{36}O_6$. Regularobufotoxin ($C_{39}H_{60}O_{11}N_4$) was obtained in the pure crystalline form (m. p. 205°) from the secretion of *Bufo regularis*. Epinephrine was isolated from the secretions of both *Bufo arenarum* and *Bufo regularis*. Cholesterol, fatty acids and a basic principle identical with bufotenidine were obtained from the secretion of the South African clawed toad, but no evidence for the presence of any bufagin-like substance was obtained.—H. JENSEN. *J. Am. Chem. Soc.*, 57 (1935), 1765. (E. B. S.)

BIOCHEMISTRY

Barbiturates—Studies on. XI. Further Contributions to Methods of Barbital Research. Reference is made to previous work on methods of extraction of barbiturates and also their estimation. In view of difficulties encountered in extraction reported from other laboratories, further study has been given to that procedure. Urochrome and other pigments in urine may interfere with colorimetric readings. Any procedure for clarifying a highly colored urine must not change concentration of barbiturates (precipitate, adsorb or destroy) and must remove enough pigment so that final color development is not obscured and should not yield end-products that have deterrent action on color development. The method of extraction previously reported meets these requirements except with highly concentrated samples. It is thought that the difficulty is due to insufficient copper sulphate and sodium hydroxide to produce a heavy precipitation. In the present study, sodium barbital was added to pathological highly pigmented normal urine speci-

mens and to urines that had been concentrated on a water-bath. They were clarified, extracted with chloroform, the extract filtered and evaporated to dryness. Controls were used so that every method was checked on its ability to remove pigment and on its efficiency in preserving original barbital content. Four new methods of clarification were used. (1) The addition of bichloride of mercury until a heavy white precipitate occurred did not prove practical because large amounts of barbital were precipitated or destroyed. (2) Zinc sulphate and sodium hydroxide produced heavy precipitate of zinc hydroxide without affecting barbital content but it was not effective in removing pigment. (3) Sodium molybdate and sulphuric acid to produce a heavy green precipitate did not destroy barbital and was effective in removing pigment but was inferior to the method finally chosen. (4) "Five cc. of a 10% copper sulphate solution are added to 25 cc. of urine which is then made alkaline with 10 cc. of a 10% sodium tungstate solution. After mixing thoroughly, the mixture is filtered and 5 cc. of 5% sulphuric acid solution is added to 30 cc. of the filtrate. This is mixed, allowed to stand for about twenty minutes and again filtered. Twenty-five cc. of this filtrate, which is equivalent to 13.39 cc. of the original urine, is extracted with chloroform. More pigment will be removed by this method if the amounts of reagents used for the 25 cc. of urine are doubled. This latter procedure has the disadvantage, however, of requiring a much longer time for filtration. "This method was compared with the original alkaline copper sulphate precipitation method and was found to be its equal in lightly colored urines. However, in highly colored urine specimens this method removed more pigment than any other method. No barbital was removed during this procedure." It had previously been stressed that cleared filtrates must be acidified before extraction because alkaline salts of barbituric acid are insoluble in chloroform. Presence of barbituric acids in chloroformic extracts of alkaline urines indicated that excreted barbiturates are present as acids even in alkaline urines. Experimental work showed this to be true. The urine has a limited buffering capacity; the amount of sodium barbital added to alkaline urines and recovered as diethyl barbituric acid is inversely proportional to the amount originally added. The modified Folin-Wu method for blood precipitation gives uniform results, but the method was tested on large amounts of blood and it was found that there were no interfering materials in the extract after concentration. For tissues, the copper sulphate precipitation method and the liquid air method are satisfactory. With the copper sulphate precipitation method the copper sulphate and sodium hydroxide solutions should be sufficient to change the liquefied tissues to a semi-solid mixture. The liquid method gives the best yield of barbiturates but it cannot be applied to the central nervous system because the lecithins and cephalins dissolve in chloroform and interfere with the development of color in the test. Such tissues may be frozen with liquid air, pulverized, extracted with chloroform, the solution filtered and evaporated to dryness on a water-bath. The residue is redissolved in chloroform, acetone added drop by drop to precipitate the phospholipids. When precipitation is complete the solution is filtered, dried, redissolved and tested.—CHARLES R. LINEGAR, JAMES M. DILLE and THEODORE KOPPANYI. *J. Am. Pharm. Assoc.*, 24 (1935), 847. (Z. M. C.)

Glycocoll—Identification and Colorimetric Determination of, by Means of Alloxanic Reagent. Place a little (not more than 0.5 mg.) of glycocoll in a round bottom porcelain dish (2–3 cm. diam.) and dissolve with agitation in 1 drop of the author's alloxanic reagent (*Bull. soc. pharm. Bordeaux* (1901), 161). Allow to stand at room temperature. A pink color is apparent after 15 minutes and becomes more pronounced on standing, being very strong after 2 hours. After 4 hours the color has changed to an intense reddish violet. Addition of 1 cc. of water to the residue forms a violet-red solution. One part of the solution is treated with 1–2 drops of sodium hydroxide solution to give a violet color; while the other half of the solution is treated with 1–2 drops of 5% zinc acetate solution containing 2 cc. of glacial acetic acid in 100 cc. of solution to give a yellow-orange color. A set of standard tubes may be prepared with known amounts of glycocoll treated as above.—GEORGES DENIGÈS. *Bull. soc. pharm. Bordeaux*, 73 (1935), 161–168. (S. W. G.)

Glycocoll—New Microcrystalline Reaction of. Place a few particles of the sample on a slide and add a drop of phosphotungstic acid solution by means of a fine rod. If the solid does not become entirely moistened, a very small droplet of the reagent may be added or the mixture may be stirred gently with a very fine rod. Examine without a coverslip under a magnification of 130–50×. If the sample is a liquid, a drop of the solution should be carefully evaporated on a slide and the reagent added to the residue.—GEORGES DENIGÈS. *Bull. soc. pharm. Bordeaux*, 73 (1935), 168–172. (S. W. G.)

Physiological-Chemical Determinations—Procedures for Some, by Means of the Color and Luminescence Comparator According to Rojahn-Heinrici. (1) *Determination of Glucose in Urine.*—Dilute 2 cc. of the urine to be examined with water to 50 cc. After shaking well put 2 cc. of the diluted sample in a test-tube and add 1.5 cc. of picric acid solution (1.2%) and 0.5 cc. *N* sodium hydroxide, heat exactly 2 minutes in a boiling water-bath, after taring the contents and the test-tube. Replenish the evaporated water and examine in the comparator. (2) *Determination of Phosphoric Acid in Urine.*—By the addition of molybdic acid the phosphoric acid, if present, is converted into phosphomolybdic acid which can be easily reduced with the formation of colloidal molybdic blue. (*a*) Molybdic Acid Solution: Triturate 5 Gm. ammonium molybdate in a clean dry mortar and shake with 100 cc. *N* sulphuric acid until dissolved; (*b*) Hydroquinone Solution: Dissolve 2 Gm. hydroquinone in 100 cc. water and add 10 cc. sulphuric acid (10%); (*c*) Sulphite Solution: Consists of 20% solution of crystalline sodium sulphite. Dilute the urine (1:10), add to 5 cc. of this dilution 2 cc. of solution (*a*), shake thoroughly, add (*b*) and (*c*) and after 10 minutes make to 25 cc. with water and examine in the comparator. (3) *Determination of Blood Pigments.*—The details for preparing a hematin solution which serves as the standard for this determination are given.—R. SEIFERT. *Apoth.-Ztg.*, 50 (1935), 1079–1081. (H. M. B.)

Prolactin—Preparation of. A procedure for extraction and proximate purification of prolactin is fully described. The tissue is first extracted with 60% to 70% aqueous ethanol at p_H 9 to 10, and this followed by complete precipitation of the active principles at a higher ethanol concentration and at p_H 6.0. The prolactin is next separated from the bulk of follicle-stimulating and thyreotropic hormones by taking advantage of the insolubility of prolactin between p_H 3 to 4 in the presence of sulphates. The hormone is further purified through use of its solubility in aqueous ethanol. About 70% of the prolactin present in the original tissue is thus obtained in one fraction uncontaminated by F. S. H. and thyreotropic hormone. At p_H 8.0 prolactin can be heated to boiling for one hour or to 60° C. for five hours without great loss of potency.—ROBERT W. BATES and OSCAR RIDDLE. *J. Pharmacol.*, 55 (1935), 365. (H. B. H.)

Serine: Globulin Ratio in Blood Serum—Rapid Clinical Technic for the Determination of. Procedure: The non-hemolyzed serum is obtained and centrifuged if necessary to remove the red blood corpuscles. Solution A is prepared by measuring exactly 1 cc. of serum and diluting to 100 cc. with physiologic salt solution. This solution contains the total proteins. Measure exactly into a centrifuge tube 1 cc. of serum and 9 cc. of saturated magnesium sulphate solution, stopper the tube and allow to flocculate for 24 hours, then centrifuge or filter on a good filter. This solution (B) contains the serine. Solution A is diluted to double its volume with an aqueous solution containing 20 Gm. trichloracetic acid in 10 Gm. Measure 2 cc. of A and 2 cc. of the dilution A/2 into 2 tubes identical with those of the standard scale. Add to each 0.2 cc. of trichloracetic acid solution, heat just to boiling and allow to cool completely. Compare each tube with those of the standard. The result given by A is multiplied by 100; that given by A/2 is multiplied by 200 and the mean of the two results is taken. This gives the proportion of total proteins. Other dilutions of A may be used. Prepare two dilutions of solution B to 5 and 10 times its volume. Proceed as above and multiply the results obtained by comparing with the scale by 50 and 100, respectively, and take the mean. This gives the amount of serine per liter. The globulin content equals total protein–serine. The results are approximate but sufficiently accurate for good clinical values.—J.-A. LABAT. *J. soc. pharm. Bordeaux*, 73 (1935), 172–174. (S. W. G.)

Vitamin B_1—Studies of Crystalline. X. Sulphite Cleavage. III. Chemistry of the Basic Product. The basic substance C_6H_9NSO, obtained from crystalline vitamin B_1 by the sulphite, is shown to contain a hydroxyl group, and the nitrogen is shown to be a tertiary amino nitrogen. Evidence indicates the base to be a tertiary heterocyclic base with a β-hydroxyethyl side chain $C_4H_4NS—CH_2CH_2OH$. The authors hold from evidence presented that the vitamin is a quaternary salt of this base.—EDWIN R. BUCHMAN, ROBERT R. WILLIAMS and JOHN C. KERESZTESY. *J. Am. Chem. Soc.*, 57 (1935), 1849. (E. B. S.)

Vitamin B_1—Studies of Crystalline. XII. The Sulphur-Containing Moiety. Through chemical studies and a synthesis of the compound, the base $C_4H_4NS—CH_2CH_2OH$, formed by the sulphite cleavage of crystalline vitamin B_1 is shown to be 4-methyl-5-β-hydroxyethylthiazole, and exists in the vitamin in the form of a quaternary salt.—H. T. CLARKE and S. GURIN. *J. Am. Chem. Soc.*, 57 (1935), 1876. (E. B. S.)

Vitamin B_1—Studies of Crystalline. XII. Ultraviolet Absorption of Some Derivatives of

the Basic Cleavage Product and Their Synthetic Analogs. By means of the ultraviolet absorption the author has shown the basic cleavage product of vitamin B_1 and certain derivatives of it to be similar to the thiazoles and their corresponding derivatives.—A. E. RUEHLE. *J. Am. Chem. Soc.*, 57 (1935), 1887. (E. B. S.)

Vitamin C—An Enzymic Method for the Estimation of True. Purification of tissue extracts before analysis using the Emmerie and van Eekelen mercuric acetate method is important if cysteine, glutathione, proteins, tannins or pigments are present. The fluid to be analyzed is adjusted to a p_H of 5 and in an aliquot portion the total reduction is determined volumetrically with 2,6-dichlorobenzenone indophenol. The indicator solution is prepared by extracting 50 mg. with 150 cc. boiling water and is standardized against a standard prepared by dissolving 25 mg. pure ascorbic acid and 50 mg. cystine in 90 cc. boiling 0.01*N* HCl, cooling and diluting to 100 cc. A second aliquot portion of the substance to be tested is treated with 1 cc. of *M* acetate buffer of p_H 6 and 10 cc. of enzyme solution. The enzyme solution is prepared by treating 250 Gm. of minced Hubbard or summer squash tissue with 750 cc. of 30% alcohol, shaking for 5 min. and filtering. Five-tenths mg. of ascorbic acid should be completely oxidized by 10 cc. of the extract in 30 min. at 38°. The fluid to be analyzed is kept at 38° for 30–60 min., the enzyme activity stopped by the addition of 1 cc. of 2% sulphuric acid and the residual reduction determined by titration with the dye. The true ascorbic acid may be computed by subtracting the 2nd titration value from the first. Examples of the method are given for orange juice, lemon juice, tangerines, grape fruit, Hubbard squash, tea, beer and milk.—HENRY TAUBER and ISRAEL S. KLEINER. *J. Biol. Chem.*, 110 (1935), 559; through *Squibb Abstract Bulletin*, 8 (1935), A-1273.

Vitamin C Content of Human Milk. The literature contains several different statements relative to the content of vitamin C of human milk. That the content must be relatively higher than of cow's milk can be seen in the fact that breast-fed children rarely if ever develop scurvy. The author has again checked the vitamin C content of human milk and has also investigated the disappearance and regeneration of the vitamin. He finds: (1) that the content of ascorbic acid (vitamin C) in human milk averages 4–7 mg. per cent, that is, about 5–7 times as much as cow's milk and ten times less than lemon juice and 20 times less than the adrenals; (2) that the colostrum does not contain more vitamin C than the fresh milk; (3) that the content of vitamin C in human milk depends largely upon the diet; (4) that in cow's milk the vitamin C content is dependable not only on diet but also upon whether or not the animal is pregnant; (5) that in the presence of air the vitamin C content of the milk drops off. Upon reduction (H_2S) a great deal of the vitamin is regenerated; and (6) the titrametric method for the determination of vitamin C in human milk gives very similar results to the biologic method on guinea pigs. The titration consists of determining how much centrifuged skimmed milk treated with a buffer solution (acetic acid–sodium acetate) is necessary to decolorize a similarly treated solution of 2,6-dichlorphenol-indophenol. A check is run upon a solution of *l*-ascorbic acid.—W. NEUWEILER. *Z. Vitaminforsch.* (1935), 39; through *Pharm. Weekblad*, 72 (1935), 1256. (E. H. W.)

Vitamin D—Different Forms of. A vitamin D concentrate containing 3 × 106 international units per Gm. and prepared from a cod liver oil containing 150 international units per Gm. was compared with irradiated ergosterol with the following respective results: Ultraviolet spectrum, no maximum 260–270 mμ, maximum 265 mμ; $[\alpha]_D$ in alcohol solution ±0°, +103°; % esterification with phthalic anhydride and pyridine after 10 days —100, about 30; effect of maleic anhydride, none, none; monohydric alcohol, +, +. The results with the cod liver oil concentrate corresponded exactly to those reported by Ender for a concentrate of tunny liver oil (*Z. Vitaminforsch.*, 2 (1933), 241; *S. A. B.*, 7 (1935), 162). While the above data are not sufficient to determine whether vitamin D from cod liver oil and from tunny liver oil are different or identical they show that both these forms of vitamin D are different from irradiated ergosterol.—OTTAR RUGH. *Nature*, 136 (1935), 396; through *Squibb Abstract Bull.*, 8 (1935), A-1490.

ANALYTICAL

Albumin. Tannate. Because of the variations in preparations sold as Tannalbin "Knoll" and the albumin tannate substitutes on the market, a study was made of 4 samples of Tannalbin and 3 of albumin tannate found on the Danish market. Table I shows moisture content, % solubility in water, cc. of 0.1*N* NaOH required for 0.2 Gm. dissolved material and albumin content according to the methods of several pharmacopœias. The author prepared several samples ac-

cording to the patent for Tannalbin "Knoll" and also according to the method of the Netherland Phar. V. These were studied in the same manner. Various methods of hardening the preparation to decrease its solubility in the stomach were investigated and the results tabulated. The practicability of the methods of evaluating the solubility are discussed. The author also investigated 8 samples of Tannalbin obtained from German and Swiss markets. The author concludes that acceptable products are difficult to make, the hardening process offering the most difficulty.—F. REIMERS. *Scientia Pharm.*, 6 (1935), 106. (M. F. W. D.)

Alkaloids—Reaction of, with Sodium Glycerophosphate. The author tested a method suggested for the identification of strychnine by Klobusitzky on alkaloids in general. A drop or two of alkaloidal solution is heated on a slide with an equal amount of 4% sodium glycerophosphate solution, the slide allowed to cool and observed. The method must be adhered to strictly or the free alkaloidal base may be precipitated as was demonstrated. The characters of the crystals obtained with berberine, brucine, quinine, cinchonidine, cinchonine, diocaine, heroin, caffeine, cocaine, morphine, nycaine, percaine and physostigmine are described. If the alkaloidal solution is sufficiently concentrated, nearly all alkaloids give precipitates. In some cases the reaction is sensitive to 1 part in 5,000.—L. ROSENTHALER. *Scientia Pharm.*, 6 (1935), 122. (M. F. W. D.)

Amino Acids and Their Compounds—Microscopy of. II. Picrates and Flavinates. Picrates of the following amino acids were made by stirring a crystal of the amino acid in a drop of a saturated solution of picric acid on a microscope slide, then warming slightly, if necessary, to effect solution: alanine, arginine, dibrom-tyrosine, dichlor-tyrosine, diiodo-tyrosine, glutamic acid, glycine, histidine, hydroxy-proline, hydroxy-valine, isoleucine, isoserine, leucine, lysine hydrochloride, methionine, norleucine, norvaline, phenylalanine, proline, serine, tryptophane and valine. All amino acids used, with the exceptions of dibrom-tyrosine, diodo-tyrosine, methionine, isoserine and glycine were the naturally occurring variety. Those mentioned were synthetic. The same general procedure was followed for the preparation of flavinates. The flavinates of the following amino acids were prepared: arginine, aspartic acid, dichlor-tyrosine, diiodo-tyrosine, glutamic acid, histidine, isoleucine, leucine, lysine, methionine, norleucine, tryptophane, tyrosine and valine. Photomicrographs are shown and the characteristics of the crystals are described for both the picrates and flavinates. Indices of refraction were determined for the flavinates.—B. L. CROSBY and P. L. KIRK. *Mikrochem.*, 18 (1935), 137. (L. L. M.)

Cadmium—Microestimation of, by Means of *o*-Oxyquinoline. The following method is said to give precise results: Two cc. of a neutral or slightly acid solution containing 1–3 mg. of cadmium ion are introduced into a microbeaker of Jena glass. A drop of universal indicator (Merck) is added, followed by a drop or 3% sodium carbonate solution and 2–3 drops of acetic acid solution to dissolve the precipitate formed by the sodium carbonate. A quantity (6–10 drops) of 40% sodium acetate solution is added to produce a p_H of 6–7, as shown by the indicator. The solution is heated on a block at 80–90° and a 2% alcoholic solution of *o*-oxyquinoline is added drop by drop to an amount slightly in excess of three times the theoretical requirement. The mixture is agitated and heated to incipient boiling, allowed to sediment for 15 minutes and the precipitate collected in a filter stick with gentle suction. The precipitate is washed two times with hot water, twice with cold water, then dried for 15 minutes in a Benedetti-Pichler oven at 120–130° and finally weighed in accordance with the usual microtechnique. The formula for the precipitate is $Cd(C_9H_6ON)_2.2H_2O$.—P. WENGER, C. CIMERMAN and M. WYSZEWIANSKA. *Mikrochem.*, 18 (1935), 182. (L. L. M.)

Camphor Liniment—Assay of. A considerable number of methods have been suggested for determining camphor in Liniment of Camphor. These are briefly reviewed. In connection with the U. S. P. revision a method was proposed in which the liniment is dried in an oven maintained at 110° C. for two hours under a stream of carbon dioxide. Experimental work was undertaken to obtain comparative results by polarimetric and gravimetric methods. So three figures are given for each sample: Polarimetric, under CO_2 at 110° C. and exposed to air at 110° C. Twenty-eight samples of cottonseed oil were tested for volatile matter at 110° C. under carbon dioxide for two hours; only two samples showed any significant change. A known sample of camphor in cottonseed oil was prepared and tested by the three methods and it seems apparent that it is necessary to run a blank on the particular oil used in any given Liniment of Camphor if an accurate assay is to be obtained.—D. A. OVERBYE and R. E. SCHOETZOW. *J. Am. Pharm. Assoc.*, 24 (1935), 961. (Z. M. C.)

Cherry-Laurel—Aqueous Distillate of. A discussion of the work published pertaining especially to the amount of hydrocyanic acid present in cherry-laurel water. The present official ratio of free and combined acid (1:3.6) is claimed to be too low and a ratio of 1:4.5 is suggested for a preparation of good quality. The following test is suggested to determine whether a sufficient quantity of benzaldehyde is present: Add 3 cc. of ammonia water to 10 cc. of cherry-laurel water. The liquid should appear milky after a half hour at most. Distinction between distilled cherry-laurel water and an artificial preparation is impossible at present.—L. VAN ITALLIE. *J. pharm. chim.*, 22 (1935), 452–454. (S. W. G.)

Cinchona Tincture. Determination of the Alkaloids in. The following change is recommended in the wording of the first portion of the procedure of the German Pharmacopœia: "After the addition of 2 Gm. dilute hydrochloric acid evaporate 20 Gm. of the tincture in a tared flask (100 cc.) in a boiling water-bath to 5 Gm., after cooling add to the residue 15 Gm. chloroform, then 4 Gm. sodium hydroxide with vigorous shaking for 10 minutes ...."—C. ROHMANN and A. KOCH. *Apoth.-Ztg.*, 50 (1935), 1150–1152. (H. M. B.)

Cudbear—Studies on. Cudbear has been much used though there are complaints of lack of uniformity. Of the attempts to replace it with some synthetic organic dye, amaranth suggested by Morrison seems to be the most favorable. Morrison's objections to cudbear were hindrance in filtration, color changes in acid and alkaline solution, fading and lack of uniformity. Possible replacement of cudbear with amaranth in N. F. VI caused considerable controversy, objections being that amaranth does not give the same color, thus making a change unwise, that no lack of uniformity had been observed, that some states restrict the use of coal-tar dyes. Cudbear was retained and the study here reported was undertaken in connection with the revision of the monograph. Early objections were based on lack of uniformity and to the presence of sodium chloride. N. F. IV solved variation somewhat by using cudbear itself; N. F. V reduced the ash limit from 35% to 12%. Cudbear is produced from a lichen and that of the present day comes from the Canary Islands, Madagascar and the African coast. Few details of manufacture are available. In general the lichens contain colorless glucosides (?) acids and ester-like compounds of orcin which upon oxidation in the presence of ammonia give orcin, a colorless compound, and then are converted into orcein and other colored substances. Cudbear is usually made by digesting lichens with a solution of ammonia at 60° in the presence of air for some days. It first becomes blue, later red and then it is dried and ground. Three things were studied: uniformity, its quality and purity and the possibility of establishing standards to insure these points. Sixteen samples were subjected to a study of colorimetric value. The following method, suggested by Scoville and devised by Arny, was used: "Accurately weigh one Gm. of cudbear previously dried over sulphuric acid; macerate it for 18 hours in 100 cc. of a mixture of 3 volumes of alcohol and 1 volume of water, cooled to room temperature before measuring. Shake frequently and allow the drug to settle. To 5 cc. of the clear liquid, accurately measured, add 15 cc. of alcohol, then gradually add distilled water to make 1000 cc. and mix. Compare the color of this freshly prepared solution in Nessler tubes or in a colorimeter with the color of a standard color solution prepared as follows: Decinormal Cobalt Chloride 0.75 cc., Two-hundredth-normal Potassium Dichromate 0.30 cc., Ammonium Carbonate T.S. 3.00 cc., Distilled Water, a sufficient quantity to make 10.00 cc. The color of the cudbear solution should not be less than that of the standard solution prepared above." Comparisons are tabulated and results are discussed. To determine quality of cudbear a solubility method was tried. One-gram samples and 70% alcohol were used. No consistent agreement between colorimetric value and solubility was found. Ash determinations were made. Seventy-five per cent of the samples were below 12%, half of them were below 6.5%. Original samples and residues from alcoholic extraction were examined microscopically. Potato starch was found in variable amounts in half the samples used, probably with the idea of regulating color value. Woody tissues and hairs, hyphæ from the subhymenial layer of the lichen were found. Microscopical results are tabulated. Usual methods for detection of dye woods are unsatisfactory. Such material as adulterants is probably rare. In the past, shipments have been denied entry because of arsenic content. Details of experimental work undertaken to determine arsenic content are reported and results are tabulated. Many samples contained considerable amounts. Its presence is probably due to carelessness. An arsenic limit of 10 parts per million is tentatively suggested.—E. H. WIRTH, L. E. MARTIN and P. G. SODERDAHL. *J. Am. Pharm. Assoc.*, 24 (1935), 949. (Z. M. C.)

Cinchona Alkaloids—The Spectrographic Investigation of. The authors investigated the possibility of analyzing mixtures of quinine and cinchonidine by spectrographic method. They conclude that the quantitative determination of quinine in a mixture of cinchona alkaloids is not practicable. Absorption curves are given for various mixtures of the cinchona alkaloids, and for the various alkaloids themselves. The apparatus is fully described as is also the method of its use, and the calculation of results.—C. G. VAN ARKEL and P. VAN DER WIELEN. *Pharm. Weekblad*, 72 (1935), 1198. (E. H. W.)

Drugs—Simple Tests for. Tests for the identity of drugs or for the presence of impurities should be simple and require as little material, time and reagents as possible so as to allow the pharmacist to carry them out. The author presents the Swiss Phar. V test for each of the following along with a much simpler test: for tartaric acid and sugar in citric acid, for phenol in salicylic acid, for antipyrine and antipyrine salicylate in acetanilid, for antipyrine and salicylic acid in antipyrine salicylate, magnesium in precipitated calcium carbonate, for uric acid in caffeine or theophylline, for sucrose in glucose, for free salicylic acid in mercuric salicylate, for cream of tartar in tamarind, for potassium ions in tartar emetic, for caffeine in theobromine or theophylline.—L. ROSENTHALER. *Scientia Pharm.*, 6 (1935), 109. (M. F. W. D.)

Drugs of High Oxidation Potential—Behavior of. The Tillman chloramine number was determined for 49 drugs and studied in relation to extract number, relative chloramine number and tannin content. The relative chloramine number $= \frac{\text{chloramine number}}{2 \times \text{extract number}}$. High chloramine numbers were observed for tannin, saponin and essential oil-containing drugs. Carbohydrates, distilled spirits and certain organic acids showed only slight reducing power against chloramine.—P. W. DANCKWORTT. *Arch. Pharm.*, 273 (1935), 403. (L. L. M.)

Emulsions and Suspensions—Modified Methods of Analysis of Commercial Oil. The emulsions and suspensions are classified as follows: (1) oil emulsions free from suspended solids; (2) oil emulsions containing suspended solids; (3) oil solutions and suspensions; (4) water-base wax emulsions. Complete systematic procedures are given for these four classes. Preliminary drying to total solids is eliminated and therefore oxidative changes in properties are avoided.—FRANK M. BIFFEN and FOSTER DEE SNELL. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 311. (E. G. V.)

Ferrous Iron—The Determination of, in Presence of Organic Matter by Heisig's Method. The general method employed was to take 20 cc. of the iron solution, 6 cc. of iodine monochloride reagent and sufficient hydrochloric acid to ensure the presence of 50% by volume of strong acid at the end of the titration. The presence of more hydrochloric acid is without disadvantage and is desirable where there is a tendency to emulsification. The iodine monochloride must be added before the hydrochloric acid, but it is preferable to delay the addition of the carbon tetrachloride until the end of the titration is near. *Application to Saccharated Carbonate of Iron.*—The iodate method was applied by digesting about 2 Gm. of saccharated carbonate of iron in a stoppered bottle with 20 cc. of 25% w/v sulphuric acid, adding 6 cc. of iodine monochloride reagent, 60 cc. of hydrochloric acid and titrating with $M/20$ iodate. *Ferrous Lactate.*—The correct ferrous iron content of ferrous lactate is ensured in the B. P. C. monograph by three determinations: (1) residue on ignition, (2) a limit test for ferric iron, (3) a limit test for calcium and alkali salts. These three determinations might conveniently be replaced by a direct titration of ferrous iron by iodate. The author claims that ferrous iron may be titrated with accuracy by iodate in the presence of liquid glucose, acacia, tragacanth, sucrose, invert sugar in small amounts, levulose, dextrose, lactose, glycerin, lactic acid and citric acid. Invert sugar in great excess produces a small error. The method is unsatisfactory in the presence of liquorice, marshmallow, quinine and aqueous extract of cochineal.—G. J. W. FERREY. *Quart. J. Pharm. Pharmacol.*, 8 (1935), 344–350. (S. W. G.)

Filtration. A discussion of filtration and filtration apparatus used in industry.—RALPH M. AUCH. *Am. Perfumer*, 31 (1935), No. 5, 91–93. (G. W. F.)

Formaldehyde—Titration of, According to the Swiss Phar. V. The Swiss Phar. V requires the sodium sulfite solution used in the titration according to the following reaction

$$HCHO + Na_2SO_3 + H_2O \rightarrow HCH\begin{matrix}OH\\(SO_3Na)\end{matrix} + NaOH$$

to be neutralized with *N*-NaOH. This is incorrect. Instead the sodium sulfite solution should be neutralized with *N*-HCl to thymolphthalein (the indicator specified in the titration) before the addition of the formaldehyde.—L. ROSENTHALER. *Schweiz. Apoth.-Ztg.* (1935), 617.

(M. F. W. D.)

Hydrobromic Acid—Determination of, in Hydrochloric Acid. The Denigès-Chelle reaction (*Bull. soc. pharm. Bordeaux* (1912); *C. R.* (1912), 1010) will detect 0.005 mg. of hydrobromic acid in 10 cc. of hydrochloric acid.—L. CHELLE. *Bull. soc. pharm. Bordeaux*, 73 (1935), 188–190.

(S. W. G.)

Indicators, Combined. A mixture of two indicators or an indicator and a dye often gives a sharper end-point than a single indicator. The following combinations were found specially suitable. For water titration: dimethyl-yellow (I) + methylene blue (II) (5:3), p_H 3.8; methyl-red + bromocresol-green (1:1), p_H 5.4; neutral-red (III) + (II) (5:2), p_H 7.1; (III) + tetrabromophenol-blue (IV), (5:3) (titration of hydroxylamine in 30% alcohol); (III) + (IV), (5:3) (titration of potassium hydroxide with hydrochloric acid in 70% alcohol); phenol-red + bromothymolbenzein, (3:2) (determination of acids and esters in spirits, 70% alcohol); cresol-red + thymolbenzein, (3:1) (titration of potassium hydroxide with potassium acid phthalate in 70% alcohol).—S. HAHNEL and B. HOLMBERG. *Svensk Kem. Tid.*, 47 (1935), 4; through *Squibb Abstract Bull.*, 8 (1935), A-1256.

Iodine—Determination of, in Organic Medicinals. The methods for the determination of iodine in iodoform, diiodoform, lipiodol, aristol, yatren, vioform, airol and quinine iodobismuthate are exhaustively reviewed and some changes are suggested. The methods may be applied as follows: (1) The method of Baubigny and Chavanne may be used to determine iodine in all the organic products. However, for volatile products, the technique should be slightly modified as indicated by the author. (2) The international method should be chosen when the products are not volatile. (3) With most organic products calcination in the presence of alkali carbonates will mineralize the iodine. Volatile products and those which may form volatile iodinated products are excluded. (4) Refluxing with sulphuric acid as recommended by the author is claimed to be best for products rich in iodine (iodoform, diiodoform, quinine iodobismuthate and airol). (5) Distillation in the presence of sulphuric acid gives exact results except with vioform which gives a slight error. (6) Chlorine in acid medium transforms the iodine to iodic acid. Only a portion of the iodine fixed in the benzene nucleus is removed (aristol). (7) Permanganate in acid medium is not convenient for complete transformation of the iodine to iodic acid. (8) Direct action of alkaline permanganate on the compound quantitatively transforms the iodine in the organic molecule to iodate in the cases of yatren, quinine iodobismuthate and airol. (9) Nitrous acid does not liberate quantitatively the iodine in the organic molecule. (10) Saponification is applicable to aliphatic derivatives (iodoform, diiodoform, lipiodol). The iodine in the benzene or oxyquinoline nuclei is not removed by treatment with alcoholic potassium hydroxide. (11) Hydrogenation in acid medium completely removes the iodine only with iodoform and lipiodol. (12) Hydrogenation in basic medium is not suitable for the aliphatic derivatives. A bibliography of 96 references is given.—LEON LECLERCQ. *J. pharm. Belg.*, 17 (1935), 545, 563, 585, 603, 631, 665, 687, 705, 721, 739, 758, 778, 798, 815, 837. (S. W. G.)

Iodine, Organic—A Volumetric Modification of the Pregl Halogen Microcombustion Method for. The sample of iodine containing organic material was weighed to the nearest thousandth of a milligram in a microboat, and burned in a stream of oxygen as described by Pregl. The absorption tube was fitted with a glass spiral instead of beads, and contained as absorbing medium, a mixture of 2 cc. of saturated sodium carbonate and 3 drops of strong sodium bisulphite solution free of halides. After the combustion, the absorption tube was rinsed with 30 or 40 cc. of water in successive small portions, and 2 cc. of glacial acetic acid was added to neutralize the sodium carbonate and produce a buffered mildly acid solution. A little bromine was added to the cold solution and shaken until the solution became uniformly brown, after which it was heated to boiling for a short time, removing most of the bromine and considerable water. A little salicylic acid or preferably phenol was added to remove the last traces of bromine and 2 cc. of 10*N* sulphuric acid added to definitely acidify the solution. To this was added 2 cc. of 1% potassium iodide solution and the iodine liberated was titrated with standard sodium thiosulphate solution, approximately 0.01*N*. The iodine originally present corresponded to one-sixth of the amount equivalent to the the thiosulphate used.—P. L. KIRK and K. DOD. *Mikrochem.*, 18 (1935), 179. (L. L. M.)

Karaya Gum—Acidity of, Solutions. The p_H of karaya gum solutions determined electrometrically becomes higher after about 24 hours. Colorimetric values agree with electrometric values at first, but, if the indicator has been added to the water used in preparing the solution, the color remains constant. If a small amount of ammonia is added to the indicator solution in which the gum is dissolved, both show the same drop with time.—W. E. THRUN. *Ind. Eng. Chem.*, 27 (1935), 1218. (E. G. V.)

Karaya Gum—Apparent Viscosity of Its Aqueous Solutions. Karaya Gum (*Sterculia urens*) resembles tragacanth and is finding increasing use. Dispersions of the gum behave like negative lyophilic colloids; too high values for viscosity are obtained when the time of passage through a capillary tube is excessive. At 25° C. the relative viscosities of solutions containing 0.2, 0.8 and 1.4 Gm. gum per 100 Gm. water are: 4.53, 48.2 and 875, respectively.—W. E. THRUN and H. V. FULLER. *Ind. Eng. Chem.*, 27 (1935), 1215. (E. G. V.)

Lead—Quantitative Spectrographic Determination of, in Biological Material. Quantities of lead introduced into an arc are measured microphotometrically in terms of relative lead-line intensities. Unknown quantities of lead, removed from urine, food, etc., are compared with known quantities in solutions of like composition. An accuracy of ±0.01 mg. between 0.01 and 0.20 mg. of lead is attained.—JACOB CHOLAK. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 287. (E. G. V.)

Luminescence Analysis—Apparatus for. Three types are illustrated, and these with various accessories are described.—W. KERN. *Apoth.-Ztg.*, 50 (1935), 1242–1243. (H. M. B.)

Magnesium Sulphate—Estimation of Small Quantities of. A microbeaker and a glass filter tube with asbestos filter (cleaned with chromic acid and with water) were weighed on a Kuhlmann's balance. A certain volume of a solution containing a known quantity of magnesium sulphate was added to the beaker and this placed inside a 3.3-cm. wide glass tube closed with rubber stoppers in both ends. The rubber stopper in top of the tube had holes fitted with narrow glass tubes, one for running a barium hydroxide solution into the microbeaker, a second for running distilled water into it, a third connected the glass filter tube, which could be lowered into the microbeaker, with a filter pump and a fourth and fifth permitted the passage of an indifferent gas through the precipitation chamber to prevent a contamination with barium carbonate. A current of pure hydrogen was passed through the precipitation chamber and the magnesium sulphate solution precipitated with a 0.03 molal solution of barium hydroxide which was perfectly free from carbonate (filtered through a filter of cotton wool). The precipitate was allowed to settle, the glass filter tube was then lowered into the liquid, the filter pump turned on and the liquid filtered from the precipitate with very gentle suction. The precipitate was then washed with water free from carbon dioxide, and the washing repeated until no trace of barium hydroxide could be detected in the wash water and four to five times more. The precipitation chamber was now disconnected and the beaker and filter taken out. The beaker was placed under a small bell-jar fitted with a tube for the connection with a filter pump and with a vertical glass tube out to the atmosphere. To this tube the filter tube was connected inside the bell-jar just above the beaker, and with a slight suction small portions of dilute sulphuric acid were washed through the filter, in a direction opposite the usual, to dissolve any magnesium hydroxide adhering to the asbestos filter, and the solution was collected in the beaker. It was then washed with small portions of water to remove the acid and this also was collected in the beaker. The bell-jar was now removed, the filter tube disconnected and placed on a clean glass plate under an inverted beaker. The aqueous solution of magnesium sulphate (with the precipitate of barium sulphate) in the microbeaker was evaporated to dryness by placing the beaker in a quartz crucible over a burner, and the excess sulphuric acid removed carefully by prolonged heating to about 325° C. After cooling, the beaker and filter tube were again placed in the precipitation chamber and the precipitation repeated as mentioned above, followed by a new washing of the filter tube and a new evaporation with sulphuric acid. This was repeated five or more times, the beaker and filter tube were heated together and, after cooling in a desiccator, weighed in the usual manner. The method is slow and tedious.—M. MÖLLER and G. SCHLEGEL. *Mikrochem.*, 18 (1935), 159. (L. L. M.)

Malt Diastase—Estimation of the Saccharifying Power of. A tentative procedure applied to the analysis of malt is described. It is an adaptation of the Hagedorn and Jensen method, depending on the reduction of potassium ferricyanide in slightly alkaline solution, followed by

acidification and titration of the ferricyanide remaining with standard thiosulphate.—H. C. GORE and H. K. STEELE. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 324. (E. G. V.)

Mass of Ferrous Carbonate—A Note on the Assay of. The use of diphenylamine as an indicator in the titration of Mass of Ferrous Carbonate with potassium dichromate was adopted by the Revision Committee of the U. S. P. XI because an inside indicator is better than an outside one. Formation of the green chromic ion makes it difficult for inexperienced workers to get a sharp end-point. Investigation of the possibility of using ceric sulphate solution instead of the dichromate showed results to be closer to theoretical amounts and the end-point sharper. The following procedure is recommended: "Dissolve about 1 Gm. of Mass of Ferrous Carbonate, accurately weighed, in 15 cc. of diluted sulphuric acid, add 10 cc. of diluted phosphoric acid and 100 cc. of distilled water. Immediately titrate with tenth-normal ceric sulphate, using 0.5 cc. of diphenylamine T.S. as the indicator. Each cc. of tenth-normal ceric sulphate is equivalent to 0.01159 Gm. of $FeCO_3$."—JOHN C. KRANTZ, JR., and C. JELLEFF CARR. *J. Am. Pharm. Assoc.*, 24 (1935), 948. (Z. M. C.)

Mercuric Cyanide—Determination of Mercury in. Introduce into a 100-cc. Erlenmeyer flask 10 cc. mercuric cyanide solution, 10 cc. distilled water and 10 drops of 25% w/v hydrochloric acid. Heat until boiling starts and then add drop by drop 2 cc. of 50% sodium thiosulphate solution. Insert a funnel into the mouth of the flask and maintain a gentle boiling for 15 minutes. Finally add 2 cc. of 20% sodium sulphite solution, boil for 15 minutes, shaking 4 or 5 times. Recover the precipitate in a tared 1 G^4 crucible with a porous bottom of Jena glass, wash with hot distilled water, then dry at 100° for 1 hour. The mercuric sulphide precipitate is too fine to be recovered on a 1 G^3 crucible.—E. CATTELAIN. *J. pharm. chim.*, 22 (1935), 454–456. (S. W. G.)

Mercury—Determination of, in Iodinated Organic Compounds of Mercury. Weigh out a sample, corresponding to at least 0.3 Gm. of mercury, in a small Pyrex weighing tube similar to that used in the Carius halogen determination. To a Carius bomb tube add 3 cc. of fuming nitric acid, transfer the weighing tube carefully to the bomb tube and proceed as in a halogen determination. After the bomb has been heated and cooled (and before opening), heat the capillary end of the bomb tube gently with a gas flame (using goggles), to prevent the loss of any mercuric iodide, which has condensed in that part of the tube, when the capillary is opened. Cut off the end of the tube, add 20 cc. of water and 15 cc. of concentrated ammonium hydroxide, and an amount of solid potassium iodide (plus an excess), sufficient to dissolve the mercuric iodide. Transfer the solution to a 400-cc. beaker and wash out the bomb tube thoroughly with water. Do not allow the total volume to exceed 200 cc. If the solution is brown, owing to free iodine, carefully add clear dilute sodium hydroxide solution until the color is a pale yellow. Heat the solution to boiling and add an excess of hot copper sulphate-propylenediamine reagent (prepared by dissolving 2.5 Gm. of copper sulphate in water and adding 2 Gm. of a 70% aqueous solution of propylenediamine). Cool for several hours in an ice-water mixture. Filter the blue precipitate on a weighed Gooch crucible and wash from three to four times with an aqueous solution containing 0.1% of potassium iodide and 0.1% of the copper sulphate-propylenediamine reagent. Then wash three to four times with 2-cc. portions of 96% alcohol and finally two to four times with 2-cc. portions of ether. The precipitate contains 21.81% of mercury.—R. B. SANDIN and E. T. MARGOLIS. *Ind. Eng. Chem., Anal. Ed.*, 7 (1935), 293. (E. G. V.)

Methylene Blue Reduction Test. Its Efficiency and Interpretation under Philippine Conditions. This test, also known as the "reductase test" for estimating the bacterial content of milk, was tried out on 142 samples of carabao milk which is the principle milk of the Philippines. The method of the American Public Health Association was used. It was checked by the standard plate method. Previous findings were confirmed that the test is characterized by a low degree of variability between replicate tubes. Meager correlation obtaining between reduction time and plate count when each class was taken individually indicated not a defect in the methylene blue test but rather the necessity for modifying the Scandinavian method of grouping to suit local conditions. A marked negative correlation was found for all samples taken together, without regard to classes. The author believes that this points to a high degree of efficiency and dependability of the methylene blue reduction test. Owing to its simplicity it is recommended for adoption as the standard procedure in local milk tests in the Philippines.—José B. UICHANCO. *Philippine J. Sci.*, 57 (1935), 295. (P. A. F.)

Microchemical Contributions, Short. XII. Differentiation of Yellow and Red Mercuric

Oxide. The red oxide reacts with a number of substances less rapidly than the yellow oxide. With ammonia and with sodium bisulphite (concentrated solution), the yellow oxide is transformed slowly into a white compound; the red oxide remains red with both reagents. In 10% potassium bisulphate solution, the yellow oxide becomes clear yellow; the red oxide remains red. The reactions are observed under the microscope. *Crystal Precipitates of Vanillin.*—The formation of the precipitates is based upon the salt-forming character of the free phenolic group. Precipitates are given with sodium and barium hydroxides and with magnesia mixture. *Differentiation of Vanillin, Ferulic Acid, Umbelliferone and Methyl Umbelliferone.*—A chart is given showing the behavior of the compounds with five reagents. *Precipitates of Phenols with p-Diazonitraniline.*—The characteristics of the precipitates and the sensitivities of the tests are given for the following phenols: phenol, *o*-, *m*- and *p*-cresols, vanillin, thymol, guaiacol, α- and β-naphthols, catechol, resorcin, hydroquinone, orcinol, phloroglucinol and pyrogallol. The behavior of Zwikker's copper pyridine reagent with phenols is discussed. Of this class of compounds, phloroglucinol and catechol alone gave precipitates. *Prontosil.*—(4-Sulphonamide-2′,4′-diaminoazobenzene hydrochloride) gave crystalline precipitates with (1) (tetranitro-diamino-cobalti)-potassium, (2) α-anthraquinone-monosulfonic acid, (3) silver nitrate, (4) mercurous nitrate, (5) cupric acetate.—L. ROSENTHALER. *Mikrochem.*, 19 (1935), 17. (L. L. M.)

Monobromacetic Acid and Normal Bromine of Wines. Wines suspected of containing monobromacetic acid as a preservative were assayed for their bromine contents and the results were compared with results obtained with other wines with and without added potassium bromide or monobromacetic acid. Method: Evaporate 10, 50 or 100 cc. of the sample on a water- or sand-bath and then heat in an oven. Calcine slowly over an alcohol lamp and pulverize the carbonaceous mass. Calcine the powder in a platinum crucible at the edge of a muffle furnace heated to redness. Wash the ash with hot distilled water and filter. Determine the amount of bromine by using the Denigès-Chelle reaction (*Bull. soc. pharm. Bordeaux* (1912), 470; *C. R.* (1912), 1010) and comparing with known samples run at the same time. Between 0.1–0.7 mg. of bromine was found to occur normally in the wines tested.—L. CHELLE and G. VITTE. *Bull. soc. pharm. Bordeaux*, 73 (1935), 179–187. (S. W. G.)

Phenol in Official Preparations—Assay for. Attention is directed to previous work along this line. Of the numerous methods suggested, the iodometric or the official assay for phenol is most widely accepted. It has been shown that the period of shaking after addition of reagents may be reduced and that the method is applicable to the assay of preparations containing phenol if no ingredient is present that will react with free bromine. If bromine is present, phenol must be separated by distillation or extraction. The following procedure was used in this study: "A sample containing about 0.04 Gm. of phenol was weighed or measured, or a volume of dilution containing about 0.04 Gm. of phenol was measured into a glass-stoppered flask, diluted, 30 cc. 0.1*N* Koppeschaar's solution added, the neck of the flask rinsed down, 5 cc. hydrochloric acid quickly introduced, the stopper replaced and the flask shaken vigorously at intervals during five to ten minutes. Being careful to allow no bromine vapors to escape, 5 cc. of potassium iodide solution (1 to 5) was then added, and the flask shaken vigorously during three to five minutes. The liberated iodine was then titrated with 0.1*N* sodium thiosulphate solution, after the addition of 1 cc. of chloroform." The phenol used was purified by distillation. Reagents were made by U. S. P. X methods and preparations were made by U. S. P. methods except phenol was weighed on an analytical balance and liquid preparations were brought to volumes in calibrated volumetric apparatus. Preparations tested were glycerite of phenol, phenolated solution of iodine, phenolated oil, camphorated phenol and phenol ointment. Glycerite of phenol and phenolated solution of iodine can be assayed directly after dilution without separating the phenol. Camphorated phenol, phenolated oil and ointment of phenol can be assayed satisfactorily after extraction of the phenol with water. The method of assay for ointment of phenol proposed for U. S. P. XI is subject to variations because of the volatility of constituents of the ointment base.—GLENN L. JENKINS and MELVIN F. W. DUNKER. *J. Am. Pharm. Assoc.*, 24 (1935), 840. (Z. M. C.)

Potassium, Rubidium and Cæsium—Dipicrylamine as a Microreagent for. The dipicrylaminates of potassium, rubidium and cæsium have different crystal forms. The reagent (dipicrylamine in sodium carbonate solution) may, therefore, be used for the detection of the three metallic ions in the presence of each other. The limit of sensitivity for each of the three metals is about 0.01 microgram. Photomicrographs are shown.—C. J. VAN NIEUWENBURG and T. VAN DER HOEK. *Mikrochem.*, 18 (1935), 175. (L. L. M.)