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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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TOXICOLOGY (*Continued*)

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2-Sulfanilamidopyridine and Its Soluble Sodium Salt—Toxicity and Absorption of. The sodium salt of 2-sulfanilamidopyridine (I) is prepared as follows: 1 part of sulfanilamide (II) is suspended in 20 volumes boiling ethyl alcohol and 1.5 molecules of 1.3*M* sodium hydroxide are added per molecule of II. The solution is chilled 2 hours in ice, and the white crystalline precipitate filtered, washed with cold ethyl alcohol and dried at 110°; yield 80%, melts at (decomposition) 316.5–317°. At 25°, 63 Gm. I dissolves in 100 cc. water. The p_H of a 1% aqueous solution is 10.4; that of a 10% solution, 11.0. I can be prepared by dissolving II completely in ethyl alcohol, adding alcoholic sodium hydroxide and immediately cooling; yield 71%. Another method is to dissolve II in 1.5 molecules warm 3*M* sodium hydroxide and chill; yield 60%. Actylsulfanilamidopyridine (III) is prepared by treatment of a warm aqueous solution of II-hydrochloric acid with acetic oxide followed by addition of sodium acetate. III melts at 225.6–226.3° after recrystallization from 30% acetic acid. Sodium-III was prepared in boiling alcoholic solution as described above and precipitated by the addition of 250 parts ethyl ether. When 0.4, 1.0, 3.0, 6.0 and 16.0 Gm. per Kg. of an acacia suspension of II were injected into mice the blood values increased correspondingly but the values were not proportional to the dose. When I was given it was more readily absorbed, and blood levels attained with doses of 0.4, 1.0 and 2.0 Gm. per Kg. were roughly proportional to the dose. The maximum blood levels obtained with 1 Gm. of I were nearly as high as with 16 Gm. of II in acacia. The toxicity of I when given to mice orally is greater than that of II. The symptoms caused by I were quite different from those seen after toxic doses of II in that more stimulation and less depression of the nervous system occurred. Blood concentration-time curves and the percentage excretion of the drug in the urine were studied in dogs to which 1.0 Gm./Kg. was administered in different ways by mouth. When II was given without water in gelatin capsules or compressed tablets absorption was poor and erratic. The administration of water with the drug had no influence on absorption in the case of capsules, but did appear to increase absorption when tablets were used. When given suspended in acacia or water, absorption was more rapid. The greatest, most rapid and regular absorption of II was seen when it was given dissolved in hydrochloric acid or in sodium bicarbonate or as I. Four factors influence the absorption in dogs: (1) the solubility of the preparation, (2) particle size, (3) state of suspension and (4) rapidity of passage of the drug from stomach to intestine. II is excreted unchanged in the urine of the dog, but in the rabbit and man it is excreted partly in the free form and partly conjugated. In the mouse only a very small part is conjugated. The conjugated form is *p*-acetylaminobenzenesulfamidopyridine (IV). Of 10 mice given 4.0 Gm./Kg. of sodium-IV, 5 died. III is of the same order of toxicity as II if blood concentrations are considered. II is more toxic than sulfanilamide.—E. K. MARSHALL, JR., A. C. BRATTON and J. T. LITCHFIELD, JR. *Science*, 88 (1938), 597–599; through *Chem. Abstr.*, 33 (1939), 2221. (F. J. S.)

Toxicity of Solvent Vapors for Chronic Effects—Limits of. The limiting values of the chronic toxicities of solvent vapors are difficult to ascertain toward man, as transposition of the values obtained on animals is not accurate. Up to the present time, only the values obtained in a few plants can be relied upon. The following values can be considered as reasonably reliable: benzine 0.9 to 3.0 mg. per liter of air; benzene 0.325 to 1.62 mg.; carbon disulfide 0.01 mg.; acetone and ether 10 mg.; carbon tetrachloride 0.32 to 0.57 mg.; tetrachloroethylene 0.67 mg.; trichloroethylene 0.55 to 1.1 mg.—F. LUCE. *Casmaske*, 10 (1938), 85–88; through *Chimie & Industrie*, 41 (1939), 1092. (A. P.-C.)

Vitamin B_6—Toxicity of. Feeding of excessive doses of vitamin B_6 did not produce toxic symptoms in various types of animals proving the harmlessness of the vitamin when given in excess.—KLAUS UNNA and WILLIAM ANTOPOL. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 116. (A. E. M.)

Vitamin K_1, Phthiocol and 2-Methyl-1,4-Naphthoquinone—Oral and Parenteral Toxicity of. The oral LD_{50} in mice is approximately 0.2 Gm. per Kg. for phthiocol and 0.5 Gm. for 2-methyl-1,4-naphthoquinone. No lethal effect could be produced with doses up to 25 Gm. per Kg. of vitamin K_1. Prolonged feeding of phthiocol and 2-methyl-1,4-naphthoquinone caused toxic effects in rats, manifest by a drop in erythrocyte count and hemoglobin. No such effects were obtained with vitamin K_1. After intraperitoneal injections of the latter an oily emulsion was found in the abdominal cavity 10 days after the last injection, proving a slow rate of absorption.—HANS MOLITOR and HARRY J. ROBINSON. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 125. (A. E. M.)

THERAPEUTICS

Androgenic Effects from Percutaneous Administration in Castrate Rats. The results obtained with androgens, percutaneously administered, indicated the effectiveness to follow the descending order—methyltestosterone, free testosterone and *t*-propionate, although the differences between the first two are not very marked. Androgens carried in a tegin base seem to be more efficacious than when carried in a lanol base.—BIRDIE L. SCOTT. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 216. (A. E. M.)

Androgenic Therapy—Virilism Caused by. Two patients were treated for severe dysmenorrhea and menorrhagia, with injections of testosterone propionate. This was moderately beneficial in the menstrual disorders, but the concomitant side reactions more than nullified this result. In doses sufficiently large for therapeutic effect, signs of virilism also developed, such as hair on the face and extremities, deepened voice, increase in weight and acne, which gave little evidence of disappearing on the withdrawal of the androgen. The present type of androgenic substance is not commendable for menstrual correction.—J. P. GREENHILL and S. C. FREED. *J. Am. Med. Assoc.*, 112 (1939), 1573. (G. S. G.)

Anthelmintic for Strongyloidiasis. Nine cases of infestation with a parasite similar to the hookworm were unaffected by the usual anthelmintics. Tincture of iodine and compound solution of iodine were found to be effective through a trans-duodenal tube.

Complete elimination was obtained by an accessory thorough cleanup of household premises, clothing and animal pets. Criteria of elimination were based on repeatedly negative results of the study of duodenal fluids and feces.—Virgil E. Simpson. *J. Am. Med. Assoc.*, 112 (1939), 828. (G. S. G.)

Anticonvulsant Drug. Sodium Diphenylhydantoinate. Chemically, sodium diphenylhydantoinate is the sodium salt of 5:5-diphenylhydantoin and is a derivative of glycolyl urea. It may be prepared in a series of stages from benzene, combining with urea and converting into the sodium salt by means of sodium hydroxide. From the structural formula the analogy to the barbiturates is noted. Sodium diphenylhydantoinate, a white bitter-tasting powder, is soluble in water, slightly soluble in alcohol, but almost insoluble in ether. When dissolved in water, however, hydrolysis takes place owing to the fact that diphenylhydantoin possesses extremely weak acidic properties. The drug is supplied in tablets and hard gelatin capsules. It is not suggested as a cure for epilepsy; however, it is believed that it will prevent or help to decrease the incidence of the convulsive seizures. Its action is not so depressant as that of the barbiturates, there is undiminished mental alertness, but sometimes the drug is used in conjunction with other anticonvulsants. While no serious untoward results have been reported, toxic symptoms observed include skin rash, dizziness and blurred vision. The maximum daily dose should not exceed 0.6 Gm. for adults, and for children the dose should be half of that amount. Sodium diphenylhydantoinate should be administered with or immediately after meals, so as to avoid gastric upset.—Anon. *Pharm. J.*, 143 (1939), 316. (W. B. B.)

Antidermatitis Component of the Filtrate Factor in Rats—Experiments on the. A purified but still crude zinc salt of pantothenic acid proved to be active in the cure of specific skin lesions and in promotion of growth in rats fed a diet devoid of the filtrate fraction. Autoclaving at p_{H} 10 destroyed the activity of the preparation.—Paul György, C. E. Poling and Y. Subbarow. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 738. (A. E. M.)

Arsonic Acids—Aromatic, Constitution and Action of. From animal experiments it appears that in trypanosome infection, introduction of higher-molecular acid residues of the homologous acyl series, the 4-aminobenzenearsonic acid as also the 4-amino-2-hydroxybenzenearsonic acid, therapeutic action is not improved, but rather impaired. In recurrent infection, however, such introduction leads to quite varying curative results. Comparison of the isomeric compounds of spirocide (3-acetylamino-4-hydroxybenzenearsonic acid) with those of orsanine (sodium 2-hydroxy-4-acetaminobenzenearsonate) showed that the constitution of the compound was decisive for the action of the preparation in the organism. It should be mentioned in this connection that in the toxicological evaluation the neurotoxic phenomena, as observed after feeding of orsanine and atoxyl, weaker action resulted with the propionyl compound and no activity whatever with the higher acid radicals.—K. Burschkiss and M. Rothermundt. *Arch. pharm.*, 276 (1938), 226–234; *Chimie & Industrie*, 41 (1939), 523. (A. P.-C.)

Atropine and Digitalis—Use of, in Certain Forms of Decompensated Heart Disease. In dogs, the heart was accelerated by 0.05 mg./Kg. atropine sulfate (I) given intravenously and was retarded by 50 mg./Kg. digitalis (II) given intravenously. The accelerating effect of I was less on the digitalized heart than on the normal heart, and the retarding effect of II was less on the atropinized heart than on the normal heart. In 7 patients with congestive heart failure, combined administrations of I and II caused an average 9.5% increase in heart rate. II slowed the heart despite atropinization, and I did not cause a great acceleration of the heart in 2 patients who had been thoroughly digitalized. I exerted good clinical effects in patients with cardiac decompensation by facilitating respiration, correcting irregularities arising from II, lessening dilatation of the peripheral vessels and relieving pulmonary edema. The use of II with I prevents undue increase in the heart rate. It is concluded that I combined with II is of definite value in acute cardiac decompensation.—J. A. Bone, D. T. Rolfe and E. L. Turner. *J. Natl. Med. Assoc.*, 31 (1939), 1–6; through *Chem. Abstr.*, 33 (1939), 2214. (F. J. S.)

Bismuth Compound of Octyloxyacetic Acid—Therapeutic. By reaction of octyloxyacetic acid and bismuth oxide (suitably at 125° to 150° C. for 4 hours) a product is obtained which contains about 48% of bismuth and yields stable solutions with oils such as olive or peanut oil, which are suitable for injection, as in the treatment of syphilis.—Edward Lyons, assignor to Parke Davis & Co. U. S. pat. 2,148,763, Feb. 28, 1939. (A. P.-C.)

Bone Marrow Given Intravenously without Shock. A fatal case of aplastic anemia is described in which 43 transfusions, totaling almost 22 liters of blood, were given in 52 days. During the course of the treatment 18 cc. of sternal bone marrow were obtained from the patient's brother. This was placed in a marrow culture medium, thoroughly mixed, and added to 500 cc. of blood from the same donor. This blood was given to the patient intravenously on the theory that some of the marrow cells might give rise to marrow tissue from which new blood could develop; the patient's marrow was believed to be entirely aplastic. Interestingly, no reaction occurred following the injection. The patient died from later complications and at autopsy the bone marrow was found to consist largely of fat, but occasional islets of regenerating tissue were found. There was, of course, no way to determine the origin of these islets. They might have arisen from the injected tissue, but this cannot be proved.—E. E. Osgood, M. C. Riddle and T. J. Mathews. *Ann. Internal Med.*, 13 (1939), 357; through *Abbott Abstract Service*, (1940), No. 655. (F. J. S.)

Chemotherapy—Recent Researches in. The author discusses the various synthetic chemicals which have been synthesized during the past ten years in attempts to combat bacterial and protozoal infections. Recent investigations on the various sulfonilamide derivatives are emphasized.—U. P. Basu. *Indian J. Pharm.*, 2 (1940), 26–35. (N. L.)

Chloroformic Solutions of Tars. Chloroformic solutions of birch, pine, juniper and coal tars of the same strengths were compared in the treatment of subacute and chronic dermatoses and the following observations reported: (1) crude coal tar was the least irritating, juniper tar less irritating than pine tar and birch tar most irritating of all; (2) crude coal tar had the greatest therapeutic efficiency; (3) of the wood tars, juniper is the least irritating and the most effective although much inferior to crude coal tar.—Bernard Fantus and H. A. Dyniewicz. *Bull. Natl. Formulary Committee*, 8 (1940), 165–166. (H. M. B.)

Desoxycorticosterone Acetate—Effect of, upon Plasma Volume in Patients During Ether Anesthesia and Surgical Operation. Seven patients undergoing surgical procedures with ether anesthesia and slight loss of blood showed a small reduction in plasma volume. This decrease in volume was not present and even reversed to slight increase when the patients received desoxycorticosterone acetate 3 to 4 hours preceding the operation.—Charles Ragan, Joseph W. Ferrebee and G. W. Fish. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 712. (A. E. M.)

4,4′-Diamidino Stilbene—Action of, against Leishmania Donovani in the Syrian Hamster. Using the change in the number of parasites in the spleen as a criterion it was found that 4,4′-diamidino stilbene has marked therapeutic action on this protozoal infection. The optimum dosage of the compound is yet to be determined but the infection in three animals was sterilized by 27 injections of 2.5 mg. per Kg. body weight, 24 injections of 10 mg. per Kg. body weight and 10 injections of 20 mg. per Kg. body weight. Pictures and descriptions are given of the histological changes observed in the spleen during the treatment.—S. Adler and I. Tchernomoretz. *Ann. Trop. Med. Paras.*, 33 (1939), 313. (W. T. S.)

4,4′-Diamidino Stilbene—Case of Indian Kala-Azar Treated with. The daily intravenuos injection of 1.0 mg. of this compound for a period of eight days apparently cured a case of Indian kala-azar.—A. R. D. Adams and Warrington Yorke. *Ann. Trop. Med. Paras.*, 33 (1939), 323. (W. T. S.)

Diothane Hydrochloride—Prolonged Regional Anesthesia with, in Proctology. In proctologic surgery regional anesthesia is being employed more and more. As employed in the United States, diothane is being used more and more for this purpose. Its analgesic effects are prolonged during four to five days, and is utilized in the post-operative period. It is employed by applying it directly to the skin or to the mucous membrane, or by painless injection. Chemically, diothane is diphenylurethanepiperidinopropane hydrochloride. Unfortunately its toxicity prevents its usage as a basal anesthetic. Diothane is an ideal analgesic, for secondary anesthesias, locals, post-operative if necessary in ano-rectal surgery.—J. A. Garat. *La Prensa Medica Argentina* (May 10, 1939), 927–39; through *Presse méd.*, 71 (1939), 139. (W. H. H.)

Epanutin in Epilepsy. Cyanosis is greater in seizures under epanutin than under the ordinary drugs, and the seizures tend to be more severe. Epanutin has in some cases diminished the frequency of the seizures. The drug seems to have a sedative action on the incidence. The authors have given 0.1 Gm. in a capsule twice or thrice a day, and in no case has the latter dose been exceeded. The results have been sufficiently favorable to warrant an extended trial and in the younger and less deteriorated epileptics it seems that tolerance to epanutin and the benefits therefrom are at least as good as with the other barbiturates. It is too early to discuss cases which have not been under long continuous observation, because too much reliance has to be placed on the history supplied; but the authors think that at present the drug provides in some cases a means of reducing for a time the total of seizures and, given in non-toxic doses, it leads to amelioration in some cases where other drugs have not; two of the patients have shown definite mental deterioration, and others showed increased confusion after the fit.—J. P. Steel and E. S. Smith. *Lancet*, 237 (1939), 367. (W. H. H.)

Filarial Infection—Chemotherapy of. After discussing the cause and symptoms of filariasis the authors report that of 76 different germicidal and trypanocidal chemotherapeutic agents none possessed satisfactory antifilarial properties. Of the organo-metallics, soamin and fouadin partly control the disease in its early stages. Prontosil is valuable for the treatment of secondary infections in filarial patients. Injections of chenopodium oil, while painful, reduce the microfilarial count and the recurring attacks of lymphangitis. Prevention of the disease by control of the carrier mosquito appears to be the only successful method.—R. N. Chopra and S. Sundar Rao. *Indian J. Med. Research*, 27 (1939), 549. (W. T. S.)

Gastroenterology—New Antispasmodic Drug in. In a woman suffering 7 weeks from severe abdominal pain after eating, refractory to opiates, relief was obtained by oral administration of 75 mg. β-diethylaminoethyl diphenyl-acetate-hydrochloric acid after each meal.—M. W. Thewlis. *Med. Times*, 67 (1939), 12–13; through *Chem. Abstr.*, 33 (1939), 2215. (F. J. S.)

Gold Therapy—Use of, in Tuberculosis. For many centuries gold has been used in the treatment of this disease. Until 1916 only inorganic compounds of gold were used but to-day organic compounds are also available. The gold preparations may be divided in three groups: the water-soluble; the oil-soluble; and the insoluble compound used in oily suspension. The treatment of 1000 tubercular patients convinced the authors that solganal, an inorganic compound prepared by Feldt of Germany, is as effective and safer than any other gold preparation commonly employed in the treatment of tuberculosis. This contradicts the findings of Frimodt-Moller and Barton (1938), who found that the inorganic gold compound, sanocrysin, had the greatest therapeutic effect. The oily preparations of gold are superior since prolonged action is obtained and toxicity reduced to a minimum.—Y. G. Shrikhande. *Indian Med. Gaz.*, 74 (1939), 545–547. (W. T. S.)

Gonorrhea—Skin Affection as Secondary Effects in the Newer Chemotherapy of. Of 675 patients treated with Uliron, 23 developed skin affections of urticaria or scarlatina type. A sensitization with the drug is supposed to be the eliciting factor.—W. Volavsek. *Dermatol. Wochschr.*, 108 (1939), 1–7; through *Chem. Abstr.*, 33 (1939), 2219. (F. J. S.)

Infections of the Urinary Tract—Chemotherapy of. A review.—E. N. Cook and William F. Braasch. *Med. Clinics N. America*, 22 (1938), 1177–1180; through *Chem. Abstr.*, 33 (1939), 2216. (F. J. S.)

Iron Administration and Hemoglobin Levels. The administration of iron in therapeutic doses to pregnant women converted the fall in hemoglobin, which was then in progress, into a rise. After the administration of iron had been discontinued, the hemoglobin fell once more at about the same rate as if iron had not been administered.—E. M. Widdowson. *Lancet*, 237 (1939), 640. (W. H. H.)

Lanolin Sol—Therapeutic. A product for adsorbing toxins from the human blood stream is prepared by agitating lanolin with ethanol, mixing the materials with approximately 3 times their volume of distilled water expelling substantially all the ethanol by heat, and filtering. The product is suitable for subcutaneous use, but for intravenous injection glucose is preferably added.—Garth W. Boericke and Wm. W. Young, assignor to J. C. Shay, Inc. U. S. pat. 2,154,432, April 18, 1939. (A. P.-C.)

Magnesium Sulfate—Case of Tetanus Successfully Treated with. The author describes the symptoms of a case of tetanus and outlines the treatment by which it was successfully culminated. The complete recovery of the patient was attributed to daily injections into the vein of a 25% solution of magnesium sulfate. The initial dosage was 1 cc. and this was increased by 1 cc. each day until a maximum of 5 cc. was given.—J. N. Bhattacharjee. *Indian Med. Gaz.*, 75 (1940), 32. (W. T. S.)

Magnesium Sulfate—Intravenous Therapy of. Injections of 5 cc. of a 50% solution of magnesium sulfate have proved beneficial in uremia and also in cases of over-digitalization. Affections of the liver and gall bladder have also been overcome by injections of this salt.—St. Kuthan. *Med. Klinik*, 34 (1938), 1363; through *Chinese Med. J.*, 56 (1939), 190. (W. T. S.)

Nasal Therapeutic Compositions. Aqueous nose-drop or nasal-spray compositions containing therapeutic ingredients such as ephedrine sulfate in aqueous solution have incorporated with them about 3% of methyl cellulose, which serves to give increased viscosity at nasal temperatures.—Lessel L. Manchey, assignor to Piedmont Development Corp. U. S. pat. 2,156,254, April 25, 1939. (A. P.-C.)

Nicotinic Acid—Use of, as an Antipellagric Compound. In an editorial it was stated that while no substitutes have been found for thiamine and riboflavin (vitamins B_1 and B_2) too narrow a significance has been attached to the rôle of these substances in physiological processes. As for nicotinic acid several similar compounds are able to substitute for it in relieving the symptoms of pellagra. Certain strains of *B. dysenteriæ* can not develop on synthetic media unless nicotinic acid or one of its physiologically active substitutes is present. It was suggested that the rate of growth of these organisms may be used to determine the relative strength of nicotinic acid and related compounds in controlling pellagra. Since too great a concentration of these active compounds inhibit the growth of these organisms, it was intimated that a parallel might exist between the inhibiting concentrations of these compounds and their toxic doses for humans.—Anon. *Southern Med. J.*, 32 (1939), 1247–1248. (W. T. S.)

Percaine—Use of, in Controlled Spinal Anesthesia. Percaine, the hydrochloride of diethylethylenediamide of α-butyl-oxycinchoninic acid, is a new type anesthetic which, according to the authors, has received too little attention in spinal anesthesia. When used by the Lake method in a 1–1500 solution containing 0.5% NaCl, percaine offers many advantages over other agents commonly used in spinal anesthesia. Spinal anesthesia by the Lake technic is described and the results of 153 cases have been tabulated. A brief review of spinal anesthesia is given.—John Gray and E. L. Lee. *Chinese Med. J.*, 56 (1939), 317–333. (W. T. S.)

Prontosil and Quinine Dihydrochloride—Comparison of Their Effectiveness in the Treatment of Malaria. After comparing the results obtained by treating 80 cases of acute malaria with prontosil and 68 cases with quinine dihydrochloride these conclusions were drawn. Prontosil is not as efficient as quinine in *P. falciparum* malaria and still less effective in *P. vivax* and *P. malariæ* malaria. Although no toxic effects were noted with prontosil it was said to have no place in the practical treatment of malaria due to its low efficiency, possible toxicity and relatively high cost.—J. C. Niven. *The Institute for Med. Research F. M. S. Bull.*, No. 4, (1938); through *Chinese Med. J.*, 56 (1939), 190. (W. T. S.)

Prontosil in Smallpox. Prontosil treatment of smallpox was successful in one case.—C. King and K. A. de Rosario. *J. Roy. Army Med. Corps*, 71 (1938), 464–466; through *Chem. Abstr.*, 33 (1939), 2216. (F. J. S.)

Protamine Zinc Insulin—Successful Treatment of Diabetic Girls with. One hundred and twenty-eight girls at Clara Barton Camp for diabetics were given a special routine. Their ages ranged from 5 to 20 years, and the duration of diabetes from a few months to 17 years. They came from all social and economic classes. Treatment consisted of a standard diet, with protamine zinc insulin alone, regular insulin alone or a combination of the two. Control of diabetes was measured by the amount of dextrose in Gm. excreted in a 24-hour specimen of urine, and the level of blood sugar, fasting, at 11 A.M. and at 4 P.M. Reactions of moderate severity occurred in 15% of the cases. It is believed that protamine zinc insulin was successful in 123 of these cases.—Priscilla White and Lovilla Winterbottom. *J. Am. Med. Assoc.*, 112 (1939), 1440. (G. S. G.)

Rare Gases—Use of, in Medicine. A discussion. —Gerhard Siewert. *Deut. Apoth. Ztg.*, 54 (1939), 1200–1201. (H. M. B.)

Simian Malaria—Treatment of, with M. & B. 693. Eight rhesus monkeys infected with *P. knowlesi* were treated with M. & B. 693. The drug had a definite lethal action on *P. knowlesi* parasites in rhesus monkeys, when given in massive doses which were disproportionately high for the body weight of monkeys in comparison with human body weight. An average 9 Gm. was required to render the blood free of parasites on the fifth day of treatment. The drug is efficient not only in rendering the peripheral blood free of parasites in an acute attack but also in eradicating the infection. An effort was made to show the presence or absence of a latent infection in the treated monkeys by means of a protein shock with horse serum. No parasitic relapse appeared. The sub-inoculations from the treated monkeys failed to infect normal susceptible monkeys. Five monkeys were subjected to superinfections with the same strain of *P. knowlesi* with which they had been originally inoculated. One died within 24 hours from inter-current disease; three died with heavy infection within twelve days of superinfections, indicating a radical cure and complete absence of immunity from the original infection; the fifth developed a low grade infection extending over a period of two months and showed scanty parasites on daily examination without any treatment of original infection and its history after superinfection indicates a partial cure of the initial attack and resultant immunity. No toxic signs were seen. If M. & B. 693 proves of equal value in the treatment of human malaria, it would be a useful adjunct to malaria therapy, especially in cases of idiosyncrasy to other antimalaria drugs; and in pregnancies and pneumonias, complicated with malaria where it is likely to exert a double action, *i. e.*, parasiticidal and bacteriocidal.—J. Singh and H. Singh. *J. Malaria Inst. of India*, 2 (1939), 181. (A. C. DeD.)

Snake Venom in Therapy. Viper venom has been recommended in ointment form in quite the same manner as bee venom for treating neuralgias and rheumatic ailments. The many similarities between bee venom and snake poison in respect of composition and action have already been remarked upon, as also has its position as a transition stage between the animal sapotoxins present in snake poisons and the skin-irritating poisons of the cantharidin type so widely distributed in the insect kingdom. These in turn possess much in common with the intensely skin-irritating plant products of the type of the anemonin present in various species of anemones and ranunculi and their toxicologically related compounds, such as euphorbin, cardol, etc. But this is not the sole link between vegetable and animal poison. To-day we know that all animal poisons are more or less related to one another, without exception, that bile acids or cholesterol play a part as mother substances and that they are closely linked again to the vegetable cardiac poisons of the digitalis group and to the sexual hormones. And even the latter, have been frequently detected in plants.—Anon. *Indian and Eastern Chemist*, 20 (1939), 228. (A. C. DeD.)

Sodium Nitrite in the Treatment of Myocarditis. A 2% solution of sodium nitrite, in injected intravenously at 2 cc. daily up to 10 doses, has no untoward effects in cases of myocarditis and other nonvalvular cardiac disturbances, such as coronary fault, faulty conductivity and excitability.—R. A. POLETTI. *Rev. asoc. méd. argentina*, June 1936; through *Rev. sud-americana endocrinol., immunol., quimioterap.*, 22 (1939), 56. (G. S. G.)

Stilbestrol and Anhydro-Oxyprogesterone. The effect of stilbestrol and anhydro-oxyprogesterone on a patient who had attained the climacteric thirteen years earlier and on eight women castrated by X-rays was studied, and the state of the endometrium was determined by curettage. For the proliferation of a resting or atrophic endometrium stilbestrol 25 mg. by mouth or 15 mg. injected intramuscularly are required. With stilbestrol 50–60 mg. given by mouth a glandular cystic hyperplasia can be produced. The stage of transformation and the menstruation following proliferation can be produced with anhydro-oxyprogesterone, 220–300 mg. given by mouth. Only in two cases were slight secondary symptoms observed after the administration of stilbestrol, but these rapidly disappeared. No secondary symptoms appeared after the administration of anhydro-oxyprogesterone in doses of 25 mg. (five tablets) daily. Lactation was either prevented or inhibited in twenty women by the administration of stilbestrol 5–15 mg. by mouth. In most cases 5 mg. was sufficient.—R. WENNER and K. JOËL. *Lancet*, 237 (1939), 688. (W. H. H.)

Stilbestrol Pellets—Estrogenic Therapy by Implanation of. Pellets of 100 mg. were implanted under the skin of patients with hypogonadism, artificial and spontaneous menopause. The relief obtained was equivalent to treatment with estrogens. The daily absorption from the pellet was equivalent to from 0.127 to 0.25 mg. No untoward symptoms of toxic effects were observed.—CYRIL M. MACBRYDE, HAROLD FREEDMAN, ELLEN LOEFFEL and DUFF ALLEN. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 212. (A. E. M.)

Sulfanilamide and Its Derivatives—Use of, in the Routine Treatment of Gonorrhea in the Tropics. Sulfanilamide and Uleron were used in the treatment of a series of gonorrheal patients in Malaya. Sulfanilamide proved to be the superior drug having clinically cured 70% of a series of 98 cases without producing dangerous toxic effects. Moreover, the leucocyte counts tend to return to normal in the course of sulfanilamide therapy. Certain precautions which must be observed in using sulfanilamide were discussed and it was suggested that it is unsuitable for self-administration. This course of treatment is popular among the Asiatics because of its relatively low cost and effectiveness.—J. ORDE POYTON. *The Institute for Med. Research F. M. S. Bull.*, No. 5, (1938); through *Chinese Med. J.*, 56 (1939), 189–190. (W. T. S.)

Sulfanilamide—Chronic Effect of, in Dogs and Monkeys with Particular Reference to the Blood. Many reports have appeared concerning blood changes following the clinical use of sulfanilamide although few attempts have been made to study these changes in experimental animals receiving this drug. Charts are used to show the periodic changes in hemoglobin content, WBC and RBC counts in 4 dogs and 2 monkeys receiving 0.2 to 0.4 Gm. and 0.1 to 0.2 Gm., respectively, of sulfanilamide daily for 3 months. A blood picture of dog No. 1 and monkey No. 68 is tabulated in detail. Weekly tests of the liver and kidney function of each animal were made along with urine examinations. Anemia of varying degree was observed in all animals while leucopenia was observed in two and granulocytopenia in one of the dogs. A transient spastic motor paralysis and a marked impairment of liver function occurred in one dog.—S. Y. P'AN. *Chinese Med. J.*, 55 (1939), 111–121. (W. T. S.)

Sulfanilamide Combined with Acriflavine Irrigations in the Treatment of Gonorrhea. The authors have had a considerable experience in the treatment of gonorrhea, and in the past two years sulfanilamide has been added to their therapeutic armamentarium. The former method used by them for the treatment of acute anterior urethritis consisted of administering sandalwood oil capsules orally and giving urethral irrigations of 1:4000 acriflavine solution. The technic of these injections is important. A 10-cc. bulb type syringe is used. It is filled with the acriflavine solution. The patient urinates and one-third of the contents of the syringe is injected into the anterior urethra (a smaller amount if the organ is small). This solution is retained momentarily and then allowed to escape. This procedure is repeated, and then the remaining third of the solution is injected and left *in situ* for exactly three minutes, unless the patient complains of burning. Daily doses of 30–40 gr. of sulfanilamide with this method were found to give better results.—W. M. BRUNET, C. H. REINHARDT and N. D. SHAW. *Virginia Medical Monthly*, 57 (1940), 40; through *Abbott Abstracts Service*, (1940), No. 657. (F. J. S.)

Sulfanilamide—One Case of Hodgkin's Disease Treated with. A patient showing a cutaneous eruption and enlarged lymph nodes which, on section, gave a histological picture typical of Hodgkin's disease, was given a total of 36 Gm. of sulfanilamide in 19 days. The skin lesions disappeared and the lymph nodes decreased in size. A leukocytosis which was present decreased, and the sedimentation rate decreased. The drug was used because the etiology of Hodgkin's disease is still uncertain; one theory holds that this is a virus disease. The treatment was initially carried out for five days, and improvement was constant during this period. Then the patient developed pruritis, and the sulfanilamide was stopped. Within four days, though the itching decreased, the original symptoms of Hodgkin's disease began to return; new areas of dermatitis developed. As soon as treatment with sulfanilamide was recommenced, the patient began to improve once more. The case is reported because of the usually unfavorable prognosis in this disorder.—E. URBACH. *Arch. Dermatol. and Syphilol.*, 41 (1940), 181; through *Abbott Abstract Service*, (1940), No. 643. (F. J. S.)

Sulfanilamide Therapy—Biochemical Study of Patients on. In sulfanilamide therapy, a study of the blood and urine of patients showed that the larger the individual dose the higher was the peak of the blood concentration and the sooner the peak occurred. In children the peak occurred earlier than in adults. A slightly higher and earlier peak was reached if the drug was followed by a reasonable quantity of water. With normal kidney function the blood concentration did not rise above 5–6 mg. % until the tissue fluids were saturated. Higher levels were reached earlier with kidney impairment. Sodium bicarbonate counteracted a fall in carbon dioxide-combining power when large doses of sulfanilamide were given. Urinary excretion was about 45–60% in the first 24 hours. Increased fluid intake did not increase the rate of excretion in patients with normal kidney function. Blood concentrations varied so widely from patient to patient on the same dose that no prediction of the blood concentration could be made for any given dose.—C. C. LUCAS and D. R. MITCHELL. *Can. Med. Assoc. J.*, 40 (1939), 27–34; through *Chem. Abstr.*, 33 (1939), 2215. (F. J. S.)

Sulfanilamide Therapy—Case of Hepatitis Following. A case of hepatitus following sulfanilamide therapy is reported for the first time. The hippuric acid test showed that the function of the liver was still impaired six months after the drug was used. The case is fully described and well discussed.—WAN-NIEN BIEN and CHEN-LANG TUNG. *Chinese Med. J.*, 56 (1939), 424. (W. T. S.)

Sulfanilamide—Toxic and Therapeutic Response of Blood and Bone Marrow to. Therapeutic doses of sulfanilamide commonly produce macrocytic anemia and a normoblastic bone marrow reaction. In the acute hemolytic anemia the bone marrow shows a more marked normoblastic reaction with predominance of young forms.—J. T. PAUL and L. R. LIMARZI. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 29. (A. E. M.)

Sulfanilamide Treatment of Forty-Seven Cases of Trachoma. The work of J. Lech of Sao Paulo is described. He stated in an article (*Rev. de Oftalmologia de Sao Paulo*) that he had used sulfanilamide in the treatment of trachoma in 47 patients. One-half of the patients had photophobia, and one-third had marked pannus. In the rest, pannus was barely perceptible. The dose of sulfanilamide was 40 mg. per Kg. of body weight daily, for the first ten days, followed by 30 mg. per Kg. for a further period of 14 days. Only two of the patients were unable to tolerate the medication in this dose. Seventeen days after beginning the treatment, marked improvement was clinically evident in 42 cases; only 5 failed to show this. After 104 days, 83% were completely cured and had complete clearing of the conjunctiva, so that it would have been impossible to tell they had had trachoma. The remaining 17% were definitely benefited, having only a few remainders of hypertrophy and rare granulations.—ANON. *El Dia Medico*, 11 (1939), 977; through *Abbott Abstract Service*, (1940), No. 641. (F. J. S.)

Sulfanilamide—Use of, in the Treatment of Trachoma. The work of Burnier is reviewed. This investigator used sulfanilamide as well as compounds of antimony in the treatment of trachoma. The antimony injections were not very successful and produced frequent complications, but sulfanilamide has given promising results. Sulfanilamide was used in 30 cases, but only 15 of these were followed for a sufficient length of time to evaluate the results. A total dose of 30 Gm. was given over a period of 21 days. Photophobia, lacrimation, secretion and blepharospasm usually subsided in about 5 days with daily doses of 30 to 40 gr. Pannus and papillary hypertrophy usually began to improve after the first week. Reactions were not often serious with the doses used, and only two patients were forced to abandon the treatment because of intolerance to the drug. There have been other reports of a beneficial action of sulfanilamide on trachoma, and some of these are mentioned.—ANON. *El Dia Medico*, 12 (1940), 14; through *Abbott Abstract Service*, (1940), No. 646. (F. J. S.)

Testosterone Propionate—Effect of, on Creatinuria. Castration of adult male rats does not alter creatine excretion. Normal and castrate rats react in a similar fashion to exogenous creatine and testosterone propionate as far as creatine excretion and body weight changes are concerned. Ingested creatine produces an intense creatinuria which is greatly inhibited by administration of testosterone propionate.—J. R. COFFMAN and F. C. KOCH. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 779. (A. E. M.)

2-Sulfanilylaminopyridine (M. & B. 693) Used in the Treatment of Lobar Pneumonia. Out of 15 cases of lobar pneumonia 14 were successfully treated by this drug with very little additional medication. The results of the therapy were tabulated.—N. D. JEKYLL. *Indian Med. Gaz.*, 74 (1939), 599. (W. T. S.)

Therapeutics—Recent Developments in. The cardio-respiratory stimulants and analeptics are discussed.—F. PRESCITT. *Chemist and Druggist*, 132 (1940), 251. (A. C. DeD.)

α-Tocopherol Acetate—Cure and Prevention of Vitamin E-Deficient Muscular Dystrophy with Synthetic. Subcutaneous injections of synthetic α-tocopherol acetate are effective in both cure and prevention of the nutritional muscular dystrophy seen in rats maintained from an early age on a vitamin E-deficient diet.—G. C. KNOWLTON, H. M. HINES and K. M. BRINKHOUS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 804. (A. E. M.)

Uliron in Bilateral Gonorrheal Conjunctivitis. Combination with injections of sterile milk gave excellent results.—W. H. SCHNEIDER-HORN. *Dermatol. Wochschr.*, 108 (1939), 8–10; through *Chem. Abstr.*, 33 (1939), 2219. (F. J. S.)

Undulant Fever—Resumé on The Use of Prontosil and Prontylin.—R. H. FRASER, F. D. WHITE, M. B. PERRIN and E. B. HARDISTY. *Can. Med. Assoc. J.*, 39 (1938), 455–457; through *Chem. Abstr.*, 33 (1939), 2215. (F. J. S.)

Vitamin B_1—Treatment of Herpes Zoster with. The author states that the pathological lesion in herpes zoster is essentially an inflammation of the posterior root ganglia. It has been established that the prominent feature in herpes is a neuritis with degenerative changes. Because of the success of vitamin B_1 administration in some other forms of neuritis, this substance was used to treat five cases of herpes zoster. The dose was 3000 units daily, repeated on seven or eight occasions. Previously, cases of this type had been treated with soothing local applications and salicylates; the vitamin treatment seemed to bring about disappearance of the lesions with healing more rapidly than in the author's previous experience. Several physicians who discussed the paper also reported favorably on the use of the vitamin in cases of herpes zoster. One physician treated three patients with 10-mg. doses; another treated two cases with 6000 units intravenously every other day. Relief from pain was more prompt.—M. J. GOODMAN. *California and Western Medicine*, 51 (1939), 105; through *Abbott Abstract Service*, (1940), No. 640. (F. J. S.)

Vitamin B_6—Identity of Natural and Synthetic Crystalline. Rat curative and prophylactic tests show that the natural and synthetic vitamin B_6 are identical in their action. A single dose of 50 micrograms is sufficient to cure symptoms of severe vitamin B_6 deficiency in 70–80% of the test animals within 14 days. Ten micrograms per rat per day is sufficient to produce practically normal growth.—E. J. REEDMAN, W. L. SAMPSON and K. UNNA. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 112. (A. E. M.)

Vitamin C Requirements in Rheumatoid Arthritis. Vitamin C was determined by the method of Farmer and Abt in the blood of 56 cases of rheumatoid arthritis, both early and late, and with varying degrees of deformity and severity of symptoms. Seventy-five of the patients showed abnormally low concentrations of ascorbic acid in the blood. They were compared with a group of 12 normal adults living in the same hospital on the same diet, and these did not show this incidence of low plasma ascorbic acid. Ten of the arthritic patients had an intensive study of vitamin C metabolism made. This consisted of noting the response to a single oral dose of ascorbic acid after the patients had been on a vitamin C-free diet for three to four weeks. The studies indicated that patients with rheumatoid arthritis have a much greater demand for vitamin C than normal persons. However, an ascorbic acid intake of 200 mg. per day, continued over eight months, produced no noticeable improvement in the arthritis of the patients observed.—M. G. HALL, R. C. DARLING and F. H.

L. TAYLOR. *Ann. Intern. Med.*, 13 (1939), 415; through *Abbott Abstract Service*, (1940), No. 645. (F. J. S.)

Vitamin E Deficiency in Dogs. A deficiency in pups produced from dogs maintained for a long period of time on a diet of mineralized evaporated milk is described. The condition is identical with muscle dystrophy previously described in rats, guinea pigs and rabbits and is cured by synthetic *alpha*-tocopherol if therapy is initiated before the symptoms are too far advanced.—H. D. ANDERSON, C. A. ELVEHJEM and J. E. GONCE, JR. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 750. (A. E. M.)

Vitamin K Deficiency and Prothrombin Levels—Effect of Vitamin K Administration on. The whole blood clotting time becomes prolonged when the prothrombin level falls to about 30% of the normal level for chicks kept on a vitamin K-deficient diet after hatching. Hemorrhages appear when the prothrombin level is about 10% of normal. Large doses of vitamin K correct the prothrombin deficit with 6 hours.—ROBERT T. TIDRICK, FRANK T. JOYCE and H. P. SMITH. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 853. (A. E. M.)

Vitamins in Health and Diseases. A review of the present knowledge of the vitamins in their relation to health and disease is given. The clinical and pathological features of the vitamin deficiencies, the methods of their study and their treatment are described.—N. K. IYENGAR. *Indian and Eastern Chemist*, 20 (1939), 232. (A. C. DeD.)

NEW REMEDIES

SYNTHETICS

Acidolate (National Oil Products Co., Harrison, N. J.) is a mixture of high molecular weight sulfonated oils (olive and teaseed) in an aqueous base and is a tested detergent for atopic and simple dermatitis, and of use in general skin care. It has a p_H approximating that of skin, contains no alkalis, dyes or perfumes, free of common allergenes, is water-soluble and is tolerated thoroughly. Acidolate is supplied in 8-oz. and gallon bottles.—*Amer. Professional Pharmacist*, 5 (1939), 717. (F. J. S.)

Anteron (Schering Corporation, Bloomfield, N. J.) is a highly purified gonadotropic extract prepared from pregnant mares' serum and each lot is proved by test on sensitized guinea pigs to be free from serum proteins which may cause shock. It is essential in the treatment of many cases of amenorrhea, uterine bleeding, dysmenorrhea and male and female sterility. There is very ample evidence that anteron shows a remarkable likeness in its physiological effect to the action of the gonad-stimulating principle of the anterior pituitary. It is also of value in delayed puberty and infantilism due to pituitary hypofunction. It is supplied in boxes of 3 and 6 ampuls (250 units).—*Amer. Professional Pharmacist*, 5 (1939), 653. (F. J. S.)

Arseno-Solvent (Modern Pharmacals Ltd., London) is a glucose-solvent solution, containing guaiacol and chloretone. It is used as a solvent for sulfarsenol, and permits of the painless injection of that substance in concentrated solution. It is supplied in boxes of 1, 6 or 12, 2-cc. sterile ampuls.—*Australasian J. Pharm.*, 21 (1940), 61. (A. C. DeD.)

Black Widow Spider Antivenin (Mulford) (Sharp & Dohme, Philadelphia, Pa.) is a serum which comes in the new lyophilized form (dehydrated serum under vacuum) which assures therapeutic efficiency for a period of at least five years. It is indicated in the specific treatment of bites of the black widow spider; and it is administered intramuscularly. The suggested dosage is 2.5 cc.; if the symptoms are not relieved in one or two hours, the dose may be repeated. It is supplied in a package containing one "Vacule" flame-sealed ampul-vial which yields 2.5 cc. of double-concentrated serum, one ampul containing 2.5 cc. of distilled water and a 1-cc. ampul-vial of normal horse serum (diluted 1:10) as test and desensitizing material. The 2.5 cc. of restored serum represents the equivalent in potency of 5 cc. of the original serum. Each dose contains the equivalent in neutralizing power of the venom of at least 750 spiders.—*Amer. Professional Pharmacist*, 5 (1939), 515. (F. J. S.)

Calcium Mandelate (Burroughs Wellcome & Co., Inc., New York) is an odorless, tasteless substance, only slightly soluble in water, containing 11.7% calcium and 88.8% mandelic acid. Each compressed product contains $8^1/_2$ grains (0.551 Gm.) of calcium mandelate, the equivalent of $7^1/_2$ grains (0.486 Gm.) of mandelic acid. It is used in the treatment of bacilluria, cystitis and cystopyelitis, particularly those due to *B. coli* and *Str. fæcalis.* It is absorbed from the gastrointestinal tract as sodium mandelate, lowers alkali reserve and causes the excretion of acid urine containing bactericidal mandelic acid. Calcium is largely excreted as carbonate in the feces. The contraindications for calcium mandelate are: hematuria, acute nephritis and severe chronic nephritis. The dose for adults is six products taken with a half a glass of water four times daily; children, in proportion to age and weight. Calcium mandelate is supplied in bottles of 100 and 500 products.—*Amer. Professional Pharmacist*, 5 (1939), 515. (F. J. S.)

Epinine (Burroughs Wellcome and Co., London) is 3:4-dihydroxyphenylethylmethylamine and possesses in marked degree the pharmacological action of adrenaline. The preparations of epinine which are marketed are as follows: Hydrochloride in tubes of 1 Gm.; solution 1 in 100 in amber-colored, stoppered bottles of 10 cc. and 25 cc.; Epicaine brand "Epinine" and cocaine hydrochloride solution in bottles of 10 cc.; "Tabloid" Ophthol (A. C.) "Epinine" hydrochloride, 0.0075 Gm.; "Tabloid" "Epinine" Compound; "Hypolorid." "Epinine," 1 in 100 (for intravenous and hypodermic injection); "Enule" "Epinine" hydrochloride, 0.01 Gm.; and Soloid Ophthal. (A. F.), Zinci Sulfatis Comp.—*Australasian J. Pharm.*, 19 (1938), 1009. (A. C. DeD.)

Gestyl (N. V. Organon, Oss) is the gonadotropic hormone from the serum of pregnant mares. While the gonadotropic hormone from the urine of pregnant women (pregnyl) is serviceable in the treatment of genital disturbances as cryptorchidism and dystrophia genitale-genitalis in men and hypermenorrhea and metropathia hemorrhagica in women it does not give favorable results in menstrual disturbances resulting from a shortage of follicle hormone. In such cases, this serum hormone, discovered by Cole and by Zondek in 1930, seems to be of greater value. The hormone can be standardized by means of infantile rats having a body weight between 25 and 35 Gm. As a unit, the smallest quantity is selected, which will increase the weight of both ovaries from an average of 8 mg. to an average of 20 mg. This quantity is divided over six injections given in 3 x 24 hours. The preparation is sold as a sterile powder mixed with sodium chloride. The contents of the ampul containing the powder is dissolved in the contents of an accompanying ampul containing 0.5% of tricresol. Each ampul contains 40 rat units. The injections are made intramuscularly.—*Pharm. Weekblad*, 76 (1939), 1136. (E. H. W.)

Glycocoll also called glycine is an amino acid. It is used in doses of 1–2 Gm. to increase muscular strength, to combat fatigue and as a rejuvinator

Glycine is transposed in the body into kreatinine.—*Pharm. Weekblad.*, 76 (1939), 784. (E. H. W.)

Intracaine (Diethoxin) (E. R. Squibb & Sons, New York) is a new local anesthetic agent which may be used in any place in the field of dental or surgical anesthesia where procaine is used, with the possible exception of high spinal. Epinephrine, or some other vasoconstrictor in ordinary use, may be used with solutions of intracaine if the user so desires. It has the following advantages: much more rapid action than procaine, toxicity comparable to that of procaine, singularly free from local or systemic idiosyncrasy, irritative or reaction-producing properties, exceptionally well antagonized by barbiturates, increased duration of anesthesia with comparable concentrations, increased spread of anesthesia at local area, and a significant precipitate warns when there has been a serious loss of potency. Intracaine is supplied in sterile crystals in 25-mg., 50-mg. and 500-mg. ampuls; crystals in $^1/_2$-oz. and 3-oz. bottles; and 25-mg. tablets in vials of 20 and bottles of 100.—*Amer. Professional Pharmacist*, 5 (1939), 653. (F. J. S.)

Mandelamine (Nepera Chemical Co., Inc., 21 Gray Oaks Ave., Yonkers, New York) contains methenamine mandelate, a compound of mandelic acid and methenamine. It is a urinary antiseptic combining the advantages of mandelic acid and methenamine without the unpleasant by-effects of either; and it is indicated in the oral treatment of pyelitis, pyelonephritis, cystitis, prostatitis, renal calculi, in non-specific urethritis and trauma associated with instrumentation. The dose is 2–3 tablets three or four times daily. Mandelamine is supplied in boxes of 120 enteric coated, sanitaped tablets, 0.25 Gm. ($3^3/_4$ grains) each.—*Amer. Professional Pharmacist*, 6 (1940), 113. (F. J. S.)

Nicotinezuuramide (pyridine-3-carbonic acid amide) is placed on the market by J. Blaes & Co., Munich, in the form of tablets containing 0.2 Gm. of yeast powder and 0.025 Gm. of nicotinic acid amide and in ampuls containing 0.1 Gm. of the amide.—*Pharm. Weekblad*, 76 (1939), 1137. (E. H. W.)

Percorten (Ciba Ltd., Horsham, Sussex) is synthetic adrenal cortical hormone, desoxycorticosterone acetate. It is used in cases of Addison's disease, constitutional adynamia and asthenia, acute infectious diseases, coeliac disease, idiopathic, steatorrhea, surgical shock, burns, injuries or operations. The dose as the physician desires. It is supplied in ampuls of 1 cc., containing 5 mg. and 10 mg.—*Australasian J. Pharm.*, 21 (1940), 259. (A. C. DeD.)

Phedracin (Ciba 2020) (Ciba Ltd., Horsham, Sussex) is a new synthetic sympathomimetic substance. It increases blood pressure and slows pulse. It is used for spinal anesthesia, post-operative shock, asthma and in cases where an intolerance for ephedrine has developed; palpitation and tachycardia—the dose as the physician desires. It is supplied in ampuls of $1^1/_2$ gr. and divisible tablets of 3 gr.—*Australasian J. Pharm.*, 21 (1940), 259. (A. C. DeD.)

Progesterone (Schieffelin & Co., New York) is a synthetic progesterone assayed according to the Corner Allen technic and standardized in weight and International units. It is available in a solution of sesame oil for intramuscular injection. Indications for the use of progesterone are as follows: threatened and habitual abortion, dysmenorrhea, amenorrhea, menorrhagia and vicarious menstruation. The dosage is: threatened and habitual abortion, 1 to 2 mg. daily until there is a remission of symptoms, then 1 mg. two or three times weekly; dysmenorrhea, 1 to 2 mg. daily for approximately 1 week prior to menstruation; amenorrhea, a course of Follacro injections for about 10 days following menstruation followed by 1–2 mg. of progesterone daily for one week; menorrhagia and vicarious menstruation, 1–2 mg. daily starting about the time of ovulation and continuing until symptoms are controlled. Progesterone is supplied in boxes of 6 x 1 cc. ampuls in the following potencies: $^1/_2$ mg. ($^1/_2$ International unit), 1 mg. (1 International unit), 2 mg. (2 International units), 5 mg. (5 International units).—*Amer. Professional Pharmacist*, 5 (1939), 717. (F. J. S.)

Progestoral (N. V. Organon, Oss) which can also be indicated chemically as pregnein-ol-17-on-3 is a material prepared by Imhoffen and Hohlweg which although it is administered *per os* has an action similar to that of the corpus luteum hormone. The corpus luteum hormone, progestine or progesterone cannot be administered perorally. Progesteral is the first synthetic product which gives the corpus luteum hormone action when administered orally. It comes into the market in tablets of 10 and 25 mg.—*Pharm. Weekblad*, 76 (1939), 785. (E. H. W.)

Riboflavin (E. R. Squibb & Sons, New York) consists of capsules of pure synthetic riboflavin (vitamin B_2 or G) containing 1 mg. (or approximately 400 Bourquin-Sherman units) each, biologically standardized. It is indicated in the treatment of cheilosis, a chapping of the lips concomitant with certain cases of pellagra; also in certain cases of pellagra not completely responding to treatment with nicotinic acid alone. The average daily requirement for an adult is estimated to be from 2 to 3 mg. or more, as prescribed by a physician. Riboflavin is supplied in bottles of 25 capsules.—*Amer. Professional Pharmacist*, 5 (1939), 586. (F. J. S.)

Sonasta (Thos. Christy and Co. Ltd., London) contains in each tablet ethylbromisovaleryl amide 0.22 Gm. and oxypropionylaminoethoxybenzene 0.12 Gm. It is used as a soporific and sedative. The dose is 2–3 tablets one hour before retiring as a soporific; 1–2 tablets three or four times a day as a sedative. It is supplied in bottles of 5, 50, 100 and 250 tablets.—*Australasian J. Pharm.*, 21 (1940), 259. (A. C. DeD.)

Splenocrisines (George J. Wallau, Inc., New York, N. Y.) contain the total extract of spleen. Each cc. "15" corresponds to 5 Gm. of fresh extract. Each cc. "30" corresponds to 10 Gm. of fresh extract. Each cc. "60" corresponds to 20 Gm. of fresh extract. The former is considered preferable for intramuscular or subcutaneous injection. It is indicated in the treatment of eczema and urticaria. The extract is marketed in 3-cc. ampuls, box of 5.—*Drug. Circ.*, 83, No. 11 (1939), 33. (E. V. S.)

Strophanthin-K Ampuls (Abbott Laboratories, North Chicago, Ill.) contain the purified amorphous glucosides of *Strophanthus kombe* and are intended for intravenous administration to secure a very rapid digitalis-like action on acutely decompensated hearts and for the treatment of certain special types of cardiac decompensation not amenable to digitalis. It is indicated in acute decompensation (acute cardiac asthma with paroxysmal dyspnea, acute pulmonary edema of cardiac origin, etc.) where digitalization is too slow; cardiac dilatation; tachycardia with sinus rhythm; decompensation with certain sinus rhythm; where digitalis fails or cannot be tolerated, or where absorption is slow. Before administering strophanthin-*K* the first step is to make sure that the patient has received no digitalis recently. The average adult dose of strophanthin-*K* in cases of hypertensive heart disease, and in other conditions with marked cardiac hypertrophy, is one ampul, or 0.25 mg. Cases of mitral stenosis should receive one-half an ampul, or 0.12 mg. as the initial dose. *Caution:* When strophanthin is injected intravenously, its full effects are obtained in a comparatively short time, comparable to digitalizing fully a patient in the space of six hours. Strophanthin-*K* is supplied in packages of six 1-cc. (0.25 mg.) ampuls, equivalent to 0.50 mg. of strophanthin-*K* U. S. P. each.—*Amer. Professional Pharmacist*, 5 (1939), 587. (F. J. S.)

Veriazol (Knoll & Co., N. V., Amsterdam) is cardiazol and veritol in clinically proved form. It is administered subcutaneously and intramuscularly, in solution, in collapse, weak circulation, etc. It is found on the market in tablets, in ampuls and in drops.—*Pharm. Weekblad*, 76 (1939), 785. (E. H. W.)

SPECIALTIES

Afaxin (Winthrop Chemical Co., Inc., New York) is a solution of vitamin A in oil, highly purified by molecular distillation and relatively free from fatty acids and products of rancidity which are largely responsible for the taste and odor of fish oil. Each capsule contains 10,000 U. S. P. (International) units of vitamin A. It is used for the prevention and treatment of xerophthalmia and other manifestations of avitaminosis A, including night blindness, hyperkeratosis of skin, lowered resistance to infections and restricted growth. The dosage is: average prophylactic dose, 1 capsule (10,000 units) daily; curative dose, 1 capsule (10,000 units) three or four times daily; occasionally large amounts (up to 200,000 units daily) are required to restore light adaptation to normal. Afaxin is supplied in boxes of 25 capsules.—*Amer. Professional Pharmacist*, 5 (1939), 719. (F. J. S.)

Berizym (Beriton) (N. V. Zyma-Ysat, Amsterdam) is a vitamin B_1 concentrate appearing on the market in tablets and ampuls. Berizym ampuls contain vitamin B_1 and ferments and amino acids (glutathion) from yeast. 1000 International units are equivalent to the vitamin B_1 activity of 0.0002 Gm. of pure vitamin B_1. Berizym tablets contain 100 International units of vitamin B_1 (also called dragées). The dose of the tablets is 2–5 three times a day.—*Pharm. Weekblad*, 76 (1939), 416. (E. H. W.)

B-"Tropon" (Troponwerke, Köln-Mülheim) consists of vitamin B concentrate (vitamins B_1–B_7) 8% and dextrose 88%.—*Pharm. Zentralhalle*, 80 (1939), 92. (N. L.)

Ca-Ma-Sil (Livingston Chemical Co., Baltimore, Md.) is a composition of magnesium silicate special 55.6%, calcium carbonate 40.3%, sodium bicarbonate 2.3%, diammonium hydrogen phosphate 1.6% and flavored with oil of peppermint and saccharin. The special magnesium silicate is prepared by allowing suitable proportions of magnesium sulfate and sodium silicate to react in aqueous solution; the resulting precipitate is carefully washed, dried and powdered; this precipitate is radically different from that prevailing in magnesium trisilicate preparations and has a molecular ration of 1:3.23 instead of the usual 2:3 ratio. It is indicated in the treatment of peptic ulcers. Ca-Ma-Sil is supplied in tins of 6 ounces.—*Drug. Circ.*, 83, No. 11 (1939), 33. (E. V. S.)

Centa-Heil and Wund Salve (Central-Apotheke, Ph. Kullmer, Sinsheim a.d. Elsenz) consists of benzocaine 5%, bismuth oxide 20%, zinc oxide 29%, starch 18%, boric acid 10%, cacao butter 10%, aluminum acetate 1% and fluidextracts of chamomile, arnica and calendula—of each 1%, with sufficient oil and vaseline to make 100 parts.—*Pharm. Zentralhalle*, 80 (1939), 120. (N. L.)

Centussin (Chem.-Pharmaz. Labor. Ph. Kullmer, Sinsheim a.d. Elsenz.) consists chiefly of drosera, thyme, castanea, primula, Senega, guaiacol, sodium bromide, extract of malt, alcohol and simple syrup. It is recommended in the treatment of asthma, grippe, etc.—*Pharm. Zentralhalle*, 80 (1939), 61. (N. L.)

Cholparin (Sanabo., Chem.-Pharmz. Produckte, G.m.b.H., Wien) contains in each tablet 0.003 Gm. choline hydrochloride, 0.02 Gm. perparin, 0.15 Gm. aliodan (an iodine derivative of ethylallophanate) and 0.25 Gm. theobromine.—*Pharm. Zentralhalle*, 80 (1939), 91. (N. L.)

Chromosmon (Chemosan-Union, Vienna) is a solution of methylene blue and sugar, dispensed in ampuls and used as an intravenous injection in gas poisoning. Within a few minutes the patient's consciousness returns and respiration also seems to be improved. It can be used in poisoning with hydrogen cyanide, carbon monoxide and illuminating gas. Chromosmon is sold in ampuls of 10 cc.—*Pharm. Weekblad*, 76 (1939), 417. (E. H. W.)

Cidicol (The Upjohn Co., Kalamazoo, Michigan) contains in each fluidounce ethylmorphine hydrochloride $^1/_4$ grain, potassium guaiacol sulfonate 8 grains, potassium citrate 20 grains, citric acid 8 grains, alcohol, 5% in an orange-colored, tart-flavored vehicle. It is a sedative, expectorant cough preparation containing no sugar, sweetness being obtained by glycerin and saccharin. For use in the early febrile stages of acute respiratory infections. The dosage is: for adults, 1 to 2 teaspoonfuls repeated at intervals of three to six hours as required; for children over one year, 10 drops to $^1/_2$ teapoonful according to age. Cidicol is supplied in pint and gallon bottles.—*Amer. Professional Pharmacist*, 5 (1939), 716. (F. J. S.)

Clora-Caine-Creme (Drug Products Co., Inc., Long Island City, N. Y.) is a composition of aluminum subacetate, benzocaine, zinc oxide, chlorinated cottonseed oil and thymol in a perfumed base. It is indicated in the treatment of burns, varicose ulcers and skin lesions as it penetrates deeply and spreads rapidly. It is available in tubes of $1^3/_8$ ounces and in pound jars.—*Drug. Circ.*, 83, No. 11, (1939), 33. (E. V. S.)

Contralgin Pulv. (I. G. Bayer) is a powder containing 5% pantocaine and surfeen, used as a paste or as a powder to anesthetize the mucous membrane or to treat painful wounds.—*Pharm. Weekblad*, 76 (1939), 417. (E. H. W.)

Drosan (Apotheker Carl Höing, Hamborn a. Rh.) contains infusion of ephedrine, peppermint, opium, anise, fennel, coriander, angelica root, potassium guaiacol-sulfonate, ephedrine, fluidextract of thyme, glycerin and simple syrup. It is recommended as a cough remedy.—*Pharm. Zentralhalle*, 79 (1938), 801. (N. L.)

Duokol (Chemische Fabriek Dr. Baljet, Arnhem) is a combination of 80% activated charcoal and 20% Collumol (colloidal aluminum hydroxide), found on the market in powder and in tablets. It is used in stomach and intestinal disturbances. The dose is 1–2 teaspoonfuls or 2–4 tablets, four times a day.—*Pharm. Weekblad*, 76 (1939), 1136. (E. H. W.)

Emocin (Tabloid) (Burroughs Wellcome and Co., London and Sydney) contains in each product 2 grains of "Empirin" acetylsalicylic acid, with a flavored demulcent base. It is used for prompt analgesic effect after tonsillectomy or irritative and inflammatory conditions of the throat. To be dissolved slowly in the mouth. It is supplied in tubes of 25.—*Australasian J. Pharm.*, 21 (1940), 259. (A. C. DeD.)

Eridin-Schnupfen Salve (Berg-Apotheke, Königsberg i. Pr.) consists of menthol, novocaine, ephedrine, oil of dwarf pine needles and vaseline.—*Pharm. Zentralhalle*, 80 (1939), 121. (N. L.)

Esiderm with Tumenol (Desitin-Werk C. Klinke, Hamburg) consists chiefly of zinc oxide, Venetian talc, glycerin and distilled water in the form of a colloidal dispersion with 75% tumenol-ammonium. —*Pharm. Zentralhalle,* 80 (1939), 91. (N. L.)

Explantin Koenig (Laboratorium Dr. S. Neumayr, München) consists chiefly of extract of drosera, chlorophyll, mineral salts, organic derivatives of iron, phosphorus and silicic acid. It is recommended in the treatment of high blood pressure and arteriosclerosis.—*Pharm. Zentralhalle,* 80 (1939), 121. (N. L.)

Flavolutan (C. F. Boehringer & Sons, Mannheim) is progesteron (corpus luteum hormone) in wheat germ oil occurring in ampuls for intramuscular injection with 2 and with 3 mg. flavolutan. It is used in habitual abortion, amenorrhea, sterility, etc.—*Pharm. Weekblad,* 76 (1939), 418. (E. H. W.)

Kombuchal (H. R. Napp Ltd., London) is an infusion of Kombucha culture. It is used in cases of senile conditions, especially arteriosclerosis. The dose is prescribed by physician. It is supplied in packages of 100 Gm.—*Australasian J. Pharm.,* 21 (1940), 259. (A. C. DeD.)

Medipax (Medicated Tampon Suppositories) (Allen Laboratories Inc., New Brunswick, N. J.) are suppositories medicated either with Merthiolate (1:2000), or Metaphen (1:2000), in a glycerogelatin base, both of which possess bacteriostatic powers in relatively high dilutions. The hydrogen-ion concentration of the medication is maintained at approximately p_H 4.5. The compressed tampon is of cross-stitched, long fiber surgical cotton. It is used to combat infection and relieve congestion in vaginitis, cervicitis, postpartum cervical lacerations, endocervicitis, pelvic inflammations, faulty involution or sub-involution, and in postpartum hemorrhage. Medipax provides a prolonged topical antiseptic action. The dose is one every twelve or twenty-four hours depending upon the severity of the case and it is supplied in boxes of 6 suppositories.—*Amer. Professional Pharmacist,* 6 (1940), 47. (F. J. S.)

Perandreen (Gesellschaft für chemische Industrie at Basel) is the synthetic, chemically pure testicular hormone. It is the propionic acid ester of testosteron. Perandreen is found on the market in ampuls for intramuscular or subcutaneous injection; 1 cc. contains 5 mg. testosteron-propianate dissolved in sterile oil, *i. e.,* 250 International units. The dose is one ampul 1–2 times per week. Perandreen is used in prostate affections, sexual impotence, lack of sexual development, etc. *Pharm. Weekblad,* 74 (1937), 323. (E. H. W.)

Plebilin (The Paul Plessner Co., Detroit, Mich.) is a brand of highly purified bile salts, in 3 grain (0.194 Gm.), white, enteric coated tablets. It is used as a choleretic and cholagogue in many varieties of biliary and gallbladder diseases, hepatic insufficiency, biliary stasis, in liver poisoning from arsphenamine, phosphorus, etc. In post-operative treatment following cholecystectomy, and in conjunction with vitamin K, in pre- and post-operative treatment of jaundice. Plebilin is derived from fresh ox gall, freed from mucin and pigment, standardized as to purity to contain not less than 70% of the combined sodium salts of the conjugated bile acids taurocholate and glycocholate, in their natural proportions. Plebilin is supplied in bottles of 100, 500 and 1000 tablets.—*Amer. Professional Pharmacist,* 5 (1939), 716. (F. J. S.)

Promucin (A. G. vorm. B. Siegfried, Zofingen) is found on the market as a liquid and as an ointment. The liquid contains a 3% ephedrine solution and the ointment 0.3 Gm. of ephedrine with 9.7 Gm. Dermocetyl. Both are employed in treating the mucous membrane of the nose, in rhinitis, etc., and in allergic phenomena.—*Pharm. Weekblad,* 76 (1939), 785. (E. H. W.)

Rheulysine (N. V. Organon, Oss) is a 10% solution of glycogen with vitamin B_1 for intramuscular injection. Rheulysine contains per cc., 0.1 Gm. glycogen, 1 mg. of the antineuritic vitamin B_1 and 0.4 mg. aethocaine, dissolved in sterile water. It is found on the market in 5-cc. ampuls. It is used in both acute and chronic myalgias and neuromyalgias in which the contents of one ampul is injected into the musculus glutaeus maximus over a period of three days.—*Pharm. Weekblad,* 76 (1939), 1137. (E. H. W.)

Roche-Apicur (Roche Products Ltd., Welwyn Garden City, Herts, England) is bee venom. It is used in rheumatic conditions. The dose is 0.05 cc. to 0.25, or maximum, 0.5 cc. It is supplied in rubber-capped phials, 1 cc.—*Australasian J. Pharm.,* 21 (1940), 259. (A. C. DeD.)

Sufana (Drug Products Co., Inc., Long Island City) are plain uncoated pulvoids, of lavender color, containing in each sulfanilamide 5 gr. and sodium bicarbonate 5 gr. It is indicated in the treatment of streptococcic infections. Sufana is supplied in bottles of 100 pulvoids.—*Drug. Circ.,* 83, No. 11 (1939), 33. (E. V. S.)

"Tabloid" Theoba (Burroughs Wellcome and Co., London and Sydney) contains 5 gr. of theobromine and $^1/_2$ gr. phenobarbitone. It is used as a diuretic and sedative in high blood pressure. The dose as prescribed by the physician. It is supplied in bottles of 25 and 100.—*Australasian J. Pharm.,* 21 (1940), 61. (A. C. DeD.)

Toxogon (Bayer Products Ltd., London) is a gonococcal vaccine, with specific and non-specific antigen content, containing 500–2000 million organisms per cc. It is used in all stages of gonorrhea. It is given as intramuscular injection. The unit dose, 20 antigen units (1000 million organisms per cc.). It is marketed as B (box of 6 x 1 cc. ampuls); C (box of 6 x 1 cc. ampuls).—*Australasian J. Pharm.,* 21 (1940), 259. (A. C. DeD.)

Typhoral (Behringwerke, Leverkusen) according to the manufacturer consists of typhus- and paratyphus-bacilli A and B, killed by fermentation and worked up into dragées. They are designed as an oral prophylactic against typhus and paratyphus.—*Pharm. Weekblad,* 76 (1939), 420. (E. H. W.)

Vasocor (Koninklijke Pharm. Fabrieken Brocades-Stheeman & Pharmacia) is a combination of strophanthin, theophylline and glucose in ampuls obtainable in two strengths; Vasocor with 0.2 mg. strophanthin per 10 cc. ampul and Vasocor Forte with a strophanthin content of 0.3 mg. strophanthin per 10-cc. ampul.—*Pharm. Weekblad,* 76 (1939), 420. (E. H. W.)

Yeast Concentrate (Burroughs Wellcome and Co. (U. S. A.) Inc., New York) is a special strain of yeast with high vitamin B potency. Each four-grain (0.259 Gm.) product provides: 80 I. U. of vitamin B_1 (thiamin hydrochloride), 55 micrograms of riboflavin (22 Sherman units of vitamin B_2), 110 micrograms of nicotinic acid and 55 micrograms of vitamin B_6. The products are sugar coated. They are used in the prophylaxis and treatment of deficiency of the vitamin B complex. Yeast concentrate provides factors essential to intracellular metabolism in all tissues, promotes normal growth and development, and prevents or cures polyneuritis, anorexia, myatonia, tachycardia, dermatitis, glossitis, diarrhea, anemia, etc., due to deficiency of the B vitamins. It is non-toxic. It is supplied in bottles of 100 and 500 products.—*Amer. Professional Pharmacist,* 5 (1939), 716. (F. J. S.)

Zylcaine (Abbott Laboratories, North Chicago, Ill.) is a combination of local anesthetics in oil, possessing a prolonged action and the formula is as follows: procaine base 1.5%, butesin (*n*-butyl-*p*-aminobenzoate, Abbott) 6%, benzyl alcohol 5% and oil of sweet almond, *q. s.* From oily solvents, the local anesthetic agents diffuse rather slowly, giving prolonged anesthesia and relaxation of the musculature. Properly made injections of this solution are painless. It is used for the relief of painful conditions in and around the anus; and is supplied in ampuls of zylcaine in oil.—*Amer. Professional Pharmacist*, 5 (1939), 717. (F. J. S.)

BACTERIOLOGY

Aerobacter Aerogenes and Bacillus Cereus—Biochemistry of. Dulcitol-negative *Aerobacter aerogenes* and dulcitol-positive *A. aerogenes* (syn. *A. Oxytocum*) have been isolated from potatoes suffering from the black center disease, and *B. cereus* from rotting "Chiku" fruit (*Achras sapota* L.). The products of metabolism of these three organisms on carbohydrate substrates have been examined. Acetyl methyl carbinol, ethyl alcohol, acids and gases are the principal products. The influence of the nature of substrate, hydrogen ion concentration of media, the temperature of fermentation and the effect of aeration have been studied in detail.—H. Chaudhuri, N. N. Chopra, Mansa Ram and J. N. Ray. *J. Indian Chem. Soc.*, 17 (1940), 117. (F. J. S.)

Alkanesulfonic Acids—Synthesis and Certain Derivatives of. Alkanesulfonic acids above *n*-pentane have now been prepared by Hemilian's method which consists of heating an alkyl halide with excess ammonium sulfite. Directions are given for separating the acids through the barium salts. Analytical and other data were tabulated for the latter series of compounds. The *p*-phenetidides and the *p*-toluidides of all the *n*-alkylsulfonic acids from methyl to *n*-amyl- have been prepared and tested for antipyretic activity and chemotherapeutic action. None of the compounds protected mice infected with certain types of pneumococci, influenza virus or staphylococcus. Methylsulfonyl-*p*-toluidide, although variable in its antipyretic activity in mice and rabbits, was found to be less toxic than phenacetin.—P. H. Latimer and R. W. Bost. *J. Org. Chem.*, 5 (1940), 24. (W. T. S.)

Ammonia—Mechanism of the Microbiological Oxidation of. II. The inhibitory action of capillary active substances like urethanes, nitriles, alcohols and ketones on the microbiological oxidation of ammonia has been studied by following Erlenmeyer's technic. The action of cyanides has also been studied. These substances have been found to inhibit the respiration of the bacteria for some time after which, however, nitrite begins to appear, the period of inhibition is found to increase generally with the increase in concentration of the narcotic. These experiments lead to the conclusion that the oxidation of ammonia is a surface catalytic reaction taking place at certain active centers on the surface of the bacteria.—G. Gopala Rao and W. V. Sundra Rao. *J. Indian Chem. Soc.*, 16 (1939), 681. (F. J. S.)

Anærobic Cultures of the Cholera Vibrion—Changes in p_{H} and Toxin Production in. Growth was extremely slow in ordinary broth in anærobiosis but was quite rapid after 0.2% of glucose was added. Acid production was very slight. In Ramon medium with 0.2% glucose growth was luxuriant but the p_{H} remained unchanged at 8.2. Only 1 strain in 6 (from Calcutta) produced a toxin which would kill a guinea pig and mice when the sterilized culture was injected intraperitoneally.—D. N. Banerjee. *Compt. rend. soc. biol.*, 130 (1939), 32–34; through *Chem. Abstr.*, 33 (1939), 3412. (E. G. V.)

Antibody—Isolation of, from Agglutinate to Type I Pneumococcus by Treatment with Acid. By treating the agglutinate of type I pneumococcus with dilute hydrochloric acid (p_{H} 2) all the antibody is liberated, and after removing the cells and neutralizing, as much as 87% may be recovered. The recovered antibody is at least 95% pure as shown by specific precipitation followed by agglutination. The vaccine can be used repeatedly for the isolation of the antibody. The method thus combines simplicity of procedure with good yield and purity of the product.—Kwan-Hua Lee and Hsien Wu. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 65. (A. E. M.)

Antigenic Polysaccharide Complexes from Cocci. A culture such as one of pneumococci is concentrated by freezing and removal of water from the frozen material by use of a high vacuum while maintaining the material solid, and a polysaccharide complex is isolated from the concentrated culture by selective extractions and precipitations.—Peter Masucci, assignor to Sharp & Dohme Inc. U. S. pat. 2,166,963, July 25, 1939. (A. P.-C.)

Antipoliomyelitis Serum—Preparation of. Sheep or other animals are immunized by successive injections of poliomyelitis virus fortified with metabolic products of intestinal bacteria, for example, endotoxin, and an antiserum is obtained from the blood of the animal about 2 months or more after the last injection.—Western Reserve University. Brit. pat. 507,376; through *J. Soc. Chem. Ind.*, 58 (1939), 886. (E. G. V.)

Antiseptic. Equal parts of *m*-dihydroxybenzene and camphor are boiled five minutes. The resulting product is a suitable skin bactericide.—U. S. pat. 2,174,976; through *Am. Perfumer*, 40 (1940), No. 4, 83). (G. W. F.)

Antisepticity Tests.—A report dealing with experimental work carried out in order to perfect testing methods for colloidal calomel ointment and compound powder of zinc sulfate. The tests and materials recommended are described in detail.—Esther Meyer and E. N. Gathercoal. *Bull. Natl. Formulary Committee*, 8 (1940), 171–180. (H. M. B.)

Antisera Precipitins for Malignant Tissue. Proteins of malignant tissue produce precipitins specific for the same type of malignancy especially when growing in the same class of tissue. It seems that the precipitins are species-specific.—Lawrence S. Mann and William H. Welker. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 18. (A. E. M.)

Antiserums and Method of Producing Same. An antiserum, such as commercial diphtheria antitoxin, is treated with a nonproteolytic enzyme such as an enzyme from *Aspergillus oryzæ* (suitably with incubation for several hours at 25° to 50° C.) and any solid precipitate is removed, to obtain a product of immunizing character and free from any substantial amount of specificity capable of causing anaphylactic shock.—Robert D. Coghill, assignor to Parke, Davis & Co. U. S. pat. 2,165,837, July 11, 1939. (A. P.-C.)

Azo Compounds—Bactericidal. Numerous examples are given of the production of compounds suitable for combating streptococcic infections, such as 4′-sulfonamidobenzeneazo-α,α'-diaminopyridine hydrochloride (melting point 266° C.), 4′-sulfonamidobenzeneazo-α,α'-hydroxyaminopyridine hydrochloride (melting point 268° C.), 4′-sulfonamidobenzeneazo-6-aminoquinoline hydrochloride (melting point 271° C.), and general mention is made of the like production and use of various compounds of the general formula: $R'N:NR''$, where R' stands for a *p*-sulfonamide- or disulfonamide-substituted phenyl radical, and R'' stands for a cyclic radical containing nitrogen in basic linkage, that is for a pyridine, quinoline or isoquinoline radical, which contains at least one further basic nitrogen atom in the form of an amino or alkylamino group, or contains at least one hydroxyl group. In the new azo compounds the amino group of the sulfonamide group may be primary, secondary or tertiary.—Fritz Mietsch and Josef Klarer, assignors to Winthrop Chemical Co. U. S. pat. 2,148,705, Feb. 28, 1939. (A. P.-C.)

Bacillus Coli Infection of the Urinary Tract. A small proportion of apparently healthy subjects have a transient bacilluria. Persistent loose stools in females but not in males are etiological factors in *B. coli* infections of the urinary tract. Constipation alone is not a factor.—A. W. D. Leishman. *Lancet*, 237 (1939), 971. (W. H. H.)

Bacteria—Growth Factors for. In continuation of their previous studies the authors bring evidence to show that one of the accessory factors required for the growth of all lactic acid bacteria is pantothenic acid. Nicotinic acid greatly stimulates growth and acid production of some but not all lactic acid bacteria. In addition to these two, riboflavin and vitamin B_6 are known to be accessory growth factors of importance in the growth of lactic acid bacteria. Other factors exist but are still unidentified.—E. E. Snell, F. M. Strong and W. H. Peterson. *J. Bact.*, 38 (1939), 293; through *Bull. Hyg.*, 15 (1940), 184. (T. C. G.)

Bacterial Growth—Physiochemical Aspects of. I. Dependence of Growth of Bacterium Lactis Aerogenes on Concentration of Medium. When *Bact. lactis aerogenes* (A) grows in an artificial glucose-phosphate-ammonium sulfate medium, the final concentration of organisms reached varies with the concentration of the food in such a way as to show that exhaustion of the latter, rather than the accumulation of toxic products, is the factor limiting growth over a wide range. Over this same range the mean generation time of the organisms is nearly independent of the concentration of the food.—S. Dagley and C. N. Hinshelwood. *J. Chem. Soc.*, (1938), 1930–1936. **II. Quantitative Dependence of the Growth Rate of Bacterium Lactis Aerogenes on the Carbon Dioxide Content of the Gas Atmosphere.** In a synthetic medium, A will not grow in the complete absence of carbon dioxide. A quantitative investigation of the relation between growth rate and the concentration of carbon dioxide shows that the rate increases rapidly to a limiting valve, reached when the concentration of carbon dioxide in the gas phase is about 0.15%.—*Ibid.*, 1936–1942. **III. Influence of the Alcohols on the Growth of Bacterium Lactis Aerogenes.** The lowering by normal aliphatic alcohols of the growth rate of A is an approximately linear function of their concentration, and the inhibiting power of the given alcohol increases exponentially with its chain length. These observations are compared with others possessing possible physicochemical analogies and discussed in connection with theories of toxic action.—*Ibid.*, 1942–1948; through *Chem. Abstr.*, 33 (1939), 3418. (E. G. V.)

Bacterial Glucolysis—Inhibition of, by Narcotics. Narcotics of the urethan series (in concentration above $0.005M$) inhibit glucolysis of *B. coli* suspensions (Warburg's method). The oxygen uptake was little or not affected.—A. Tizzano. *Riv. biol.*, 23 (1937), 404–410; through *Chem. Abstr.*, 33 (1939), 3411. (E. G. V.)

Bacteriological Media—New Monographs for Certain Ingredients of. Arabinose, dextrin, dextrose, dulcitol, galactose, inulin, lactose, maltose, mannitol, rhamnose, sucrose and xylose are considered and recommended by the N. F. Committee on Ingredients of Bacteriological Media.—*Bull. Natl. Formulary Committee*, 8 (1940), 194–200. (H. M. B.)

Bacteriophage—Maintaining Potency of, for Long Periods. Samples of streptococcus, staphylococcus and *Bact. coli* bacteriophages in broth and in asparagin medium were distributed in sealed-glass ampuls, in cotton-plugged and in rubber-stoppered bottles, and titrated for lytic activity after 1, 3, 6, 9 and 12 months in the refrigerator at 9° C. and at laboratory temperature in the dark. Survival was unaffected by type of container used. Those stored in the refrigerator maintained the same titre throughout the year in asparagin medium, and in broth fell only about one logarithmic quotient during the 6th to 12th months. At room temperature, however, in either medium but more rapidly in broth, the preparations lost activity from the first month onward until at the 12th month they were inactive or potent at not more than 10^{-2}.—M. Applebaum and F. C. Frisbee. *J. Lab. Clin. Med.*, 24 (1939), 1290; through *Bull. Hyg.*, 15 (1940), 128. (T. C. G.)

Bacteriophage—Preparation and Standardization of. A review of the preparation and standardization of bacteriophage.—Durlavkrishna Ray. *Indian J. Pharm.*, 2 (1940), 111–113. (N. L.)

Bayer 205 Resistance—Stability of, in Trypanosoma Gambiense. The resistance of *T. gambiense* to Bayer 205 is an unstable character; it progressively decreases on mechanical passages through mammals of the same species, decreases more rapidly on mechanical passages through mammals of different species, and even completely disappears on cyclical transmission through *Glassina palpalis*.—L. van Hoof, C. Henrard and E. Peel. *Trans. Roy. Soc. Trop. Med. Hyg.*, 32 (1938), 197–208; through *Chem. Abstr.*, 33 (1939), 2169. (E. G. V.)

Carbohydrate Degradation by Mouth Organisms. Mouth organisms, acting on a medium of saliva, glucose and calcium phosphate produce the same compounds as are formed in tissues and during alcoholic fermentation. Twenty references.—I. L. S. Fosdick. *J. Am. Dental Assoc.*, 26 (1939), 415–417; through *Chem. Abstr.*, 33 (1939), 3413. (E. G. V.)

Carcinoma Antigen. *2,165,370*—A method of making an antigen for injection intradermally to determine if carcinoma exists consists in suspending a protein of epithelial embryonic cells which are obtained from the submaxillary glands of embryonic mammals in a solution of decinormal sodium hydroxide, separating the extracted protein, neutralizing and buffering, passing through a bacteriological filter, and heating to about 80° C. *2,165,371*—This relates to an antigen specific to the diagnosis of sarcoma by intradermal injection comprising a neutralized, inorganic alkaline hydroxide extract of embryonic connective tissue cells obtained from embryo of mammals.—Benjamin Gruskin, assignor to Lakeland Foundation. U. S. pats. 2,165,370 and 2,165,371, July 11, 1939. (A. P.-C.)

Coconut Milk as an Additional Nutrient Substance in Culture Media. Sterile coconut milk is easily obtained by aseptically aspirating ripe fresh coconuts. The addition of 10% to 25% of this noncooked, nonsterilized nutrient agent nearly doubled the cultural qualities of ordinary nutrient broth and agar in the cases of all organisms tested. It was found to be superior to the usual medium used for *Staphylococcus aureus*, *B. fecalis alcaligenes* and *B. welchii*. In the case of the meningococcus it was found to be equally as good as the medium usually used. In the cases of *Streptococcus viridans*, pneumococcus, gonococcus and tubercle bacilli, it was found to be inferior to the preferred selective media.—L. BLAUVELT. *J. Lab. Clin. Med.*, 24 (1939), 420. (T. C. G.)

C. Diphtheriæ—Nutrition of. A medium consisting of a mixture of amino acids, sodium lactate, β-alanine, pimelic acid, nicotinic acid and a complex salt mixture was found to support the growth of *mitis*, *intermedius* and most *gravis* strains of the diphtheria bacillus. Certain *gravis* strains failed to grow but it was found that if small quantities of an alcohol-soluble liver extract were added, growth occurred. This substance is unstable on boiling with dilute HCl or NaOH and is similar to and almost certainly identical with pantothenic acid, which is a compound of β-alanine and dihydroxyvaleric acid. The other strains of the diphtheria bacillus apparently synthesize this factor, its presence being shown in sterile filtrates of the cultures. Pantothenic acid is essential for the growth of lactobacilli and hemolytic streptococci. It is probably the chick-antidermatitis factor.—W. C. EVANS, W. R. C. HANDLEY and F. C. HAPPOLD. *Brit. J. Expt. Path.*, 20 (1939), 396; through *Bull. Hyg.*, 15 (1940), 184. (T. C. G.)

Culture Media—p_H of, for Tubercle Bacilli.—N. E. INSUA. *Rev. facultad cienc. quim.* (Univ. Nacl. La Plata), 12 (1938), 125–126; through *Chem. Abstr.*, 33 (1939), 3411. (E. G. V.)

Diagnostic Antisera—Domestic Fowls Used in the Preparation of. Owing to the difficulty in obtaining and maintaining an adequate stock of rabbits the authors made a search for some other laboratory animal which could be used to prepare diagnostic antisera. The domestic fowl was found suitable since it is cheap, easily obtained and may be kept without an elaborate, expensive arrangement. Satisfactory high-titer sera were obtained for *B. typhosum*, *B. shigae*, *B. flexneri* and *Vibrio choleræ* with the use of this animal.—C. L. PASRICHA, M. N. LAHIRI and B. M. PAUL. *Indian Med. Gaz.*, 74 (1939), 741. (W. T. S.)

Diphtheria Immunization—Some Problems of. Three groups of children were immunized as follows: 987 children aged from six months to one year were immunized with two doses of toxoid one month apart; 187 children aged from six months to five years, who had been immunized with 1 cc. of alum-precipitated toxoid (one dose), and 180 children aged from six months to five years who had been immunized with two doses of toxoid one month apart. The authors concluded that the number of Schick negatives was much greater in infants immunized at six months of age than at one year. There was a definite decline in the ability to get a negative Schick reaction in infants tested one year after immunization rather than six months after immunization. The percentage of reversals as the result of two doses of toxoid was 25.5%, and 70% of these reversals occurred between two and four years after immunization.—M. M. HILLMAN and J. I. LINDE. *J. Pediatrics*, 15 (1939), 513; through *Bull. Hyg.*, 15 (1940), 155. (T. C. G.)

Dysentery Bacilli—Media for the Isolation of. Specimens of feces unpreserved or diluted in 30% glycerine-saline, were plated on MacConkey agar and on Leifson's desoxycholate-citrate agar. Growth of *Bact. flexneri* was more abundant on the latter medium and would have been missed frequently by the use of MacConkey alone. In 56 examinations there were 36% isolations on MacConkey and 62% on desoxycholate-citrate agar, which may be inoculated much more heavily owing to the suppression of *Bact. coli* and *Bact. aerogenes*. Only one specimen was positive on MacConkey. Descriptions are also given of the type of growth of most of the intestinal organisms on desoxycholate agar, on which *Bact. alkalescens*, Morgan's bacillus enterococci, *Bact. alkaligenes*, Sonne's bacillus and stock strains of *Bact. shigae* were inhibited. The use of both media is advised since isolation of a pure culture for further study is easier from MacConkey agar.—J. V. IRONS, S. W. BOHLS, T. DESHAZO and L. L. HEWLETT. *J. Lab. Clin. Med.*, 25 (1939), 81; through *Bull. Hyg.*, 15 (1940), 190. (T. C. G.)

Fresh Serum—Properties of. I. Serum Tryptase. Normal serum and plasma contained a tryptase capable of cleaving plasma and heterologous proteins.—F. FERRANTI. *Boll. ist. sieroterap. milan.*, 17 (1938), 589–598. **II. Complement.** One portion of the complement (midpiece) was found in the subfraction of euglobulin with a low isoelectric point. The other portion (endpiece) occurred in the albuminois fraction but not in the albumin molecule. The complementery action was due exclusively to the latter portion.—*Ibid.* 599–609. **III. Factors Determining Coagulation of Blood.** Chemical experiments showed that prothrombin was not a euglobulin but was something of unknown nature bound to fibrinogen by adsorption. The kinasic function was attributed to a subfraction of euglobulin with a slightly higher isoelectric point. The albumin fractions contained the anticoagulant.—F. FERRANTI and A. TORRINI. *Ibid.*, 642–652. **IV. Relation between Blood Tryptase, Complement and Factors Determining Blood Coagulation.**—F. FERRANTI. *Ibid.*, 653–661; through *Chem. Abstr.*, 33 (1939), 3403. (E. G. V.)

Fungicidal Soap. A prophylactic against infectious diseases produced by fungi, such as athlete's foot, consists of a soap to which sodium thiosulfate and a small amount of copper sulfate have been added.—SEWELL M. CORBETT. U. S. pat. 2,160,834, June 6, 1939. (A. P.-C.)

Germicides. Compounds such as acetoxymercuri 1,3-dihydroxy-4-butyl-, or -amyl- or -hexyl-6-chlorobenzenes are prepared by interacting the corresponding unmercurated alkyl phenol derivatives with mercuric acetate and replacing the acetoxy with the desired anion by means of the compound of that anion with an alkali metal. The products are active germicides.—WALTER G. CHRISTIANSEN, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,163,745, June 27, 1939. (A. P.-C.)

Germicides—Evaluation of, by the Manometric Method. An attempt to estimate the germicidal effect of certain disinfectants was made by suspending *Bact. coli* in serum or in a synthetic medium, measuring its rate of oxygen uptake by the Warburg technic, adding a given concentration of the disinfectant to be tested, and measuring the decrease in the rate of respiration that occurred in successive time intervals. By plating methods it was found that unless a complete inhibition of respiration occurred, sterility could not be expected. Observations showed that the inhibition of respiration was always progressive, and that an increase never occurred after a preliminary decrease. The relation between the degree of inhibition of respiration and the proportion of bacteria killed varied with different disinfectants. A concentration of merthiolate, for instance which produced a 61% inhibition of respiration, killed 43% of the organisms, while sulfanilamide, in a concentration which produced a 55% inhibition of respiration, had little or no killing effect. It was found that the presence of serum greatly inhibited the germicidal action of merthiolate and tincture of iodine, but had little or no effect on sulfanilamide, and only a slight effect on phenol and formol.—J. O. ELY. *J. Bact.*, 38 (1939), 391; through *Bull. Hyg.* 15 (1940), 129. (T. C. G.)

M. & B. 693—Septicemia and. The sequence of events in this case seems to have been: (1) retention of urine due to mechanical interference by a large fibroid; (2) infection of the urinary tract by *Staphylococcus albus;* (3) infection of the blood by the same organism, with a secondary hemorrhagic meningitis; and (4) rapid cure of the infection with M. & B. 693, with quick recovery. The total dose was 42 Gm.—S. GALEWSKI and H. S. STANNUS. *Lancet,* 237 (1939), 1067. (W. H. H.)

M. & B. 693—Staphylococcal Septicemia and. Six cases of carbuncle of the face, including five in which staphylococcal septicemia was proved, are described. Two of the patients, who were treated with M. & B. 693 in large doses at an early stage, and by ligature of the angular vein on the affected side to prevent thrombosis of the cavernous sinus, recovered. The other four patients, who did not receive the treatment, died, although they had other drugs of the sulfonamide group. The results of this small series of cases suggest that the early use of M. & B. 693 in large doses, together with early ligature of the angular vein, is of value in such cases. —A. W. ABRAMSON and B. FLACKS. *Lancet,* 237 (1939), 1065. (W. H. H.)

Methenamine Mandelate—Preparation, Toxicity and Bactericidal Activity of. The preparation and properties of methenamine mandelate are described. Tests of the toxicity of methenamine mandelate are given which show that it is toxic to rats on intraperitoneal injection and non-toxic on oral administration to rabbits. Results of bactericidal tests are presented which show that the compound is bactericidal in urine *in vitro* at p_H levels of 5.5, 6.0 and 6.5. The data is given in the form of two tables. Bactericidal tests with methenamine mandelate at a p_H values of 5.5, 6.0 and 6.5 are plotted in terms of original organisms (*Escherichia coli*) alive up to twenty-four hours. Two different strains of *E. coli* were used to eliminate the possibility of an over-sensitive organism; the one was an organism freshly isolated from fecal material, which agreed in cultural and morphological characteristics with *E. coli* and the other was a standard laboratory strain. When the bactericidal tests were conducted at a p_H of 5.5, a control sample of the culture showed an increase of 5,000,000% in 12 hours; at a p_H value of 6.0, a control sample of the culture showed an increase of 206% in 1 hour; at a p_H value of 6.5, a control sample of the culture showed an increase of 300% in 1 hour.—G. L. JENKINS, L. JACK and C. H. DRAKE. *Pharm. Arch,* 10 (1939), 81. (W. B. B.)

Morphine Series—Reduction Studies in.—L. SMALL and G. L. BROWNING, JR. *J. Org. Chem.,* 3 (1939), 618–637; through *Chem. Abstr.,* 33 (1939), 3383. (E. G. V.)

Neoarsphenamine, Sulfapyridine, Sulfanilamide—Effectiveness of, in Marrow Cultures with Staphylococci and Alpha Streptococci. In cultures of living human marrow inoculated with hemolytic *Staphylococcus aureus* or *Streptococcus viridans,* neoarsphenamine in concentrations of 3 to 9 parts per million was far more effective than 1:10,000 concentrations of either sulfanilamide or sulfapyridine, and did not significantly damage the marrow cells.—EDWIN E. OSGOOD. *Proc. Soc. Exptl. Biol. Med.,* 42 (1939), 795. (A. E. M.)

Pantothenic Acid and Nicotinic Acid as Essential Growth Substances for Morgan's Bacillus (Proteus Morganii). Evidence has been presented which indicates that pantothenic acid and nicotinic acid are the essential growth factor for *Proteus Morganii.* —MICHAEL J. PELCZAR JR., and J. R. PORTER. *Proc. Soc. Exptl. Biol. Med.,* 43 (1940), 151. (A. E. M.)

Pathological Serum Proteins—Physiochemical Characterization of. A discussion.—F. EIRICH. *Kolloid-Z.,* 85 (1938), 260–268; through *Chem. Abstr.,* 33 (1939), 2205. (E. G. V.)

Phenols—Chlorinated, Formulæ for Antiseptic Soutions of. The formulæ and methods of preparation of the following antiseptic solutions containing chlorinated phenols are given: *Antiseptol-X, Instrument Antiseptol-X, Antiseptol-T* and *Instrument Antiseptol-T.* The principle uses of these solutions are also discussed.—J. W. COOPER. *Indian J. Pharm.,* 2 (1940), 72–76. (N. L.)

Phenols—Chlorinated, Selective Action in Germicidal Preparations Containing. The results of the work reported here indicate that the combination of essential oils similar to pine oil or ti-tree oil with chlorinated phenols (*e. g., para*-chloro-*meta*-xylenol) reduces the germicidal activity of the latter component toward *Staphylococcus aureus* if the essential oil is present in higher proportion. Disinfecting fluids containing only essential oils of the above types are very selective in their germicidal action and are almost inactive against *Staphylococcus pyogenes aureus.* The addition of chlorinated phenols to the essential oils considerably enhances the activity of the combination toward *Bacterium typhosum,* but not toward *Staphylococcus aureus* until the proportion of chlorinated phenols is comparatively high and not less than one-third. Comparison is made of the germicidal activity, as determined by the Rideal-Walker test using both *Bact. typhosum* and *Staphylococcus aureus.* The avoidance of selective action in the formulation of such preparations involves a compromise between efficiency and odor values, on account of the adverse effect the chlorinated phenol has on the odor of the essential oil. *Staphylococcus aureus* is advocated in the testing of these preparations for the determination of safe dilutions to recommend for purposes of skin sterilization. Data is presented in the form of four tables, which bear the following headings: (1) Germicidal values of chloro-*meta*-xylenol and pine oil preparations, (2) germicidal values of ti-tree oil preparations, (3) germicidal values of *iso*-thymol and chloro-*iso*-thymol preparations and (4) germicidal values of proprietary antiseptic fluids.—Q. MOORE and J. N. WALKER. *Pharm. J.,* 143 (1939), 507. (W. B. B.)

Pneumococcus Infection Treated with Antiserum and Sulfapyridine. Rats infected with various types of the pneumococcus were treated with sulfapyridine, or antiserum or both. Both the antiserum and sulfapyridine were effective to a certain degree in curing the infected rats. Combined serum and drug therapy was clearly better than either alone in types I, V, XIV, and somewhat better than either alone in types II, VII and possibly VIII. Neither serum therapy, chemotherapy or combined serum and drug therapy gave spectacular results in type III infections.—H. M. POWELL and W. A. JAMIESON. *J. Immunol.,* 36 (1939), 459. (T. C. G.)

Serum Proteins—Important Methods for Detection of Alteration in. Discussion.—K. DIRR. *Klin. Wochschr.,* 18 (1939), 91–95; through *Chem. Abstr.,* 33 (1939), 3409. (E. G. V.)

Solutions—Sterile, Preparation of, for Parenteral Injection. The preparation of sterile solutions demands a sound knowledge of bacteriology, as it is important to reduce the technic of their preparation to the simplest and quickest form consistent with accuracy and safety. When the medicament is perfectly stable in aqueous solution, the obvious method of sterilization is that of autoclaving, an average procedure for most pharmacopœias being heating at 115° C. for thirty minutes. Unfortunately many medicaments are not stable in aqueous solutions under such conditions. For those which are very unstable there usually only remains the method of filtration through a bacteria-proof filter. In between the classes of very stable and very unstable medicaments is a very large class of substances which are only moderately stable and cannot withstand the conditions of autoclaving, but which can probably withstand 100° C. for thirty minutes in aqueous solution. The methods adopted for the sterilization of such solutions vary widely in different pharmacopœias and present our greatest problem. The medicaments concerned are very important and so frequently used that a quick method giving absolute sterility is essential. The sterility methods of the following pharmacopœias are given: British Pharmacopœia, 1932; Deutsches Arzneibuch VI, 1926; Pharmacopie Belge IV, 1930; Pharmacopœia Danika VIII, 1933; Nederlandsche Pharmacopœia V, 1926; Codex Medicamentarius Gallicus, 1937; Farmacopea D'Italia V, 1927; Farmacopœia Portuguesa, 1935; United States Pharmacopœia XI, 1935; Farmacopea Espanola VIII, 1927; Pharmacopeia Hungarica IV, 1934. The methods generally adopted can be divided into two classes: (1) Heating at 100° C. for thirty to sixty minutes. (2) The process usually known as tyndallization, involving heating for one hour on several successive days. The most interesting method is the second one (tyndallization), which has the advantage of obtaining sterility with low heat treatment. However, it is the experience of the author that in the majority of the cases tyndallization fails as an absolute method, for sporing organisms may survive the process when the conditions during the intervals are not suitable for spore development, because the p_H of the solutions are far removed from the optimum and other causes. The author has been searching for a quicker and much more reliable method of sterilization than the above, and the suggestion is put forward that absolute sterility could be obtained by incorporating a small quantity of some bactericide in the solutions and heating at 100° C. for thirty minutes. The two bactericides that appear to be ideal for such a purpose are *p*-chloro-*m*-cresol and phenylmercuric nitrate. Tests were carried out which showed that 0.25% of the former and 0.002% of the latter would fulfil all the bacteriological conditions. Two tables are given to show the results of acute and chronic toxicity tests performed with several bactericides, including *p*-chloro-*m*-cresol and phenylmercuric nitrate. The toxicity tests would appear to warrant the use of either of these two substances in the strengths mentioned above.—H. BERRY. *Pharm. J.*, 143 (1939), 311. (W. B. B.)

Sterilizing—Method of. Dried fruits, meat, sugar, tobacco, surgical instruments and dressings, soil, etc. are sterilized by treatment with ethylene oxide in the presence of a predetermined amount of water, the added water being sufficient to react with the ethylene oxide to produce ethylene glycol, the concentration of ethylene oxide and the time of exposure depending on the degree and nature of the contamination. The materials are preferably placed in a container which is evacuated before admission of the ethylene oxide.—P. M. GROSS and L. F. DIXON. U. S. pat. 2,075,845; through *J. Soc. Chem. Ind.*, 58 (1939), 894. (E. G. V.)

Sulfamethylthiazol Found to Protect Mice against Staphylococcus Aureus. In a joint report concerning the clinical use of this drug and its use in animal experiments this summary was given. About 70% of the mice injected with a killing dose of *S. aureus* were saved for ten days (the period of observation) by the injection of sulfamethylthiazol or its sodium salt.—GRAYSON CARROL, LOUIS KAPPEL, LLOYD JONES, FRED W. GALLAGHER and FRANCIS W. DI ROCCO. *Southern Med. J.*, 33 (1940), 83. (W. T. S.)

Sulfanilamide—Action of, in Vivo and in Vitro. When hemolytic streptococci were planted in 50% horse blood broth and sulfanilamide added at different intervals from the beginning of incubation it was found that the viable count began to fall only after the logarithmic phase of growth had lasted for 2 to 3 hours, *i. e.*, long enough for about 8 successive generations under the influence of the drug. If the drug was not added until near the end of the logarithmic phase the growth curve showed little or no deviation from that of the control culture without sulfanilamide, *i. e.*, there was no bactericidal effect. From these results the authors conclude (1) that the action of sulfanilamide is essentially upon the reproductive mechanism of the coccus; (2) that it is at its maximum under conditions which allow very rapid multiplication of the organisms; (3) that the greater activity of sulfanilamide in the presence of blood is attributable to the fact that blood favors rapid growth of the cocci; (4) that the bactericidal action *in vivo* (expressed in curative activity) is more striking in infections by virulent organisms because these multiply more rapidly than avirulent organisms. In the second part of the paper the authors contrast the very low toxicity of sulfanilamide for leucocytes and embryonic fibroblasts in tissue culture with that of antiseptics such as phenol or acriflavine. To this remarkably low toxicity for tissues, combined with its effect on the reproductive mechanism of streptococci, the authors ascribe the curative activity of sulfanilamide.—L. K. WOLFF and H. W. JULIUS. *Ann. inst. Pasteur*, 62 (1939), 616; through *Bull. Hyg.*, 15 (1940), 187. (T. C. G.)

Sulfanilamide—Mode of Action of, in Vitro. The authors have concerned themselves with Lockwood's observation that peptone interferes with the action of sulfanilamide on hemolytic streptococci in human serum. They found that when growth curves were made with rabbit serum instead of human serum, using one of Lockwood's own strains, peptone did not interfere with the bactericidal action if the experiment was so planned as to diminish the rate of growth of the cocci, *e. g.*, by incubation at 20° C. Nor did it interfere if incubation was made at 39–40° C. They conclude that sulfanilamide exerts a bactericidal influence upon hemolytic streptococci only if the organisms are multiplying slowly, and they consider that their work does not support Lockwood's contention that sulfanilamide interferes with the power of the streptococcus to utilize serum proteins.—J. T. WELD and L. C. MITCHELL. *J. Bact.*, 38 (1939), 335; through *Bull. Hyg.*, 15 (1940), 188. (T. C. G.)

Sulfanilamide—Study of Effect of, on Bactericidal Power of Whole Blood for Gonococcus. This drug increases the bactericidal power of the blood for the gonococcus independently of the development of specific antibodies; the concentration in the blood should be 5 mg. per 100 cc., which may be reached with a daily dosage of 5 Gm. If the drug is added to ascitic broth cultures it produces bacteriostasis.—C. S. KEEFER and L. A. RANTZ. *Am. J. Syphilis, Gonorrhea, Venereal Diseases;* through *Chinese Med. J.*, 56 (1939), 395. (W. T. S.)

Sulfapyridine—Response of Different Strains of Type I Pneumococcus to. Strains of type I pneumococcus varied considerably in their response to sulfapyridine. These variations were not as great as the variations between types, observed previously, for all the strains of type I pneumococcus were susceptible to therapy. Reinfection experiments indicated that there were marked variations in the antigenicity of the strains, but these differences could not be correlated with the effectiveness of sulfapyridine, and therefore were not responsible for the strain variations noted above.—L. H. SCHMIDT and CAROLYN HILLES. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 288. (A. E. M.)

Sulfathiazole—Bacteriostatic Effects of, upon Various Microörganisms. Its Therapeutic Effects in Experimental Pneumococcal Infections. Sulfathiazole is as effective a bacteriostatic agent as is sulfapyridine in broth cultures of certain strains of Lancefield's Groups A, D, and G *beta* hemolytic streptococci, *E. coli*, *Staphylococcus aureus*, Types I and II pneumococci and *B. proteus*. Sulfathiazole was slightly less effective than sulfapyridine in the control of experimental pneumococcal infections in mice. However, the more rapid absorption and excretion of sulfathiazole by the mouse partially invalidate the results of comparative therapeutic tests in which the drug is administered *per os* in acacia suspension.—PERRIN H. LONG and ELEANOR A. BLISS. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 324. (A. E. M.)

Syphilis—Evaluation of Laughlen Test for. The Laughlen test, carried out on uninactivated sera, shows an error of 18.06% compared with the Kahn test; 20.56% error when compared with the Kolmer-Wassermann test. On inactivated sera compared with the Kahn test there was an error of 10% by the Laughlen test. The Laughlen agglutination test for syphilis is too erroneous in its results to recommend its continued use in present form.—M. R. MOORE. *J. Lab. Clin. Med.*, 24 (1939), 973. (T. C. G.)

Tetanus Toxin Production on a Simplified Medium. The medium consists of casein acid hydrolysate with tryptophan, glucose and 1% of a commercial liver extract, as used in pernicious anemia. A high concentration of toxin is produced.—J. HOWARD MUELLER and PAULINE A. MILLER. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 389. (A. E. M.)

Thiazol Derivatives of Sulfanilamide and Experimental Beta-Hemolytic Streptococcal and Pneumococcal Infections in Mice. The chemotherapeutic effects of three thiazol derivatives of sulfanilamide under conditions of experimental streptococcal or pneumococcal infections are definitely superior to those of the parent substance and compare very favorably with those of sulfapyridine. On the basis of the superior margin of safety of sulfathiazol and particularly of sulfamethylthiazol, as compared with sulfanilamide and sulfapyridine, these new compounds appear promising.—O. W. BARLOW and E. HOMBURGER. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 317. (A. E. M.)

Thiazol Derivatives of Sulfanilamide—Bacteriostatic Action of Three, upon Bacteria in Broth Cultures. Sulfathiazol, sulfamethylthiazol and sulfaphenylthiazol were found to be superior to sulfanilamide and sulfapyridine in their inhibitory actions upon pneumococci I, II and III and *beta Streptococcus hemolyticus* Group A in concentrations as low as 5 mg.%. Concentrations of 1 mg.% proved the new compounds to be more effective against gonococcus than the parent compound and sulfapyridine. The methyl and phenyl compound were markedly bacteriostatic to *Staphylococcus aureus*. Sulfanilamide and sulfapyridine exerted a moderate degree of inhibition on the latter organism.—C. A. LAWRENCE. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 92. (A. E. M.)

Thiazol Derivatives of Sulfanilamide—Specific Chemotherapy of Experimental Staphylococcus Infection with. Sulfathiazol (2-sulfanilamidothiazol) and sulfamethylthiazol (2-sulfanilamidomethylthiazol) prolong the life of mice infected with a highly mouse virulent strain of *Staphylococcus aureus* and prevent the development and allow the healing of abscesses in kidneys and other organs in a significant number of animals.—O. W. BARLOW and E. HOMBURGER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 792. (A. E. M.)

Triboulets Test for Intestinal Infections—Note Concerning the Reliability of. The mercuric chloride-acetic acid reaction has proved positive in 100% of intestinal infections and hence should prove a valuable complement to bacteriological tests.—H. WIESBROCK. *Klin. Wochschr.*, 17 (1938), 1473; through *Chinese Med. J.*, 56 (1939), 190. (W. T. S.)

Tubercle Bacilli in Sputa—Concentration and Culture Methods for. The method of concentration employed was digestion with 4% sodium hydroxide and subsequent neutralization and centrifugation. Cultures were made on Petragnani's medium in screw top tubes with cork washers. Of the 796 sputa negative on direct examination, the smears of 23 or 2.9% were positive after concentration. Cultures were obtained from 25 or 4.5% of the 555 microscopically negative sputa; 18.2% of the total number of positive sputa for the year were obtained either by concentrated smear or by culture. It was found that all acid-fast bacilli isolated by culture must be tested for virulence in the guinea pig before they may be safely called tubercle bacilli. Cultures proved superior to animal inoculations when these methods were run in parallel on a series of 84 body fluids.—E. PETRAN and C. A. PERRY. *J. Lab. Clin. Med.*, 24 (1939), 539. (T. C. G.)

Tubercle Bacilli Vaccine—Sensitization and Antibody Formation with. *M. rhesus* monkeys were injected with a suspension of heat-killed tubercle bacilli in paraffin oil. From one to twelve weeks later complement fixing antibodies were detected and the animals were sensitized to tuberculin.—J. CASALS and J. FREUND. *J. Immunol.*, 36 (1939), 399. (T. C. G.)

Tubercle Bacillus—Action of Bacterial Substances on. The bacterial action of several substances on the tubercle bacillus was studied in cultures and *in vivo*. One per cent sodium cyanate, potassium cyanate and ammonium cyanate are very active at p_H 5. Biacetyl and vuzinum (isooctylhydrocupreine dihydrochloride) inhibit, and alcoholic solutions of eucupine and pyridine destroy, the bacillus. 30% alcohol is ineffective.—E. BAUMANN. *Klin. Wochschr.*, 17 (1938), 382–386; through *Chem. Abstr.*, 33 (1939), 3411. (E. G. V.)

Tuberculin, O.T. and P.P.D. in the Patch Test. A comparison between old tuberculin and purified protein derivative in the patch test was by saturating filter paper in each (the P.P.D was prepared as a 1% solution which is regarded as equivalent to standard O.T.), drying and applying the dried squares simultaneously under adhesive tape to 130 children. The results were not concordant in 30, of whom 27 were positive to O.T. and negative to P.P.D., and only three the reverse. O.T. therefore appears to be definitely superior to P.P.D. in this test, a result which cannot be satisfactorily explained.—H. VOLLMER and E. W. GOLDBERGER. *Am. J. Dis. Child.*, 58 (1939), 527; through *Bull. Hyg.*, 15 (1940), 103. (T. C. G.)

Tuberculosis—Diagnosis of, by Culture and Guinea Pig Inoculation. A report is made of the examination of 2439 specimens at the Los Angeles County General Hospital during the seven years from 1931 to 1938. Parallel examination by culture on Herrold's medium and guinea pig inoculation of urine, feces, sputum and exudates, was made. Of the total, 345 proved positive by inoculation, or culture or both. The results proved that inoculation was the most sensitive but since 13% gave positive growth with negative inoculation in the animals, both tests should be carried out on each specimen. A simple but successful method is described for growing organisms present in the cerebrospinal fluid. The fluid is centrifuged at high speed for one-half hour; then the supernatant fluid is poured off and 20% of filtered, inactivated human serum is added to the sediment in veal infusion broth. The tube is then corked and incubated. By this method meningococci, alpha and beta streptococci, staphylococci, pneumococci, *H. influenzae* and *Myco. tuberculosis* have been cultivated.—A. HOYT, F. HOLTZWART, B. KUNTZNER and R. T. FISK. *J. Lab. Clin. Med.*, 25 (1939), 88; through *Bull. Hyg.*, 15 (1940), 164. (T. C. G.)

Typhoid Bacilli—Selective Media for the Isolation of. A total of 2245 specimens of feces and urine were cultured for typhoid bacilli using various media in a comparative way. Wilson-Blair bismuth sulfite medium was found to produce 38.4% more positives than Endo; 38% more than eosin-methylene-blue and 80% more than Leifson's desoxycholate medium. The Difco modification of the Wilson-Blair medium used in these tests was found to be superior to the authors' original formula. Selenite F enrichment medium was shown to be superior to 30% glycerin water since typhoid bacilli multiply in the former but not in the latter. From the authors' experience of two years they believe the Wilson-Blair medium to be superior to any other plating medium for the isolation of the typhoid bacillus from feces and urine.—C. B. GUNTHER and L. TUFT. *J. Lab. Clin. Med.*, 24 (1939), 461. (T. C. G.)

Typhoid Fever—Laboratory Diagnosis and Control of. O suspensions are relied upon for agglutination tests since the O agglutinins are more specific and less influenced by the stimulus of non-enteric infections. Vi agglutinins seem to be present early as they have been noted in one small series in all cases examined before the fifth day, but they had disappeared in a quarter of the sera taken after the seventh day. They have been found constantly in permanent carriers but much less constantly in temporary or convalescent carriers. The typing of strains by Vi-phages is done with a series of patches of a young broth culture of the unknown strain sown on an agar plate and when they have dried, are spotted separately with a drop of nine different phages appropriately diluted so that they act selectively. The plate is incubated for two hours then after a night in the ice box it is reincubated. The result is readable in 4 to 6 hours. A disc of lysis is produced by the phage of the type to which the strain belongs.—J. S. K. BOYD. *Brit. Med. J.*, (Nov. 4, (1939)), 902; through *Bull. Hyg.*, 15 (1940), 158. (T. C. G.)

Typhoid Vaccine—Development of Agglutinins after Oral Administration of. A vaccine was prepared from three strains of typhoid, one strain of paratyphoid A and two strains of paratyphoid B bacilli. All strains were furnished with both H and O antigens, and were virulent for the rabbit and mouse. The typhoid strains in addition carried Vi antigen, being agglutinated by an anti-Vi serum to 1:200–1:500. The vaccine, containing bile, was given on two consecutive days by the mouth on a fasting stomach. A month later the agglutinin titer to each of the three types of organisms was measured. Of 227 sera tested, 155 proved to be devoid of all agglutinins in a titer of 1:20. Of the remaining 72 sera, 48 contained agglutinins to *Bact. typhosum* only, 2 to *Bact. paratyphosum* A only and 5 to *Bact. paratyphosum* B only, while 17 agglutinated two or more of these organisms. H agglutinins were more often present than O. The titer was usually low, 1:20 or 1:40. In only two instances did the H titer for the typhoid bacillus reach 1:160; while the O titer never exceeded 1:40. Vi agglutinins were not found. These observations, in agreement with other workers, suggest that oral vaccination against typhoid fever is not as effective as subcutaneous inoculation.—M. GUARNACCI. *Giorn. di. Batteriol. e. Immunol.*, 23 (1939), 352; through *Bull. Hyg.*, 15 (1940), 134. (T. C. G.)

Typhoid Vaccine—Effect of Dose of, on Immunity. In an attempt to determine the optimum number of organisms to be used in a typhoid vaccine the following experiments were carried out on rabbits. Nine groups of four rabbits of approximately the same weight were given five increasing doses subcutaneously of a 0.4% formolized vaccine made up with five smooth strains of typhoid bacilli. After the last injection their blood serum was examined quantitatively for agglutinins and bactericidins. The first group of animals started with a dose of 12.5 million and ended with one of 200 million. The ninth group started with a dose of 4000 million and ended with one of 6000 million. Judged by the agglutinin titers reached and to a less extent by the bactericidal titers, the animals that did best belonged to groups 4 to 8, the best of all being group 5. The animals of this group received doses running from 200 million to 3200 million. At the conclusion of the experiment resistance tests were made by inoculating the animals intravenously with a dose of 500 million typhoid bacilli. Most of the animals died, but a few survived in groups 4 to 9. On the whole the author concludes that the dosage of TAB vaccine used in many countries is excessive at the present time.—P. ZANNELLI. *Rend. ist. di Sanita Pubblica*, 2 (1939), 453; through *Bull. Hyg.*, 15 (1940), 94. (T. C. G.)

Typhus Fever—Vaccination against. The formalin-killed suspensions of Mexican rickettsiæ, prepared according to the methods of Zinsser and Castaneda were tested for their effect on guinea pigs and humans. Twelve persons who had not had a previous typhus infection were vaccinated and subsequently inoculated with large doses of typhus material from infected guinea pigs. None of these persons developed typhus fever. It was found necessary to inject at least three doses of the vaccine in order to protect guinea pigs against non-orchitic Mexican strains; while it was easy to immunize these animals with a single dose of vaccine against the orchitic strains of typhus. The apparent immunological differences between orchitic and non-orchitic Mexican strains are the same as those found between murine and European typhus. —F. VEINTEMILLAS. *J. Immunol.*, 36 (1939), 339. (T. C. G.)

Undulant Fever—Reliability of Agglutination Test for. In order to determine the reliability of the agglutination test for undulant fever, information concerning the symptoms and clinical diagnosis of 327 patients whose sera had been examined for brucella agglutinins was obtained through questionnaires sent to attending physicians. The results of the positive agglutination agreed with the clinicians' diagnosis in 81% to 89% of the cases. The negative agglutination test was substantiated by the clinical diagnosis in about 90% of the cases. An analysis of the data indicated that cross agglutinations were obtained in about 2% of the sera containing agglutinins for *E. typhi* or *B. proteus* X 19. Brucella agglutinins were found in approximately

3% of 650 sera from patients in one municipal tuberculosis sanatorium and in 9% of the 102 sera from the patients in another tuberculosis sanatorium. The transient and irregular behavior of these agglutinins and the absence of positive skin tests indicated that they were probably nonspecific or false reactions.—H. J. SHAUGHNESSY and T. C. GRUBB. *J. Lab. Clin. Med.*, 24 (1939), 298. (T. C. G.)

Virus Problem from Chemical Viewpoint. Review.—F. LYNEN. *Kolloid-Z.*, 85 (1938), 222–234; through *Chem. Abstr.*, 33 (1939), 2206. (E. G. V.)

Water—Simplified Bacteriological Examination of. A "bottle method" for testing the presence of coliform organisms in water is described, in which concentrated nutrient broth is added to the sample and the whole incubated overnight. Next day a loopful from the bottle is streaked on eosin-methylene-blue-agar and incubated until next day, when the colonies are transferred to lactose broth and Bacto brilliant-green bile 2% for confirmation. Coliform organisms, if present, appear in large numbers and are easily confirmed. The use of large quantities of sample is reasonable as slight contamination is as potential a source of danger as heavy contamination. It does not show the degree of contamination, but only the presence of contamination, in which case the degree is of no importance. The method is rapid, efficient, simple, saves time and material, makes lactose-broth fermentation tubes unnecessary in the presumptive test, and shows less false positives and more confirmed negatives than does the standard method. Sterile bottles containing concentrated broth could be used for sampling in the field, so that by the time the water reached the laboratory growth will have occurred and confirmation can proceed.—J. E. WEISS and C. A. HUNTER. *J. Am. Water Works Assoc.*, 31 (1939), 707–713; through *J. Soc. Chem. Ind.* 58 (1939), 785. (E. G. V.)

Zephiran—Action of a Quaternary Ammonium Type of Wetting Agent, on Metabolism of Microorganisms Associated with Dental Caries. The alkyl compound exerted on lactobacillus, *M. tetragenus*, *Staphylococcus albus*, an aerobic acid-producing diplococcus and Monilia yeast an inhibiting effect on respiration and glycolysis at dilutions of $M/10{,}000$ to $M/50{,}000$. The product is more efficacious than fluoride or iodoacetate.—BENJAMIN F. MILLER, ZELMA BAKER and R. W. HARRISON. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 705. (A. E. M.)

BOTANY

Botany—Advances in. A review for 1939.—F. E. DENNY. *News Ed.*, (*Am. Chem. Soc.*), 18 (1940), 58–63. (E. G. V.)

Colchicine—Note Concerning the Influence of, on Plant Chromosomes. The author predicted that the action of colchicine in speeding up mutation will enable man to duplicate many wild forms of plants and thereby minimize the significance of so-called varieties, to which authors have previously given high sounding names. The grower of plants will find colchicine useful in increasing the size of his plants and making heretofore sterile hybrids fertile.—WILLARD N. CLUTE. *Am. Botanist*, 46 (1940), 18. (W. T. S.)

Growth Substances—Synthetic. Softwood cuttings of 89 species of ornamental plants responded favorably to treatment for 24 hours with solutions of indolebutyric acid (0.5–2.0 mg./100 cc.). Only one plant, *Cornus florida rubra*, showed no rooting of untreated cuttings but good rooting when treated. In general, the rooting percentage between untreated and treated cuttings was not changed by the use of indolebutyric acid if the untreated cuttings were allowed to remain in the bench the normal length of time. By treating the cuttings, the time required to reach the normal rooting percentage was reduced. With plants that produce roots with a definite arrangement in regard to the node and position of cut, treatment with indolebutyric acid failed to change the relationship. Narrowleaf evergreens difficult to propagate by cuttings were not benefited by treatment. With softwood cuttings the quality of the root systems was greatly improved by treatment with growth substances.—L. C. CHADWICK and D. C. KIPLINGER. *Trans. Iowa State Hort. Soc.*, 73 (1938), 171; through *Chem. Abstr.*, 34 (1940), 2025. (F. J. S.)

Hemicelluloses—Extraction of, from Plant Material. On the basis of the results cited here, the explanation advanced that the break in the extraction curve for beet pulp is due to pectin present is apparently valid as far as the acid extraction is concerned. After pectin has been removed from the beet pulp with ammonium oxalate, a smooth acid extraction curve is obtained. This idea was further corroborated (though not conclusively) by the smooth acid extraction curve for sweet potato pulp. The above explanation does not hold in case of alkaline extraction of hemicelluloses. The break is present in alkaline extraction curves for both treated beet and treated sweet potato pulps.—E. YANOVSKY. *Ind. Eng. Chem.*, 31 (1939), 1245–1246. (E. G. V.)

β-Indolylacetic Acid—Effect of, upon the Size of Starch Grains of Potato (Solanum Tuberosum). After treatment of the seed pieces with β-indolylacetic acid (I), the yield of tubers was considerably increased and the starch granules were larger than usual. Likewise a subsequent effect of the more vigorous development could be observed in the following vegetative period. Varieties differed in their sensitivity to added I. Even leaf cuttings demonstrated the effect of the concentration of I upon the size of the starch granules. Preliminary trials with other plants indicated a general application of this relationship.—M. ZIKA. *Planta*, 30 (1939), 151; through *Chem. Abstr.*, 34 (1940), 2023. (F. J. S.)

Lactuca Virosa—Relationship between the Bitter Principles of the Latex of, and the Nature of the Soil. VIII. Bitter Principles of the Latex of Lactuca Virosa.—G. SCHENCK and H. GRAF. *Arch. Pharm.*, 277 (1939), 297–305. (L. K.)

Marijuana Extermination in the United States. The author doubts that the destruction of so much *Cannabis sativa*, as is carried out in the United States at the present time, serves a useful purpose since this plant is harmless. It was pointed out that the Asian hemp is harmful and in an attempt to eradicate it many innocent plants are being destroyed.—WILLARD N. CLUTE. *Am. Botanist*, 46 (1940), 20. (W. T. S.)

Medicinal Plants. The relative values of natural and synthetic drugs are discussed.—I. ESDORN. *Ber. deut. botan. Ges.*, 57 (1939), 166–175; through *J. Soc. Chem. Ind.*, 59 (1940), 85. (E. G. V.)

Mounting Media—Two New, Superior to Canada Balsam and Gum Dammar. Nevillite V and Nevillite No. 1 (synthetic cycloparaffin or naphthalein polymers) are described.—R. A. GROAT. *Anat. Record*, 74 (1939), 1–6; through *Chem. Abstr.*, 33 (1939), 5426. (E. G. V.)

Passion Flower—Meaning of Its Name. In an article explaining the derivation of certain plant names the authors made this statement. The *Passiflora incarnata* (may-pop) is so called because the early explorers thought they could see within the flowers of this plant all the implements and objects of the crucifixion.—ANON. *Am. Botanist*, 46 (1940), 7. (W. T. S.)

Phyllanthus Emblica L. as a Source of Vitamin C. The berries of this plant are known to be one of the richest sources of vitamin C, containing up to 7 mg. of this vitamin per Gm. of pulp. The present investigation is concerned with the vitamin C potency of the fruit after it was dried and stored. Although the pulp loses some of its vitamin C content on drying it retains a rich source of this vitamin as determined by the indo-phenol method and a biological assay. The dried pulp must be preserved by refrigeration. Several methods for preserving the fruits are discussed and its use in infant feeding is considered.—K. V. GIRI. *Indian J. Med. Research*, 27 (1939), 429. (W. T. S.)

Seeds—Effects of Alkali Salts on Germination of. Seeds were germinated in 50 Gm. of soil or sand in Petri dishes to which varying concentrations of NaCl were added. The smallest concentrations of NaCl stimulated germination. When this was exceeded, the seeds were injured. The order of decreasing sensitivity of seeds to NaCl injury was corn, oats, wheat, barley, peas, sugar beet, red clover, mangold, mustard, lucerne and paddy. Delay in time of germination and injury to barley was in the following order of decreasing severity: Na_2CO_3, $MgCl_2$, NaCl, Na_2SO_4. The presence of 0.5% $CaSO_4$ decreased injury caused by Na_2CO_3 and $MgCl_2$.—B. T. MULWANI and A. G. POLLARD. *Agr. Live-stock India*, 9 (1939), 548; through *Chem. Abstr.*, 34 (1940), 2026. (F. J. S.)

Yeast—Growth Substance in. A discussion and review of the bios question.—A. L. SCHADE. *Commun. Sci. Practice Brewing*, 4 (Dec. 1938), 36–40; through *Chem. Abstr.*, 33 (1939), 3414. (F. J. S.)

Yeast—Longevity of. Tests on a culture of *S. cerevisiæ* in a sucrose solution prepared 44 years ago by J. S. Ford indicate no changes in morphology or sporulation characteristics.—L. FLETCHER and T. MANSON. *J. Inst. Brewing*, 45 (1939), 96; through *Chem. Abstr.*, 33 (1939), 3414. (F. J. S.)

CHEMISTRY

GENERAL AND PHYSICAL

Amino Acids—Dielectric Properties and Ionization Constants of. The dielectric constants of solutions of the amino acids, glycine, glycylglycine alanine and ε-aminocaproic acid were measured at 20° and 100 cycles/second in a modified form of the Furth cell. These measurements were over a range of p_H extending to either side of the isoelectric points. Values of the ionization constants were calculated to be for glycine, $pK_a = 2.79$ and $pK_b = 9.39$; alanine, $pK_a = 2.882$ and $pK_b = 9.535$; glycylglycine, $pK_a = 2.45$ and $pK_b = 8.06$; ε-aminocaproic acid, $pK_a = 4.15$ and $pK_b = 11.2$. Similar measurements were made for the aminosulfonic acids, taurine and sulfanilic acid. The zwitter-ion hypothesis is quantitatively applicable and the results indicate that the whole of the ampholyte is converted to the zwitter-ion form only over an extremely narrow range of p_H (about 2.4 to 2.6).—W. CARR and W. J. SHUTT. *Trans. Faraday Soc.*, 35 (1939), 579–587; through *Chem. Abstr.*, 33 (1939), 5259. (E. G. V.)

Barbituric Acids—Effect of Variation in Ionic Strength and Temperature on the Apparent Dissociation Constants of Thirty Substituted. The author's paper is summarized as follows: (1) By means of glass electrode p_H measurements, the effects of variation in sodium chloride concentration on the pK' values of thirty substituted barbituric acids have been determined at 25° C. With concentrations of sodium chloride up to 2 molar, the relation between pK' and the ionic strength is approximately expressed by one form of the Debye-Hückel equation. By means of this equation, pK values at 25° C. have been calculated for all of the acids employed. (2) The effects of variation in temperature on the pK' and pK values of 5-isoamyl-5-ethylbarbituric acid have been determined at temperatures between 15° C. and 40° C., and the values of the standard free energy change, $\Delta F°$, have been calculated. For this acid in this temperature range the relation between $\Delta F°$ and temperature is expressed by the usual thermodynamic equations, in which $\Delta S°$, the standard entropy change, has a value of −3.1 calories per degree. (3) It has been shown that, by means of the experimental data here presented and an equation derived for this purpose, the approximate pK' values of the thirty substituted barbituric acids can be calculated for any ionic strength and any temperature within the physiological range.—M. E. KRAHL. *J. Phys. Chem.*, 44 (1940), No. 4, 449–463. (F. J. S.)

Beer's Law of Absorption—Application of, to Solutions. Application of Beer's law to the solutions of potassium dichromate, picric acid, didymium nitrate, methyl violet, methylene blue, chromic acid, nickel nitrate, nickel sulfate, nickel chloride and cobalt chloride has been tested. It is observed that nickel chloride and cobalt chloride behave similar to cupric chloride and do not obey Beer's law. The results also indicate that ionization alone is not responsible for the deviation from Beer's law.—W. V. BHAGWAT. *J. Indian Chem. Soc.*, 17 (1940), 53. (F. J. S.)

Cataphoretic and Electro-Osmotic Methods of Measuring Electrokinetic Potential—Comparison of the. The electrokinetic potential of a number of suspensions has been measured by the cataphoretic and the electro-osmotic methods and the results obtained by the two methods have been found to agree between themselves.—B. N. GHOSH and P. C. ROY. *J. Indian Chem. Soc.*, 16 (1939), 634. (F. J. S.)

Colloidal Solutions—Mutual Coagulation of. Interaction of Copper Ferrocyanide with Ferric Hydroxide, Thorium Hydroxide and Ceric Hydroxide. Mutual coagulation of copper ferrocyanide and ferric hydroxide, copper ferrocyanide and thorium hydroxide, and copper ferrocyanide and ceric hydroxide has been studied. It has been observed that the width of the zone of mutual coagulation is minimum when the charge on the colloidal particles of the reacting sols is maximum, the value of the minimum width also depending upon the hydration of the particles. The width of the zone of mutual coagulation seems to be controlled mainly by the charge on the colloidal particles, the fact whether the peptizing electrolytes and other impurities present in the sols chemically react or not on mixing them being unimportant.—P. M. BARVE, V. C. VORA and B. N. DESAI. *J. Indian Chem. Soc.*, 16 (1939), 645. (F. J. S.)

Crystallization. A review from the chemical engineering viewpoint.—R. K. ABRAMS. *J. Proc. Austral. Chem. Inst.*, 6 (1939), 181–192; through *J. Soc. Chem. Ind.*, 58 (1939), 897. (E. G. V.)

Fine Powders—Specific Surface of. A study has been made of the permeability method for the determination of the specific surface of fine powders described by Carman. While the use of liquids has been found to give high results when the specific surface exceeds about 1000 square cm. per Gm., an air-permeability method has been found satisfactory for cements with specific surfaces up to 4000 square cm. per Gm. and should be applicable to other fine powders. A comparison of the Wagner photoelectric sedimentation method and the Andreasen sedimentation method with the air-permeability method has been made and the latter two are shown to yield results in good agreement when Andreasen's definition of particle diameter is used. The air-permeability method has advantages over any alternate methods at present in use for the determination of surface area, being rapid and of satisfactory reproducibility, but other methods are necessary if particle size distribution curves are required.—F. M. LEA and R. W. NURSE. *J. Soc. Chem. Ind.*, 58 (1939), 277–283. (E. G. V.)

Hunter Multipurpose Reflectometer—Preliminary Report on the Suitability of the, for Color Measurement of Near Whites. A series of results are tabulated and the instrument is recommended to measure and specify an acceptable chromaticity range for near whites.—KENNETH L. KELLY. *Bull Natl. Formulary Committee*, 8 (1940), 229–236. (H. M. B.)

Interfacial Tension and Adhesion. A review of the fundamental ideas of surface tension and interfacial tension of liquids is presented. When a liquid wets a solid three forces act: the adhesion of the liquid on the solid; the surface tension between the liquid and its vapor; and the force between the gaseous molecules and the solid. The first equals the second plus the third. Adhesion is a function increasing or decreasing with temperature depending on whether the increase of surface of contact causes a decrease or increase of entropy. Adhesion is an increasing function of pressures if the adhering liquid is more dense than the body of the liquid. Mathematical equations are developed for forces of adhesion of both gases and liquids on a solid. No new experimental data of others are made.—F. MICHAUD. *J. chim. phys.*, 36 (1939), 23–35; through *Chem. Abstr.*, 33 (1939), 5262. (E. G. V.)

Isoelectric Point of Some Amino Acids—Determination of. The amino acid under investigation is added to solutions of known p_H. That solution the p_H of which does not change after addition of the amino acid shows the isoelectric point. The p_H at the isoelectric point for sarcosine was found to be 6.00, for glycylglycine 5.70, leucylglycylglycine 5.60, aceturic acid 2.50, hippuric acid 2.70, valine 5.90 and leucine 5.85.—O. BELFIORI. *Rend. seminar. facoltá sci. univ. Cagliari*, 6 (1936), 107–116; through *Chem. Abstr.*, 33 (1939), 5259. (E. G. V.)

Melamine—Space Group Determination of the Crystals of. The dimensions of the unit cell of the crystal of melamine have been found to be a = 10.52 Å.; b = 7.44 Å.; c = 7.33 Å. The list of reflecting planes in the crystal shows that the planes (hol) are halved if h is odd and (olo) is also halved. These halvings assign the crystal to the space group C^5_{2h}. The number of molecules in the unit cell is four.—JAGDISH SHANKER, PRABHAKAR N. BALJEKAR and MATA PRASAD. *J. Indian Chem. Soc.*, 16 (1939), 671. (F. J. S.)

Osmotic Relationships between Egg White and Egg Yolk and the Effects of Injection of Sodium Fluoride and Potassium Cyanide Thereon. The average difference in freezing point between egg yolk and egg white has been found to be 0.07°. Sodium fluoride solution has been injected underneath the shell and the effects of the injection on the difference in freezing point are noted for 72 hours, showing that the difference in freezing point is reduced from day to day. This difference is not due to the Donnan equilibrium between the two sides of the vitellin membrane but is due to a "dynamic steady state" maintained by the vitality of the membrane. The results of the injection of potassium cyanide are anomalous and an explanation has been suggested.—N. M. BASU and M. C. MITRA. *J. Indian Chem. Soc.*, 17 (1940), 111. (F. J. S.)

Powdered Materials—Measurements of the Firmness of. Definitions of size and shape applicable to small and irregular particles are given. The limitations of sieves and sieving operators are discussed, and the alternative methods dependent on the relative movements of the powder and a fluid, adsorption of the surface, light adsorption of a suspension, microscopic counts, etc., are considered with regard to their accuracy and convenience of application. Tables and sample calculations are given which facilitate the interpretation of experimental data, and enable the results from several of these methods to be evaluated on a comparable basis. The importance of the size distribution and the total surface area as characteristic of a given powder are stressed.—H. HEYWOOD. *Inst. Mech. Engrs.* (London), Nov., (1938), 52 pages (preprint); through *Chem. Abstr.*, 33 (1939), 5262. (E. G. V.)

Therapeutic Colloids—Preparation of. A mixture of lanolin or similar material and ethyl alcohol is poured into about 3 times its volume of distilled water, and after removal of ethyl alcohol by heat the emulsion, with sugar if desired, is filtered and employed either subcutaneously or parenterally as a detoxicant.—G. W. BOERICKE and W. W. YOUNG. Brit. pat. 508,288; through *J. Soc. Chem. Ind.*, 58 (1939), 997. (E. G. V.)

INORGANIC CHEMISTRY

Boron—Determination of, in Plants. By means of the quinalizarin color reaction it is possible to detect 0.0001 mg. of boron in plants and other materials. Plants are first ignited to a gray ash which is taken up with dilute acid.—K. C. BERGER and E. TRUOZ. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 540–545. (E. G. V.)

Bromine by a New Process. According to a report from the American Consulate-General, Frankfort-on-Main, a new process has been patented recently in Germany for producing bromine from potassium salts, including chloride. The method is stated to offer considerable advantages over processes hitherto employed. The raw material generally used for bromine production in Germany has been the cold mother liquors that accumulate in the plants producing potash chloride and other salts; these liquors are gradually enriched by bromine. In processes hitherto used, such mother liquors are heated to around 110° C. and the bromine is driven off in bromine towers. Considerable amounts of bromine are thus lost through evaporation. It is claimed that the new patented process recovers bromine from the hot solutions prior to cooling and before crystallization of the salts. The yield of bromine, some of which would otherwise be separated out with the chlorides, is thus increased and there is also no need for a second heating, so that a saving of fuel is effected. Moreover, the salts obtained from the hot bromine-free solutions are automatically freed from bromine without further special processing, and are thus in the condition required for use in many technical operations, especially the electrolysis of alkali chlorides. The report states that neither the Consulate nor the Bureau of Foreign and Domestic Commerce has investigated the merits of the discovery, and it is not known if the process has been adopted on a large scale in Germany itself.—ANON. *Chemist and Druggist*, 132 (1940), 32. (A. C. DeD.)

Calcium Arsenate—Manufacture of. In the manufacture of basic calcium arsenate by the addition of arsenic acid to lime slurry with agitation, a method for obtaining a basic calcium arsenate having amorphous-like properties and a total water-soluble arsenic content less than 0.75%, comprises maintaining a body of lime slurry in a state of agitation, introducing a further quantity of lime slurry by means of an impeller type pump, and simultaneously introducing arsenic acid into the suction side of the pump, the rate of addition of lime slurry and arsenic acid being so adjusted that the excess of lime initially present in the reaction mixture gradually diminishes to an end point at which the reaction product contains about 41% of arsenic oxide.—IVAN L. HAAG, assignor to E. I. DU PONT DE NEMOURS & CO. U. S. pat. 2,166,246, July 18, 1939. (A. P.-C.)

Chromium Chromate. Chromium chromate has been prepared from chromic chloride solution and silver chromate by double decomposition. The substance forms a brown glassy mass in the dry state, which is soluble in water. A study of the physical properties of its aqueous solution, such as the measurement of equivalent conductivity, freezing point, p_H value, magnetic susceptibility and absorption spectra, as well as of its chemical properties, shows that it is not a simple chromic chromate, $Cr_2(CrO_4)_3 \cdot 3H_2O$, but contains a complex chromato-chromiate anion and should be represented as $Cr\left[Cr\begin{matrix}(CrO_4)_3\\(H_2O)_3\end{matrix}\right]$.—PRODOSH CHANDRA ROY CHAUDHURY. *J. Indian Chem. Soc.*, 16 (1939), 652. (F. J. S.)

Hydrogen Peroxide—Evaluation of. A comparison of results obtained by using *N*/10 solutions of potassium permanganate (I), sodium thiosulfate (II) after evolution of iodine from acid potassium iodide, and titanous chloride (III) on solutions of hydrogen peroxide which had been stabilized with various organic and inorganic stabilizers indicated that I and II gave identical results on the same solutions but that III gave low results on all stabilized solutions. Experiments showing the action of a catalase solution, prepared from liver, on the solutions of hydrogen peroxide indicated that solutions stabilized with sulfuric acid were decomposed very slowly by catalase solutions. Sulfuric acid appeared to be the inhibitor since hydrogen peroxide solutions, neutralized previously, were quickly decomposed by fresh catalase solutions. If the acid hydrogen peroxide solutions were mixed with the catalase solution and subsequently neutralized no decomposition occurred.—S. M. TRITTON. *Analyst*, 64 (1939) 469. (G. L. W.)

Hydrogen Peroxide—Method of Production of. Apparatus is described, and a process which involves subjecting a solution (such as an aqueous solution of ammonium persulfate and sulfuric acid) capable of yielding hydrogen peroxide on heating, to the action of a high-frequency electric field having a frequency of at least the order of magnitude of 10^6 alternations per second and arising from electrically conducting means out of direct contact with the solution being subjected to the field.—JOHANNES A. L. VAN DER LANDE, assignor to N.-V. INDUSTRIEELE MAATSCHAPPIJ VOORHEEN NOURY & VAN DER LANDE. U. S. pat. 2,163,898, June 27, 1939. (A. P.-C.)

Hydrogen Peroxide—Process for the Production of. Barium peroxide is added to phosphoric acid and the addition is interrupted while the mixture is still acid; the mixture is heated (suitably to about 35° C.); an excess of a carbonate such as barium carbonate is added, and the product is filtered.—ISSAR BUDOWSKI, assignor to COMPAGNIE PARISIENNE DE PRODUITS CHIMIQUES. U. S. pat. 2,153,658, April 11, 1939. (A. P.-C.)

ORGANIC

Alkaloids

Alkaloids in Cinchona Bark—Determination of. II. On the basis of a large number of experiments the following conclusions are drawn: When the prescribed hydrochloric acid for the decomposition of the alkaloids is omitted in the determination (Swiss Pharm. V) and the drug (No. 5 or 6 powder) is heated only with water scarcely distinguishable differences result; if formic acid is used the alkaloidal content is found to be higher. With a No. 4 powder the content is about 4% higher than when hydrochloric acid is used. High values are obtained with formic acid. If the bark is heated only with water, only about 50% of the alkaloids are dissolved. By the use of hydrochloric acid and formic acid there is not complete decomposition of the alkaloidal tannates. In the determination a certain portion of the alkaloids are liberated by the excess of alkali.—HANS WOJAHN. *Deut. Apoth. Ztg.*, 54 (1939), 1224–1226. (H. M. B.)

Alkaloids—Microchemical Tests for. Collaborative study of microchemical tests for berberine hydrochloride (addition of hydrochloric acid to a 1 in 200 or 1 in 400 solution of the alkaloid), cotarnine (chloroplatinic acid, mercuric chloride, potassium ferrocyanide), narceine (chloroplatinic acid, Wagner's or other iodized reagents gives characteristic blue crystals), narcotine (liberation of the free alkaloid by alkali such as potassium, or preferably ammonium, hydroxide) gave satisfactory results, and adoption of the tests as tentative is recommended. The technic of the tests and description of the crystals are given in *J. Assoc. Official Agr. Chem.*, 22 (1939), 88.—C. K. GLYCART. *J. Assoc. Official Agr. Chem.*, 22 (1939), 706–709. (A. P.-C.)

Alkaloids—Styphnic Acid and Picric Acid in the Microchemical Detection of. Picric acid (trinitrophenol) and styphnic acid (2,4,6-trinitro resorcinol) give characteristic precipitates with alkaloids and their salts which may be used for identifying them. Atropine picrate, quadrangular plates, melting point 175° to 176° C., can detect 0.00001 Gm. of atropine. Atropine styphnate, yellow plates melting at 176° to 178° C. Brucine picrate, prismatic crystals, melting point 280° C. Brucine styphnate, orange-yellow hexagonal crystals, which decompose at 300° C. without melting. Quinine picrate forms a voluminous amorphous mass that melts about 138° C. Quinine styphnate, yellow needles melting at 149° to 150° C. Cocaine picrate, melting with decomposition at 165° to 166° C. Cocaine styphnate, needles that melt with decomposition at 196° to 197° C. Codeine picrate, crystals melting at 202° to 208° C. Codeine styphnate, well separated needles that melt with decomposition at 195° C. Morphine picrate, amorphous mass melting about 288° C. Morphine styphnate, yellow needles melting at 201° to 202° C. Strychnine picrate, dendritic crystals which decompose about 270° C. Strychnine styphnate, prisms mixed with amorphous masses, melting at about 265° C.—A. OLIVERIO. *Ann. chim. applicata*, 28 (1938), 353–363; through *Chimie & Industrie*, 41 (1939), 1073–1074. (A .P.-C.)

Allolupinine—Synthesis of. XVIII. Lupinene Alkaloids. The preparation of the following is described: *ζ*-chloro-*γ*-valerolactone; *ζ*-ethoxy-*γ*-valerolactone; condensation of ethyl ester of picolinic acid with *ζ*-ethoxy-*γ*-valerolactone to give *α*′-[*ζ*-ethoxy-*γ*-valerolactonyl-]ketone; saponification of *α*-pyridyl-*α*′-[*ζ*-ethoxy-*γ*-valerolactonyl-]ketone to the *α*-pyridyl-*α*′-[*ζ*-ethoxy-*γ*-oxy-*n*-butyl-] ketone; hydration of the *α*-pyridyl-*α*′-[*ζ*-ethoxy-*γ*-oxy-*n*-butyl-]ketone to *α*-[*α*′-piperidyl-]*α*,*ζ*-dioxy-*ε*-ethoxy-*n*-propane; ring closure of *α*-[*α*′-piperidyl-]*α*,*ζ*-dioxy-*ε*-ethoxy-*n*-propane to 4-ethoxymethyl-octahydropyridocoline; saponification of 4-ethoxymethyl-octahydropyridocoline with hydriodic acid to allolupinine.—K. WINTERFELD and

F. W. HOLSCHNEIDER. *Arch. Pharm.*, 277 (1939), 221–237. (L. K.)

Astragalus Earlei (Loco Weeds)—Isolation of α- and β-Earleine from. The serious stock loss in the range country caused by "loco weeds" has stimulated this and previous investigations of these plants. Generally, it is possible to divide "loco weeds" into two groups: those whose toxicity is attributed to the presence of selenium and those whose toxicity is due to substances other than selenium or its compounds. It is the second group which is the subject of this report. The toxic locoine tartrate has previously been isolated from the weeds but it was always contaminated with potassium tartrate due to the relatively large amount of potassium in the plant. From an aqueous extract of the weed, freed of potassium ions by a zeolite (Decalso) and rid of certain unwanted bases by precipitation with phosphotungstic acid, it has now been possible to isolate two alkaloids in a state of purity. (The procedures are described in detail.) The alkaloids were strikingly alike, separable only by chromatographing a solution of their picrates over aluminum oxide. They have, therefore, been designated as α- and β-earleine, respectively. Both alkaloids appear to be triacidic bases but their molecular formulæ were not determined due to a lack of material. Neither of the alkaloids appear to be toxic to cats.—DONALD C. PEASE and ROBERT C. ELDERFIELD. *J. Org. Chem.*, 5 (1940), 192. (W. T. S.)

Bordeaux B—Strychnine Compound of. Strychnine Azorubrate. In the extraction of strychnine from Borbeaux B, when the strychnine is extracted by chloroform after addition of sodium hydroxide, a better result is reached if the excess of alkali is allowed to react for two or three days instead of the usual few minutes; this is proved by experiment. Using the modified method for determination of the strychnine, results close to the theoretical (58.69 %) were obtained.—D. B. DOTT. *Pharm. J.*, 143 (1939), 527. (W. B. B.)

Calycanthine—Structural Formula of. Calycanthine is an alkaloid obtained from two species of *Calycanthus* but not from a plant of the family, *Compositæ*, as has been previously claimed. From a study of the products obtained by benzoylation, catalytic reduction, and selenium degradation of calycanthine, the authors have proposed a constitutional formula for this alkaloid. Their formula differs from that offered by Barger *et al.* (*J. Chem. Soc.*, (1939), 510) for the same alkaloid. It was suggested that Barger *et al.*, arrived at their formula from preconceived notions of biogenesis which are not in agreement with chemical data. A discussion of Barger's formula is included.—RICHARD H. F. MANSKE and LEO MARION. *Can. J. Research*, Sec. B, 17 (1939), 293–301. (W. T. S.)

Colombo Root and Its Preparations—Assay of. Various possibilities for the estimation of alkaloids in colombo root and its preparations were investigated. It appears that the palmatine can be estimated as picrolonate after extracting with ether of the strongly caustic soda solution of jatrorhizine and columbamine, estimation of the remaining two alkaloids by reduction of the quaternary to tertiary bases, which are readily extracted with ammoniacal ether and titrated. It is preferable, however, to estimate the total alkaloid content after reduction of the bases and subsequent titration of the dihydrodesoxypalmatine which has been isolated from the primary tincture rendered strongly alkaline with sodium hydroxide. Reduction is best effected with zinc powder or amalgamated zinc shavings. The total alkaloid (palmatine and jatrorhizine) content of various samples of colombo root, its tincture and the primary tincture is reported as above determined. Former observations on the wide variation in the ratio of jatrorhizine to palmatine in different preparations was confirmed.—H. NEUGEBAUER and K. BRUNNER. *Arch. Pharm.*, 276 (1938), 199–206; through *Chimie & Industrie*, 41 (1939), 522. (A. P.-C.)

Corydalis Lutea—Investigation of the Alkaloids from. M. has previously shown that the chemical examination of *Fumariaceous* plants offer a means of resolving disputed points of the taxonomy. M. now reports on a chemical examination of *Corydalis lutea* which was made in an attempt to more accurately classify this plant among certain other closely related species. *C. lutea* yielded 7 alkaloids, 4 of which, namely: protopine, *l*-tetrahydro-palmatine, *l*-isocorypalmine and isocorydine, are found elsewhere. The occurrence of isocorydine, without corydine, is unique thus far. Three new alkaloids have been found; something of their structure determined and names suggested for each. The close relationship of *C. lutea*, *C. claviculata* and *C. ochroleuca*, which has been proposed on morphological grounds, is disputed by the findings of the chemical examination. From *Corydalis ochroleuca* Koch., 8 alkaloids, 3 of which, namely protopine, *l*-tetrahydropalmatine and *l*-isocorypalmine are found in *C. lutea.* Three of the 8 alkaloids have been isolated from other sources. Two apparently new alkaloids have been found. One alkaloid ($C_{20}H_{19}O_8N$) referred to as alkaloid F45 is phenolic while the other ($C_{11}H_9O_2N.{}^1/_2H_2O$) referred to as alkaloid F46 contains a methylene-dioxy group.—RICHARD H. F. MANSKE. *Can. J. Research*, Sec. B., 17 (1939), 89–98. (W. T. S.)

Curchi Alkaloids. II. Conessine and Its Related Bases. Methods of obtaining conessidine, concurchine, concurchinine and curchine are described. There is also a table giving names, empirical formulæ, melting points, specific rotations, number of *N*-methyl groups of, and the number of iodine atoms taken up by, the known holarrhena bases. Seventeen references.—ALFRED BERTHO. *Arch. Pharm.*, 277 (1939), 237–257. (L. K.)

Ephedrine—Note Relative to a Synthesis of. Reduction of acetophenone in concentrated ammoniacal alcohol, in presence of nickel, is rather slow, even at the start, and cannot be pushed to completion, even though fresh nickel is added. The reaction product is a mixture of α-phenylethylamine (15%), phenylmethylcarbinol (40%) and unchanged acetophenone. On the other hand, under the same conditions benzyl methyl ketone is converted rapidly and nearly quantitatively into β-phenylisopropylamine. By subjecting a mixture of phenylpropanedione in alcoholic solution and a slight excess of 33% aqueous methylamine solution, to hydrogenation in presence of Raney's nickel, there is at first a rapid and constant absorption of hydrogen, followed by a marked decrease in the rate of absorption when half the theoretical amount of hydrogen has been absorbed. Absorption ceases before reaching the theoretical value. The final product consists chiefly of *d-l*-ephedrine which is obtained in fairly good yield.—P. COUTURIER. *Compt. rend. acad. sci.*, 207 (1938), 345–347; through *Chimie & Industrie*, 41 (1939), 730. (A. P.-C.)

Ergot Alkaloids—Determination of. In the previously described (*J. Assoc. Official Agr. Chem.*, 21 (1938), 538–541) colorimetric method, extraction of crude ergot in a Soxhlet extractor by the U. S. P. menstruum (Process C percolation with acidified 50% alcohol) removes only 50% to 75% of the amount of alkaloid that can be extracted with ether.—LLOYD C. MILLER. *J. Assoc. Official Agr. Chem.*, 22 (1939), 719. (A. P.-C.)

Fumariaceous Plants—Alkaloids of. In addition to corypalline, the isolation of which has already been recorded, *Corydalis pallida* Pers. has yielded five known and two new alkaloids. The known bases are—protopine, *d*-and *dl*-tetrahydro-palmatine, capaurine and capauridine. The new alkaloids are capaurimine (F50), $C_{20}H_{23}O_5N$ (phenolic; two hydroxyl and three methoxyl groups), and alkaloid (F51), $C_{20}H_{23}O_4N$ (one hydroxyl and three methoxyl groups). Capaurimine on methylation yields capaurine O-methyl ether, the *dl*-form of which is identical with capauridine O-methyl ether. Alkaloid (F51) on methylation yields *dl*-tetrahydropalmatine but it is not identical with the known *dl*-bases of the same formula.—Richard H. F. Manske. *Can. J. Research,* Sec. B, 18 (1940), 80. (W. T. S.)

Fumariaceous Plants—Alkaloids of. The alkaloids of *Corydalis ochotensis* consist of four known bases, namely, protopine, cryptocavine, ochotensine, and aurotensine, together with two new ones, namely, ochotensimine (F48) and alkaloid (F49). Ochotensimine is the O-methyl ether of ochotensine. It has not been obtained crystalline, but it has been characterized as the methiodide and the derived dihydro-methine base. In addition to acetylornithine, the isolation of which has already been recorded, fumaric acid and maltol were also found.—Richard H. F. Manske. *Can. J. Research,* Sec. B, 18 (1940), 75. (W. T. S.)

Glaucium Flavum Crantz—Alkaloids of. In continuing his studies concerning the relationship of the chemical constituents of a plant to its taxonomic features, Manske makes this report. An exhaustive examination of *Glaucium flavum,* a papaveraceous plant, has revealed the presence of luteanine, isocorydine, aurotensine and the alkaloid F47 (not yet characterized) in addition to the two alkaloids already known to be present, namely protopine, glaucine. Since there are some twenty ill-defined species of the genus *Glaucium* it is thought that the identification of their alkaloids, especially the new ones, will be an aid in the classification of the species in this genus.—Richard H. F. Manske. *Can. J. Research,* Sec. B., 17 (1939), 399–403. (W. T. S.)

Lycopodium—Alkaloids of. *Lycopodium clavatum* L. contains about 0.12% of alkaloids, of which three were isolated and obtained in crystalline form. Isolation was effected by consecutive crystallization from acetone and petroleum ether. The crystalline part (40% of the extract) contained lycopodine, clavatine and clavatoxine in the ratios of 83:12:3. All three alkaloids have basic properties, are soluble in dilute acids and are precipitated by ammonia and other alkalies. They are bitter, alkaline to litmus, *l*-rotatory and possess physiological activity.—O. Achmatowicz and W. Uzieblo. *Roczniki Chem.,* 18 (1938), 88–95; through *Chimie & Industrie,* 41 (1939), 1144. (A. P.-C.)

Nicotine—Colorimetric Silicomolybdic Acid Method for Determining Small Quantities of. An examination of Hoffmann's colorimetric (silicomolybdate) method for determining very small amounts of nicotine is reported. By modification of the original technic, the optimum color intensity has been obtained, and under the conditions laid down, the relationship between the color intensity and quantity of nicotine is shown to be linear over a considerable range.—G. L. Sutherland, R. P. Daroga and A. G. Pollard. *J. Soc. Chem. Ind.,* 58 (1939), 284–288. (E. G. V.)

Nicotine—Extracting, from Tobacco. An extract produced from ammonia-treated tobacco by use of a nonaqueous solvent such as gasoline or kerosene is treated with an aqueous solution of sulfuric acid and nicotine sulfate, to avoid emulsification.—Clarence E. McCoy. U. S. pat. 2,162,738, June 20, 1939. (A. P.-C.)

Opium—Manchurian. I. Principal Alkaloids. The morphine, narcotine, papaverine, codeine and thebaine contents (determined by Kanevskaja's method) of opium derived from different provinces were 11.71–0.65, 4.52–0.76, 0.84–0.03, 3.98–2.12 and 4.21–1.07%, respectively.—J. Arima and M. Iwakiri. *Rept. Inst. Sci. Research Manchoukuo,* 2 (1938), 43; through *J. Soc. Chem. Ind.,* 58 (1939), 324. (E. G. V.)

Opium Slag. I. Principal Alkaloids. The slag (residue from smoked opium) contains about 50% of the original morphine, and 60–80% of the codeine, but no narcotine, papaverine or thebaine.—J. Arima and M. Iwakiri. *Rept. Inst. Sci. Research Manchoukuo,* 2 (1938), 44; through *J. Soc. Chem. Ind.,* 58 (1939), 324. (E. G. V.)

Roemeria Refracta—Alkaloids of the Papaveraceæ. III. The plant was extracted with dichloroethylene and yielded about 0.2% of a mixture of alkaloids in the form of a brown resinous mass. Treatment with hydrochloric acid gave a slightly soluble crystalline hydrochloride from which a crystalline base, $C_{18}H_{17}NO_2$, was obtained. The properties of the base differed from those of known alkaloids and was named "roemerine." The conduct on degradation by Hoffmann's method as well as the other reactions of the base indicate the constitution of a methylene-dioxy-aporphine.—R. Konowalowa, S. Yunousoff and A. Orekhoff. *Bull. soc. chim. France,* (1939), 811; through *J. pharm. Belg.,* 21 (1939), 736. (S. W. G.)

Solanaceous Alkaloids. A discussion of the Solanaceous group of alkaloids is given from the standpoint of their pharmacological properties. The possibilities of producing the Solanaceous drugs in India is also reviewed.—S. Prasad. *Indian J. Pharm.,* 2 (1940), 36–39. (N. L.)

Strychnine—Extraction of, in Toxicology. Results obtained by electrodialysis and extraction by the Stass-Otto method are compared. The former recovers a greater part of the alkaloid (94%–100%), but the following modification of the Stass-Otto procedure gives yields of 37–55% and will detect about 2 mg. of strychnine per Kg. Dissolve the residue obtained by the Stass-Otto method in a little distilled water acidified with hydrochloric acid, precipitate the strychnine with Mayer's reagent saturated with mercuric iodide, recover the precipitate by centrifuging, suspend it in distilled water and remove the mercury with hydrogen sulfide. Evaporate the solution on a water bath, alkalinize and extract the strychnine with chloroform. The modified Stass-Otto procedure may be used when the electrodialysis method is not feasible.—E. Kergonou. *Bull. trav. soc. pharm. Bordeaux,* 77 (1939), 203–206. (S. W. G.)

Strychnine in Strychnine-Quinine Mixtures—Polarographic Determination of. A catalytic freeing of hydrogen is caused by strychnine on electrolysis at the dropping mercury cathode, as is likewise caused by quinine. This led to the possibility that the content of strychnine in strychnine-quinine mixtures could be determined polarographically. In buffered solution, very small quantities of strychnine (concentrations of the order 10^{-6} mol.) produced a distinct step maximum in the voltage curve of the polarograph, smaller with increasing acidity, but in the p_H range 10–12 far greater than that given by quinine. In an oxygen-free 0.1*N* solution of sodium sulfite as buffer, the step maximum of quinine was at 1.7 volts, that of strychnine at 1.9 volts. In testing the possibility of analysis by this means, the alkaloids of a strychnine-quinine mixture were shaken out with ether and dissolved in 0.02*N* HCl. An aliquot representing 0.5 mg. of quinine base was taken, 10 cc. of 0.1*N* sodium sulfite solution added, and tested in the polarograph. From the step height of the voltage curve the strychnine content was calculated with the aid of a standard curve. The relative error of determination was found to be 15–20%. Hence the method was not very satisfactory for the purpose intended.—F. REIMERS. *Dansk Tids. Farm.*, 14 (1940), 65. (C. S. L.)

Strychnine in Tincture of Nux Vomica—Study of the Assay of. Attention is directed to some of the difficulties encountered in assaying nux vomica and reference is made to a number of methods. The work reported was an attempt to devise a more efficient method than previous ones. An apparatus was devised to get away from the hand shaking out. The B. P. method requires that it be followed strictly. The U. S. P. VIII method gave only approximate results because tincture should not be evaporated to complete dryness and because time was insufficient for destruction of brucine. The fixed oil present is a troublesome factor in U. S. P. XI. The interim revision method is a decided improvement. Cooling to −7° C. decreased both oil and alkaloids in the tincture. The method of Beal and Hamilton was difficult. Removal of the precipitate of lead sulfide took too much time and occluded some alkaloid. The method of Palkin and Watkins was easy and satisfactory. Results were slightly higher than by any other method The use of potassium dichromate as suggested by Kolthoff and Lingane was satisfactory for solutions of either alkaloid but not for mixtures. Potassium iodide, with or without the buffers tried, is of no value. Quantitative precipitation of strychnine from solutions of its salts and from mixtures of strychnine and brucine salts by normal sodium hydroxide was reasonably efficient. The principle utilized might be used with other alkaloidal drugs where the problem of separation is difficult. The use of chlorphenol red, bromcresol purple and *para*-nitrophenol as differential indicators proved unsuccessful. Approximate titration curves of brucine and strychnine were determined. Study of them shows why the indicators were unsuccessful and why buffers cannot be used.—GERTRUDE M. HORN, K. L. KAUFMAN and S. G. MITTELSTAEDT. *Jour. A. Ph. A.*, 29 (1940) 183. (Z. M. C.)

Ungernia Tadshicorum Vved—Alkaloids of. There was separated from the bulbs of *Ungernia tadshicorum* Vved. (*Amaryllidaceæ*) over 0.3% of alkaloids, the principal constituent of which is a homogeneous, crystallizable substance identical with lycorine.—N. K. IOURASHEVSKI. *J. Obchtch. Khim.*, 8 (1938), 949–952; through *Chimie & Industrie*, 42 (1939), 110. (A. P.-C.)

Veratrum Album—Alkaloids of. III. Germerine, protoveratrine, jervine, pseudojervine and rubijervine, as well as some amorphous alkaloids, were identified in *Veratrum album*. The first five form two distinct groups: germerine and protoveratrine are esters containing the radicals of methylethylacetic and methylethylglycolic acids. In addition, protoveratrine is also esterified by acetic acid. Jervine, pseudojervine and rubijervine are not hydrolyzed by alcohol alkali solution.—W. POETHKE. *Arch. Pharm.*, 276 (1938), 170–181; through *Chimie & Industrie*, 41 (1939), 313. (A. P.-C.)

Essential Oils and Related Products

Anise, Buchu, Calamus, Celery Fruit, Coriander, Cubeb, Fennel, Juniper, Sage, Sassafras, Thyme and White Sandalwood—Volatile Oil Content of. Yields, specific gravities, optical rotations, refractive indices, acid and ester numbers of a large number of samples of the oils are reported and the data summarized and compared with Gildemeister and Hoffman.—ANON. *Bull. Natl. Formulary Committee*, 8 (1940), 181–192. (H. M. B.)

Buchu and Its Fluidextract—Volatile Oil Content of. Three samples of buchu were examined in the usual manner by the Clevenger method. The oil in the fluidextract was determined by the following procedure: Place 100 cc. in a distilling flask and assemble the complete apparatus, place on a water bath and heat until no further distillation occurs. Remove from the bath, add 25 cc. of water to the distilling flask and continue heating by means of a sand bath, collecting the distillate in 3 x 2-cc. portions until it becomes cloudy. Then add 25 cc. water and continue the determination in the usual manner. The yield of the oil in the drug and the fluidextract is 1.2–1.3% v/w and 1.2–1.3% v/v. The oils showed the following constants: specific gravity (40°/25°) 0.958–0.979, $(n)_{20^\circ}$ 1.4815–1.4879, acid number 4.9–9.9, ester number 23.3–25.1.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 8 (1940), 221–224. (H. M. B.)

Calamus—Volatile Oil Content of. The Clevenger method was found to be suitable when modified as follows: "Weigh out 2 fifty-Gm. portions of the drug; place one of the portions in the distilling flask with 500 cc. water and proceed with the usual distillation. After the drug has been exhausted of its oil, empty the distilling flask and recharge with the second portion of the drug and an equivalent amount of water and proceed with the distillation. Use the volume of the combined distillates as the yield from 100 Gm. of drug." The yield of oil ranged from 1.1–1.4% v/w with the following physical constants: specific gravity (25° C.) 0.948–0.967, $(a)_{25^\circ}$ c. −20 to +25°, $(n)_{20^\circ}$ c. 1.5010–1.5072, acid number 1.2–4.5, ester number, 2.8 to 29.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee* 8 (1940) 224–226. (H. M. B.)

Citrus Essential Oils—Purifying. Citrus peel is ground in the presence of water, thereby forming a slurry. The slurry is mixed with a liquefied normally gaseous hydrocarbon solvent under sufficient pressure to maintain the solvent in a liquid state. The slurry-solvent mixture is allowed to settle under pressure, thereby forming a solvent layer containing the citrus oil and a slurry layer. The layers are separated; the solvent layer is cooled to precipitate the resinous material which is removed from the solvent layer, and the solvent is then evaporated from the deresinated oil.—CHARLES D. BARNES and WM. A. S. WRIGHT, assignors to UNION OIL CO. OF CALIFORNIA. U. S. pat. 2,158,670, May 16, 1939. (A. P.-C.)

Essential Oils—Determination of Phenols in. The U. S. P. and N. F. methods of assay are criticized. The following method is recommended for oils containing up to 30% of phenol: 30 cc. of *N* sodium sulfanilate in a cassia flask are chilled with ice and precipitated with 25 cc. of *N* hydrochloric acid. Keeping cold, 25 cc. of *N* sodium nitrite are added. Shake thoroughly and after $^1/_2$ hour, add 10 cc. of the oil (noting temperature). Add 25-cc. portions of *N* sodium hydroxide, shaking well, until 100 cc. are added. Shake during $^1/_2$ hour, keeping ice cold, fill the flask with *N* sodium hydroxide and warm to original temperature.—F. D. DODGE. *Am. Perfumer*, 39 (1939), No. 4, 35–36. (G. W. F.)

Essential Oils, U. S. P. and N. F. Proposed changes to the monographs are suggested: *Oil of Bitter Almonds, U. S. P.*—Reduction of the benzaldehyde standard to 80% and modified assay. *Volatile Oil of Mustard, U. S. P.*—Change specific gravity to 1.5275–1.5310. *Oil of Bay, N. F.*—The maximum phenol content standard should be increased to 65%, the minimum specific gravity reduced to 0.950, and the statement of solubility in carbon disulfide modified.—ESSENTIAL OIL ASSN., SCIENtific Committee. *Am. Perfumer*, 38 (1939), No. 5, 47–48. (G. W. F.)

Fluidextract of Celery—Volatile Oil Content of. The Clevenger method is not applicable.—Rept. Amer. Pharm. Assoc. Lab. *Bull. Natl. Formulary Committee*, 8 (1940), 164. (H. M. B.)

Juniper—Assay of, for Volatile Oil Content. Three samples of berries were found by the Clevenger method to yield 0.6, 0.7 and 1.1% of volatile oil, respectively, and little variation in constants was noted.—Rept. Amer. Pharm. Assoc. Lab. *Bull. Natl. Formulary Committee*, 8 (1940), 162–164. (H. M. B.)

Milfoil Oil. Flowers, leaves and stems yield a blue oil which may be distinguished from chamomile oil by its deep dark blue color and which may not be present as such in the plant but may be due to the azulene portion obtained upon steam distillation.—W. Peyer. *Deut. Apoth. Ztg.*, 55 (1940), 1–2. (H. M. B.)

Nhamuhy—Essential Oil of. Nhamuhy oil, density at 20° 0.901, acid value 0.9, flash point 38.5°, contains α-pinene (32.2), β-pinene (48.2), limonene (2.5), terpinolene (7.4) and α-terpineol (2.5%).—A. Machado. *Rev. soc. brazil. quim.*, 8 (1939), 7–10; through *J. Soc. Chem. Ind.*, 58 (1939), 776. (E. G. V.)

Ocimum Canum, Sims—Essential Oil of. Steam distillation of the whole plant gave 0.7% of oil having an intense odor of lemon with trace of lavender; it was soluble in 70% ethyl alcohol and contained linalool 10.9, esters 4.8, geraniol and citronellol 7.3, methylheptenone 2.4, citral 60 and citronellal 7.3%.—J. N. Tayal and S. Dutt. *Proc. Nat. Acad. Sci. India*, 8 (1938), 120–125; through *J. Soc. Chem. Ind.*, 58 (1939), 776. (E. G. V.)

Oil Cananga Java. *Cananga odorata* is called ylang ylang in the Philippines, Réunion, Madagascar and neighboring islands and called kenanga or kananga in Java, being different varieties of the species. The volatile oils are different, due to botanical, climatic and soil conditions as well as differences in distillation processes and selection of the flowers. Planting and harvesting of Java Cananga Oil are discussed.—E. Guenther. *Am. Perfumer*, 38 (1939), No. 6, 36–38. (G. W. F.)

Oil Cananga Java. Distillation and adulteration are discussed. The author found the oil to possess the following characteristics: Oil Cananga Bantam (2 samples): sp. gr. (15° C.) 0.913, 0.915; optical rotation −18°41′, −16°37′; refractive index at 20° C. 1.5001, 1.4999; saponification value 14.9, 15.2; not clearly soluble in 90% alcohol up to 10 volumes, soluble in 0.5 volume of 95% alcohol. Oil Cananga Cheribon (2 samples): sp. gr. (15° C.) 0.921, 0.923; optical rotation −29°58′, −26°55′; refractive index at 20° C. 1.5018, 1.5030; saponification value 29.9, 29.9, solubility as above. Refined Cananga Oil has the following characteristics: sp. gr. (15° C.) 0.904, 0.907; optical rotation −12° 30′ to −31°30′ (usually −15° to −20°); refractive index at 20° C. 1.4961–1.4980 (usually around 1.4970); saponification value 4.7–16.8 (usually 5–12); soluble in 9.5 volumes of 95% alcohol and more clearly in 10 volumes of 90% alcohol.—E. Guenther. *Am. Perfumer*, 39 (1939), No. 1, 32–34. (G. W. F.)

Oil from the Fruits of Ferula Alliacea Boiss—Investigation of. The fruits of *F. alliacea* contain 19% of oil and some natural coumarins. The constants of the oil are as follows: density at 31.5° 0.9156, refractive index at 40° 1.4691, specific rotation in chloroform at 30° (11.29% soln.) 1.94, solubility in alcohol at 25° 2.55%, thermal value 16°, true Valenta number (acetic acid) 74.67°, maumene test 95.06, bromide test nil, acid value 16.6, saponification value 189.62, ester value 173.02, iodine value (Wijs) 90.73, hypochlorous acid value 19.05, acetyl value 23.56, Reichert-Meisl value (5 Gm. oil) 1.81, Polenske value (5 Gm. oil) 0.25, total saturated fatty acids (corr.) 14.02%, total unsaturated fatty acids (corr.) 78.08%, unsaponifiable matter 1.90%. The probable composition of the oil has also been discussed.—Prafulla Kumar Bose and Sachindra Nath Dutt. *J. Indian Chem. Soc.*, 17 (1940), 49. (F. J. S.)

Thyme and Its Fluidextract—Volatile Oil Content of. Four samples of drug were assayed yielding oil 0.7–1.6% v/w and the oils obtained had the following constants: specific gravity (25° C.) 0.906–0.952, $(a)_{25^\circ\text{ C}.}$ −2° to +20.2°, $(n)_{20^\circ\text{ C}.}$ 1.4788–1.5040, acid number 1.4–8.4, ester number 2.8 to 23. The fluidextracts were assayed by the following method: "To 100 cc. of the fluidextract in a flask add 50 Gm. sodium sulfate. Place the complete apparatus on a water bath and heat until the distillation of the alcohol is complete. Allow the flask to cool and add 300 cc. of water and continue the distillation in the regular manner on a sand bath. Collect the distillate and dry." The oils obtained in this manner showed the following constants: specific gravity (25° C.) 0.911–0.913, $(a)_{25^\circ\text{ C}.}$ −0.2° to −0.5°, $(n)_{20^\circ\text{ C}}$ 1.4643–1.4785, acid number 3.6–4.0, ester number 0.0.—Rept. Amer. Pharm. Assoc. Lab. *Bull. Natl. Formulary Committee*, 8 (1940), 226–229. (H. M. B.)

Verbena Oil. The whole plant, distilled in steam with cohobation, gives the essential oil in a low and a very variable yield, from 0.1% to, rarely, 0.7%.—Anon. *Perfumer. Essent. Oil Record*, 30 (1939), 14. (A. C. DeD.)

Glycosides, Ferments and Carbohydrates

Acetone and Normal Butyl Alcohol—Fermentation of Cassava and Molasses for the Production of. In a search for cheap raw materials the authors experimented with Philippine cassava (*Manihot utilissima* Pohl) and molasses. A strain of *Clostridium acetobutylicum* (Weizmann), which was isolated from rice field soil, was used as the fermenting agent. Mashes prepared from either cassava or molasses alone cannot maintain the normal growth of the acetone-butyl alcohol organism, due to lack of adequate nutrients. For this reason it is necessary to supplement them with materials, such as corn meal or soybean powder, which are rich in nutrients. Soy bean is better than corn as a source of nutrients. The addition of at least 0.4 Gm. of soy bean powder to every 100 cc. of mash with a carbohydrate content equivalent to 4% starch will furnish the necessary nutrients for the fermentation of either cassava or molasses. The procedure is simple and is believed to possess a slight advantage over the Arroyo process for the production of solvents from molasses. The ability of *Clostridium acetobutylicum* to utilize cassava and molasses can be increased by gradually acclimatizing it to grow in the presence of these substances through repeated subculturing, sporulation and heat-shocking. With the use of derived cultures, the fermentations are complete after a period not exceeding 69 hours in the case of cassava-soy bean mixtures and 93 hours in the case of molasses-soy bean mixtures. The yield of total solvents is from 34 to 38% of the dextrose equivalent of the carbohydrate content of the mash and has an average composition of approximately 31% acetone, 58% normal butanol and 11% ethyl alcohol. The average yield from 1 Kg. of cassava (gaplex) is 0.8 lb. and from 1 gallon of molasses 2.5 lbs. of total solvents. Mashes with carbohydrate contents equivalent to between 4.06 to 5.56 Gm. of dextrose per 100 cc. of mash give the highest yields of solvents per sugar unit. At the optimum sugar concentration of 5.56%, the maximum yield is 2.040 Gm. of total solvents per 100 cc. mash. Mashes with higher carbohydrate contents do not yield larger amounts of solvents, due probably to the inability of the vegetative phase of the butyl organism to withstand the presence of solvents at higher concentrations.—Marcos A. Tubangui, Victoria A. Masiluñgan and Dolores Hipolito. *Philippine J. Sci.*, 70 (1939), 123. (P. A. F.)

Amino Acid Dicarboxylases—Specificity of. Histidine-, tyrosine- and dopadecarboxylases are shown to be different ferments, each acting specifically on its substrate.—Peter Holtz, Karl Credner and Hedwig Walter. *Z. physiol. Chem.*, 262 (1939), 111; *Squibb Abstract Bull.*, 13 (1940), A-77. (F. J. S.)

Asclepias Cornuti or the Common Milkweed—Glycosides of. References to the literature direct attention to studies on the caoutchouc content, fibers, seed, hairs, seed oil and constituents of the lactiferous sap. The plant was official from 1820 to 1864 and a related species was official until it was placed in the N. F. and later deleted. Some differentiation of species is given. Sugars have been studied and glycosides of related species but no report of a thorough study on the glycosides of *A. cornuti* was found. Details of this work are given. Sucrose and glucose were found in aqueous and alcoholic extracts. Leaves and stems contain a bitter principle which may be divided into a toxic and non-toxic fraction but they did not contain glycosides in significant amounts. A toxic glycoside having properties resembling asclepiadin was isolated apparently in impure form. The overground portions contained a principle which was irritating to the dermis.—A. E. Rihn and H. G. DeKay. *Jour. A. Ph. A.*, 29 (1940), 69. (Z. M. C.)

Cocarboxylase Action—Mechanism of. There is no evidence for Langebeck's hypothesis that the structure of cocarboxylase contains a primary NH_2 group as the active center. Thiamin is not a typical primary amine since it reacts with ketene to yield not an N-acetyl but an O-acetyl derivative, nor does it readily give up its nitrogen. The fact that dihydrothiamin has no antineuritic action in pigeons and dihydrococarboxylase is as active as the oxidized form in both pigeons and the yeast test system strongly suggests that the coenzyme in the course of its physiological function goes through an oxido-reductive cycle.—Kurt G. Stern and Joseph L. Melnick. *J. Biol. Chem.*, 131 (1939), 597; through *Squibb Abstract Bull.*, 13 (1940), A-31. (F. J. S.)

Cottonseed Phosphatides. The kernels contain 1.7% of phosphatides, of which 16.5% are soluble in acetone, 76.5% in ethyl alcohol and 7% in benzene. The fractions contain, respectively, 46.2, 53.2–59.4 and 100% of lecithins and 53.8, 40.6–46.8 and 0% of kephalins.—M. Lischkevitsch. *Maslob. Zhir. Delo*, 2 (1939), 6–8; through *J. Soc. Chem. Ind.*, 58 (1939), 742. (E. G. V.)

Enzyme Preparation from Microörganisms. The paper is confined to microbial enzyme preparations that are produced commercially, and with their industrial applications.—L. Wallerstein. *Ind. Eng. Chem.*, 31 (1939), 1218–1224. (E. G. V.)

Gluconic Acid Production—Repeated Use of Submerged Aspergillus Niger for Semicontinuous. Calcium gluconate has been produced semicontinuously through the utilization of the floating mycelial growth from previous fermentations. Thirteen successive fermentations have shown no decrease in activity. A saving of time has resulted by the elimination of the lag period, the elimination of other than the initial pregerminated inoculum for a series of fermentations, and the maintenance of high rates of oxidation of glucose to gluconic acid. This process should be of industrial interest.—N. Porges, T. F. Clark and E. A. Gastrock. *Ind. Eng. Chem.*, 32 (1940), 107–111. (E. G. V.)

Glucose—Microdetermination of. This is a modification of the method of Fujita and Iwatake. To not more than 0.5 cc. of solution to be tested in a test tube add 0.25 cc. of potassium ferricyanide reagent (0.066 Gm. potassium ferricyanide, 5.6 Gm. hydrogen dipotassium phosphate and 1.68 Gm. tripotassium phosphate per 100 cc.), and place in boiling water for 15 minutes; after cooling, add 3 drops of zinc-iodide solution (25 Gm. of sodium chloride, 5 Gm. of zinc sulfate crystals and 2.5 Gm. of potassium iodide per 100 cc.), 2 drops of 1:1 hydrochloric acid and 1 drop of 0.25% starch solution in saturated sodium chloride; titrate the iodine against two-hundredth-normal sodium thiosulfate using a Pincussen mercury microburet. The glucose (in 0.001 mg.) = $0.175(a-b)$, where a = the thiosulfate equivalent of the control, and b = that of the solution tested. Glucose can be determined with an accuracy of 1 to 2% in quantities of 0.005 to 0.010 mg.—W. Niemierko. *Acta Biol. Exptl.*, 12 (1938), 178–182; through *Chimie & Industrie*, 41 (1939), 1076. (A. P.-C.)

Glucosides from Oleander Leaves Having an Action on the Heart. An aqueous extract of oleander leaves is extracted with a chlorinated aliphatic hydrocarbon such as chloroform and glucosides dissolved are precipitated by a liquid saturated hydrocarbon such as "petroleum ether" and the precipitate is extracted with ether.—Max Bockmühl and Gustav Ehrhart, assignors to Winthrop Chemical Co. U. S. pat. 2,168,789, Aug. 8, 1939. (A. P.-C.)

Glucosides—Preparation of Active, from Digitalis Lanata. Leaves of *D. lanata*, preferably pre-extracted with solvents, or dry extracts prepared by extraction with ethyl acetate-ethyl alcohol-water or acetone, are kneaded with magnesium oxide and water and the mass is extracted with a solvent, for example, acetone. The extract is dissolved in aqueous ethyl alcohol, extracted with ether, and the glucosides are crystallized from the ethyl alcohol (aqueous) and then recrystallized from methyl-ethyl-ketone or aqueous dioxan.—E. Wolf. Brit. pat. 506,465; through *J. Soc. Chem. Ind.*, 58 (1939), 887. (E. G. V.)

Glycerol, Glycols and Aqueous Sugar Solutions—Solidified Compositions Containing. Glycerol, glycols and like substances are mixed with a higher aliphatic alcohol, such as cetyl or myristyl alcohol, and preferably with a soap substitute not having an alkaline reaction (*e. g.*, a salt of a sulfuric ester of a higher aliphatic alcohol). Solid or semisolid compositions which may be used as cosmetics are obtained, and may be mixed with other appropriate substances.—Simon Jacobowitz, assignor to Gustav Snoek. U. S. pat. 2,165,857, July 11, 1939. (A. P.-C.)

Iodine and Hypoiodous Acid—Actions of, on Pepsin. P. and S. show that the inactivation of pepsin and diazopepsin by iodine and HIO at sufficiently high p_H and temperature can be carried out without involving more than two tyrosine groups. Peptic activity, plotted against Folin value (expressed as percentage of the original), shows that groups other than tyrosine are involved in the inactivation. Certain amino acids are named which could not take place in the inactivation.—John St. L. Philpot and Percy A. Small. *Biochem. J.*, 33 (1939), 1727; through *Squibb Abstract Bull.*, 13 (1940), A-30. (F. J. S.)

Pepsin and Pepsin Preparations. The values of several trade products are reported on the basis of a procedure previously outlined (cf. *Deut. Apoth. Ztg.*, 53 (1938), 1550, 1573).—G. Dultz. *Deut. Apoth. Ztg.*, 55 (1940), 36–37. (H. M. B.)

Permeability—Increase of, by Saponins. In the presence of saponin, strychnine nitrate will pass through the living skin of the decerebrated frog. This increased permeability is dependent on the concentration of both strychnine and the saponin.—M. Roberg. *Arch. exptl. Path. Pharmakol.*, 188 (1938), 360–365; through *Chem. Abstr.*, 33 (1939), 5420. (E. G. V.)

***d*-Pinite Isolated from Astragalus Earlei and Oxytropis Lambertii.** This sugar, the monoethyl ether of inosite, has been isolated in quantity along with several alkaloids from two different species of "loco weeds." The two plants furnishing *d*-pinite are *A. earlei* (Big Bend loco weeds) and *O. lambertii* (White loco weeds). The chief source of *d*-pinite is the sap of *Pinus lambertiana* Dougl.—Donald C. Pease, Malcolm J. Raider, Robert C. Elderfield. *J. Org. Chem.*, 5 (1940), 198. (W. T. S.)

Proteolytic Enzyme Material from Ficus Latex. A process for the stabilization of crystalline proteolytic enzyme from *Ficus* latex involves filtration in an acidulated aqueous solution of an acidity of the order of about thousandth-normal hydrochloric acid, freezing the wet crystals thus obtained, and removing the frozen solvent with the aid of a high vacuum.—Randolph T. Major and Alphonse Walti, assignors to Merck & Co. U. S. pat. 2,162,737, June 20, 1939. (A. P.-C.)

Proteolytic Enzyme Production from Ficus Latex. A process for producing a proteolytic enzyme in crystalline form from *Ficus* latex comprises pretreating the crude latex by filtration to remove solid and semisolid material, precipitating the protein fraction of the treated latex with magnesium·sulfate, dissolving the precipitate in a small quantity of twentieth-normal hydrochloric acid, neutralizing the solution with half-normal sodium hydroxide allowing it to stand at a temperature not in excess of room temperature, filtering off the formed crystals, and washing them with a slightly acidulated solution of sodium chloride.—Alphonse Walti, assignor to Merck & Co. U. S. pat. 2,163,643. June 27, 1939. (A. P.-C.)

Saponin—Difficulties in the Detection of, by Means of the Blood-Gelatin Method. *Medicago sativa* contains in its leaves a saponin which forms a cholesterol addition product that does not give a test for saponins by the usual blood-gelatin method. By treating the leaves with hot xylol, this addition product is split off, and a positive saponin test results. The medicago saponin-cholesteride is also decomposed in the cold by ether, ethyl alcohol, chloroform and xylol. Saponins can form nonhemolyzing addition products not only with cholesterol, but also with phytosterols. Xylol treatment resulted in positive saponin tests in cases previously negative.—R. Jaretzky and W. Lindner. *Arch. Pharm.*, 277 (1939), 45–49. (L. K.)

Sorbose from Sorbitol. Continuation of previous studies on *l*-sorbose production from *d*-sorbitol by submerged growths of *Acetobacter uboxydans* revealed that concentrated corn steep liquor was a satisfactory nutrient to substitute for dried yeast extract although its use required the addition of an antifoam agent, octadecyl alcohol. In the presence of a slight excess of calcium carbonate which afforded satisfactory p_H control, *d*-sorbital in concentrations up to 30% was rapidly oxidized to *l*-sorbose. Pilot-plant scale results revealed no essential differences from those obtained on a laboratory scale. When 20% sorbitol solutions were employed under the most favorable conditions, the yields of sorbose obtained in fermentation periods of 25 hours on both laboratory and pilot-plant scale were in excess of 90%. Recovery yields of crystalline sorbose approximated 70%.—P. A. Wells, L. B. Lockwood, J. J. Stubbs, N. Porges and E. A. Gastrock. *Ind. Eng. Chem.*, 31 (1939), 1425–1431. (E. G. V.)

Sucrose—Microdetermination of, in Blood. The following formula was devised for the determination of sucrose: blood sucrose equals total reducing sugars after hydrochloric acid hydrolysis minus glucose before hydrolysis multiplied by 342/360. Tests carried out on solutions of glucose, of levulose and of sucrose and on samples of blood containing known quantities of these sugars gave sagisfactory results.—B. Della Maggiore. *Bol. Soc. Ital. Biol. Sper.*, 13 (1938), 1086–1087; through *Chimie & Industrie*, 42 (1939), 31. (A. P.-C.)

Sugars—Microscopic Identification of. A few drops of a saturated aqueous solution of the unknown sugar in a small vial are treated with sufficient acetone, alcohol, acetonitrile or 1,4-dioxane to cause crystallization. If the precipitating liquids are not added too rapidly, the sugar solutions usually become opalescent before crystallization. Photomicrographs of *l*-arabinose, *d*-arabinose, cellobiose, fructose, fucose, galactose, α-*d*-glucose, β-glucose, α-*d*-lactose, β-lactose, maltose, *d*-mannose, melibiose, raffinose, *l*-rhamnose, *l*-sorbose, sucrose and xylose are given. A table of optical properties of sugars is also given.—J. A. Quense and W. M. Dehn. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 555–559. (E. G. V.)

Vaccinium Uliginosum—Constituents of the Leaves of. The authors succeeded in isolating from the leaves of *Vaccinium uliginosum* L. a flavon glycoside containing $1^1/_2$ molecules of water of crystallization and melting at 235–237°; $[\alpha]_D^{24} = -51.6°$. Cleavage of this glycoside by dilute mineral acids gave one molecule each of quercetin and galactose. Quercetin was identified as the acetate while the sugar was detected by osazone formation. Complete methylation of the glycoside with diazomethane gave a product melting at 217–219°, which, on treatment with 3% sulfuric acid gave galactose and another compound identified as 5,7,3′,4′-tetramethylquercetin, melting at 195°. These findings indicate that the flavon glycoside is quercetin-3-galactoside.—Riiti Kawaguchi, K. W. Kim and Koremitsu Matsushita. *J. Pharm. Soc. Japan*, 59 (1939), 44–49 (in German, 50–51). (N. L.)

Other Plant Principles

Amyrin from the Bark of Viburnum Opulus—Isolation and Identification of Alpha- and Beta-. Report is made of a study of a wax-like petroleum ether soluble material obtained from the bark of *Viburnum opulus*. Experimental work explains the isolation of mixed amyrins, their benzoylation, describes β-amyrin benzoate and α-amyrin benzoate, hydrolysis of each benzoate. In order to test correctness of the assumption that both amyrins were present in *Viburnum opulus*, the compounds were isolated from Manila Elimi Gum, converted into acetates, benzoates and nitrobenzoates and compared with corresponding derivatives of the alcohols obtained from the bark of *Viburnum opulus*. They were found to be similar.—J. L. Powers and W. E. Powers. *Jour. A. Ph. A.*, 29 (1940), 175. (Z. M. C.)

Arbutin and Methylarbutin and Their Determination in Drugs. Arbutin and methylarbutin both form unstable modifications. For arbutin, the unstable form melts at 165°; the stable, at 199.5–200°. For methylarbutin, the unstable form melts at 160.5°; the stable, at 176°. Both substances crystallize with one molecule of water which can be driven off above 70°. The melting point of the methylarbutin hydrate is less than 105°. The 2,4-dinitrophenyl ether of arbutin forms an unstable modification melting at 183°–185°, and a stable one melting at 188°–189°. The hydrate melts at 120–122°. By use of a curve based on the refractive indices of the melted products of arbutin and methylarbutin, the percentage composition of these substances in mixtures can be determined. Mixtures of the compounds give two different melting points, and, consequently, two curves—one for the unstable form; the other, for the stable. The methods used up to the present for the separate determination of arbutin and of methylarbutin are based on erroneous assumptions and are, therefore, not practical. The investigations are thoroughly discussed.—E. LINDPAINTER. *Arch. Pharm.*, 277 (1939), 398–415. (L. K.)

Camphor Derivatives—Contribution to the Knowledge of. The preparation and physical properties of a number of sulfur derivatives of camphor are described.—TYOTARO TUKAMOTO. *J. Pharm. Soc. Japan*, 59 (1939), 149–168 (in German, 37–41). (N. L.)

Celastrol—Constitution of. II. The present report is a continuation of an earlier one. These later investigations indicate that celastrol, a red pigment found in the outer bark of the root of *Celastrus scandens*, has the formula $C_{22}H_{30}O_3$. There is a hydroxyl group which is acid enough to be methylated by means of diazomethane. The other two oxygen atoms seem to be in the form of an orthoquinone which can be reduced catalytically and reoxidized by atmospheric oxygen. Details of experimental work are reported.—O. GISVOLD. *Jour. A. Ph. A.*, 29 (1940), 12. (Z. M. C.)

Celastrus Scandens—Sterols and Resin Alcohols from. Report is made of a study of the phytosterols found in the bark of the root of *Celastrus scandens*. Details of experimental work are given. A phytosterol probably consisting of the sitosterols or a mixture of sterols and three resin alcohols were isolated from the non-saponifiable portion of the petroleum ether extract.—OLE GISVOLD. *Jour. A. Ph. A.*, 29 (1940), 77. (Z. M. C.)

Cholesterol—New Monograph for. Heat and light were found to affect materially the color and odor of the compound. It is apparent that the product should be packaged in amber containers and stored at room temperature or in a cool place. It was reported to be soluble in acetone, sparingly soluble in cold alcohol, freely soluble in hot alcohol and chloroform (brown color), ether, soluble in ethyl acetate, hot liquid petrolatum, slightly soluble in water. Melting point range for 5 samples was found to be 137–150° C. In general, the loss of weight on drying and the residue upon ashing is negligible.—FREDERICK GRILL. *Bull. Natl. Formulary Committee*, 8 (1939), 48–50. (H. M. B.)

Coumarins from *o*-Hydroxy-Aryl-Alkyl Ketones—Synthesis of. III. By using the new method of synthesis of coumarins from *o*-hydroxy-aryl-alkyl ketone it has been found that when there is an alkyl substituent in the β-position of the expected cinnamic ester, coumarin is invariably formed irrespective of the presence of any substituent in the α-position; and the presence of any alkyl group or a halogen atom in the benzene nucleus of the ketone has no appreciable effect on the reaction. Thus 4-alkylcoumarins and 3:4-dialkylcoumarins have been prepared in excellent yield.—DUHKHAHARAN CHAKRAVARTI and NARENDRALAL DUTTA. *J. Indian Chem. Soc.*, 17 (1940), 65. (F. J. S.)

Flavones—Natural. IV. Constitution of Erianthin, the Yellow Coloring Matter of Blumea Eriantha DC. Erianthin has been shown to be 5:7-dihydroxy-3:6:8:3′:4′-pentamethoxy flavone.—PRAFULLA KUMAR BOSE and PHANIBHUSAN DUTT. *J. Indian Chem. Soc.*, 17 (1940), 45. (F. J. S.)

Gums—Identification of, in Drugs. A collaborative study was made of the identification of Irish moss, tragacanth, agar, quince, karaya and galagum by means of chlorzinc iodide (to 100 cc. of a solution of zinc chloride (specific gravity 1.8) add a solution of 10 Gm. of potassium iodide and 0.15 Gm. of iodine in 10 cc. of water; keep a few crystals of iodine in the solution), tincture of iodine (U. S. P.), ruthenium red (to a few cc. of a 10% solution of lead acetate add enough ruthenium red to produce a wine red color), and methylene blue (0.1% solution in alcohol, 0.1% solution in water). The technic of the test and reactions obtained with the several reagents are described in detail in *J. Assoc. Official Agr. Chem.*, 22 (1939), 92–94. The results were satisfactory and adoption of the method as tentative is recommended.—J. H. CANNON. *J. Assoc. Official Agr. Chem.*, 22 (1939), 726–728. (A. P.-C.)

Jalap Resin and Its Principal Constituent, Convolvulin. Convolvulin is a colloidal substance of high molecular weight. It is insoluble in pure water but is peptized in presence of small traces of alkali, yielding a solution with extremely disagreeable taste which attacks the mucosa. The quantity of alkali required to thus dissolve convolvulin is smaller than its acid number (10); the neutral solution possesses all the purgative properties of the resin, but in presence of a larger quantity of alkali the convolvulin is rapidly hydrolyzed, and the solution loses its colloidal properties together with its disagreeable taste and its activity. The physiological effect of jalap resin is therefore due to the colloid present (which dissolves under the action of the alkaline secretion of the intestine and irritates the intestinal mucosa). Hydrolysis of convulvulin produces 74% of rhamnoconvolvulic acid, 9% of tiglic acid, 7.6% of isovaleric acid, 7% of a new compound named exogonic acid, $C_{10}H_{16}O_4$, and 1.4% of methylacetic acid.—C. MANNICH and P. SCHUMANN. *Arch. Pharm.*, 276 (1938), 211–226; through *Chimie & Industrie*, 41 (1939), 522–523. (A. P.-C.)

Lactucin and Lactucopicrin—Isolation of. V. Bitter Principles of the Latex of Lactuca Virosa. A discussion.—G. SCHENCK, H. GRAF and W. SCHREBER. *Arch. Pharm.*, 277 (1939), 137–145. (L. K.)

Licorice Root—Sweet Constituents of. Oxidation of methyl glycyrrhetinate with chromic acid yields methyl ketoglycyrrhetinate, $C_{31}H_{46}O_4$, by oxidation of the secondary hydroxyl group. Reduction of glycyrrhetinic acid by metallic sodium in boiling alcoholic solution yields dehydrohydroglycyrrhetinic acid, probably formed by reduction of the carbonyl to hydroxyl with simultaneous dehydration. Pyrogenic distillation of glycyrrhetinic acid at 380° to 400° C. yields an oily distillate corresponding to the formula $C_{13}H_{20}$, which seems to be a hydrosapotalene.—G. KURONO. *J. Pharm. Soc. Japan*, 58 (1938), 220; through *Chimie & Industrie*, 42 (1939), 109. (A. P.-C.)

Menthones and Menthols—Optically Active. The authors describe an invention relating to the catalytic hydrogenation of levo-piperitone to produce menthones or menthols of full, or very high, optical activity. They have found that the catalytic hydrogenation of levo-piperitone by the usual method leads to products which are either optically inactive or are of low optical activity owing to complete or partial racemization which occurs during the hydrogenation to the menthone stage. Thus the hydrogenation of levo-piperitone in presence of palladium (introduced in the form of palladium chloride) is found to yield a mixture of menthones which are racemized to the extent of 50%. Hydrogenation in presence of known nickel or nickel-copper catalysts containing magnesium as a promoter is found to yield ultimately a menthol mixture having only 65% of the theoretical optical activity. This invention relates to a process for the catalytic hydrogenation of levo-piperitone in which racemization is entirely prevented or greatly reduced during hydrogenation by the choice of suitable conditions for the hydrogenation.—J. W. BLAGDEN and W. E. HUGGETT. British Patent Specification No. 515,171; *Perfumer. Essent. Oil Record,* 31 (1940), 22. (A. C. DeD.)

Rotenone Compositions—Stabilized. Deterioration of rotenone by the action of light and air is inhibited by the addition to the rotenone (suitably in a solvent such as acetone) of a small proportion of a stabilizer such as salicylic acid, dichloroaniline or an aminophenol or an anthranilic acid.—LUDWIG J. CHRISTMANN and DAVID W. JAYNE, JR., assignors to AMERICAN CYANAMID CO. U. S. pat. 2,151,651, March 21, 1939. (A. P.-C.)

Rotenone—Selective Extraction of. Extractions such as that of rotenone from dry powdered derris root are effected by use of a solvent ester such as mesityl oxide oxalate, butyl ester or other suitable δ,ϵ-unsaturated α,γ-diketo carboxylic ester of the general formula $R^1R^2C{:}CR^4COCH_2COCO_2R^3$, where R^1 and R^2 are the same or different organic radicals or, respectively, one organic radical and one hydrogen atom, R^4 is an alkyl radical or a hydrogen atom and R^3 is any organic radical forming an ester of the carboxyl group.—LOWELL B. KILGORE, assignor to KILGORE DEVELOPMENT CORP. U. S. pat. 2,149,917, March 7, 1939. (A. P.-C.)

Tannin (Crystalline) from the Bark of Acer Spicatum. The bark of *Acer spicatum* has been reported as an adulterant of, or substitute for, *Viburnum opulus* so it seemed advisable to determine if the chemical constituents of the two drugs are similar. A crystalline tannin was isolated from the *Acer spicatum* and it and the products of hydrolysis are similar to acer-tannin isolated from *Acer ginuala,* and its products of hydrolysis. A crystalline octoacetyl derivative was prepared and it is similar in chemical and physical properties to the octoacetyl derivative of acer-tannin. A crystalline hexamethyl derivative was prepared; no crystalline methyl derivative of acer-tannin has been described. The preparation of the hexamethyl derivative indicates strongly that the original tannin must possess a structure including six phenolic hydroxyl groups. If so, the original tannin molecule is composed of aceritol to which are attached two separate golloyl nuclei. It is believed that the tannin from *Acer spicatum* bark and that from *Acer ginuala* leaves are identical.—J. L. POWERS and E. L. CATALINE. *Jour. A. Ph. A.,* 29 (1940), 209. (Z. M. C.)

Thymol Derivatives. II. Catalytic Reduction of *p*-Thymotinic Aldehyde. *p*-Thymotinic aldehyde in ether solution has been reduced catalytically at a temperature of 175° C. and at a pressure of 2000 lbs. in the presence of a copper-chromium catalyst yielding pure *p*-methyl-thymol corresponding to 61% of the theoretical yield. When reduced an alcoholic solution at room temperature in the presence of Raney nickel catalyst at a pressure of 2000 lbs., pure *p*-thymotinic alcohol was obtained in a yield of 78% of the theoretical.—C. W. SONDERN. *Pharm. Arch.,* 11 (1940), 9. (W. B. B.)

Thymol Derivatives. I. Preparation of *p*-Thymotinic Alcohol. Attempts to apply the procedure recommended by Lederer and Manasse to thymol resulted in the formation of resinous products from which only small amounts of *p*-thymotinic alcohol and dithymylmethane could be isolated. When the procedure was modified by using equimolar quantities of thymol and formaldehyde in a more concentrated reaction mixture, and the temperature was maintained between 15° and 19° C. throughout the reaction, the method appeared to be very satisfactory for preparing *p*-thymotinic alcohol, since no resinous by-products were formed—C. W. SONDERN. *Pharm. Arch.,* 11 (1940), 7. (W. B. B.)

Volatile Plant Constituents. Synthesis of Vetivazulene. Vetivazulene, from vetiver oil, was synthesized and shown to be identical with the natural product by the identity of the absorption spectra in the ultraviolet and in the visible and of the melting points and mixed melting points of their trinitrobenzoates (151.5–152°), picrates (121.5–122°), and trotylates (80.5–81°) (trinitrotoluene compounds).—A. ST. PFAU and P. A. PLATTNER. *Helv. Chim. Acta,* 22 (1939), 202–208; through *Chem. Abstr.,* 33 (1939), 3370. (E. G. V.)

Fixed Oils, Fats and Waxes

Andiroba Oil—Constitution of. The oil contains volatile acids 0.7, myristic 17.9, palmitic 12.4, oleic 59.4 and linoleic acids 4.9; glyceryl radical 4.7; unsaponifiable matter 1.0%.—T. FLEURY DE AMORIN. *Rev. chim. ind.,* 8 (1939), 217–219; through *J. Soc. Chem. Ind.,* 58 (1939), 962. (E. G. V.)

Brachychiton Diversifolium—Composition of Seeds and Seed Oil of. The seeds (water 11.12, protein 14.87, phosphorus pentoxide 1.07, cellulose 18.98, starch 25.94, pentosans 0.48, pectin 0.95, ash (composition given) 3.66%) yield 23% of oil (freezing point −2° to 3°, density at 15° 0.9236, index of refraction at 25° 1.4673, specific rotation nil, acid value 32.9, saponification value 187.9, acetyl value 50.5, Reichert-Meissl value 2.86, iodine value 103.6, unsaponifiable matter 0.89%), the fatty acids of which are palmitic (7.58), stearic (5.4), oleic (64.67) and linoleic acid (11.32%).—G. LABRUTO and E. DE ANGELIS. *Ann. chim. Applicata,* 29 (1939), 68–73; through *J. Soc. Chem. Ind.,* 58 (1939), 742. (E. G. V.)

Castor Oil—Variations in the Physical and Chemical Properties of, Due to Thermal Treatment under Different Conditions. The effect of heating castor oil at temperatures up to 325° at normal (625 mm.), reduced (5–10 mm.), and increased pressures has been studied, with reference to the changes induced in chemical composition of the oil and its decomposition products, and consequently in the usual analytical characteristics. The work was undertaken in order to define the conditions for complete miscibility of castor oil with mineral oils. The major chemical change involved is the decomposition of the oil. Oils produced by thermal treatment, though of excellent viscosity, are much more liable to form sludge and gum than raw castor oil.—F. HAWKE and B. SEGAL. *J. Soc. Chem. Ind.,* 58 (1939), 270–272. (E. G. V.)

Cinnamomum Loureirii—Seed-Fat of. The seed of *Cinnamomum loureirii* Nees contains 37% of solid fat which has nearly the same properties as that obtained from the seed of *Cinnamomum japonicum* Siebold. The solid fat, after repeated recrystallization from acetone and alcohol, gave a crystalline substance melting at 34.5°. On the basis of its melting point, elementary analysis and saponification value, this substance appears to be α,α'-dilauryl-β-monocaprin. The crystalline product gave no depression of melting point when mixed with the latter synthetic compound. The solid fat, itself, may be used as a substitute for cacao butter.—TATUO KARIYONE and HIROYUKI IWAO. *J. Pharm. Soc. Japan,* 59 (1939), 113–115 (in English, 29–30). (N. L.)

Cod Liver Oil—British. Its Production, Properties and Uses.—K. MACLENNAN. *J. Ministry Agr.*, 45 (1939), 1245-1254; through *J. Soc. Chem. Ind.*, 58 (1939), 963. (E. G. V.)

Cod Liver Oil—Difference in Color between Brownish and Water-White. Samples are compared with an arbitrary standard in a colorimeter. —A. VOSSGARD. *Arsberetn. vedkomm. Norges Fisk.*, 111 (1936), 52–54; through *J. Soc. Chem. Ind.*, 58 (1939), 744. (E. G. V.)

Fats—Spoilage of. VII. Effect of Heating on Storage Stability of Fats. The autoxidation of fats in storage depends on the concentration of peroxides and natural antioxidants. Preheating of fats in air at 150–200° increases peroxidation and considerably reduces the induction period of subsequent autoxidation (heating in nitrogen impairs the stability to a smaller degree). Heating in air at more than 200° reduces the content of peroxides, but nevertheless reduces the stability of the fat (although in a smaller degree than in the first case), probably because the heating causes destruction of natural antioxidants.—J. KOCHLING and K. TAUFEL. *Fette u. Seifen*, 46 (1939), 206–209; through *J. Soc. Chem. Ind.*, 58 (1939), 742. (E. G. V.)

Fatty Oil from the Seeds of Bauhinia Variegata L. The oil from the seeds of *Bauhinia variegata* L. consists of the glycerides of myristic, palmitic, stearic, lignoceric, oleic and linoleic acids together with the phytosterol and sitosterol.—S. V. PUNTAMBEKAR and S. KRISHNA. *J. Indian Chem. Soc.*, 17 (1940), 96. (F. J. S.)

Glycerides of Vegetable Fatty Oils. I. Niger Seed Oil. The fatty oil extracted from the seed of *Guizotia abyssinica* (Niger seed) has been found to contain myristic acid (along with some capric, caprylic and lauric acids) (1.7%), palmitic acid (5%), stearic acid (2%), oleic acid (38.9%) and linolic acid (51.6%) along with traces of archidic, behenic and lignoceric acids. The glyceride structure of the oil has been determined by brominating the neutral oil, resolving the brominated solid and liquid products into a number of simpler fractions and estimation of the fatty acid composition of the different fractions. The component glycerides of the oil have been found to be trilinolin (2%), oleo-di-linolin (40%), di-oleo-linolin (30%), myristo-di-linolin (2%), myristo-oleo-linolin (3%), palmito-di-linolin (6%), palmito-oleo-linolin (11%), stearo-di-linolin (2%) and stearo-oleo-linolin (4%).—N. L. VIDYARTHI and M. VENKATESH MALLYA. *J. Indian Chem. Soc.*, 17 (1940), 87. (F. J. S.)

Iodized Oils. Iodized oils are so constituted that the iodine is not released by peptic digestion but only by pancreatic or enteric digestion and in this manner digestive disturbances characteristic of the inorganic iodine compounds are avoided. Iodized oils are split up into iodized fatty acids and glycerin. After passing through the chyliferous ducts they are rebuilt and then pass into the lymphatic circulation and thence into the blood. Here part is oxidized and the liberated iodine eliminated by the kidneys as sodium iodide. The remaining portion is accumulated in the reserve organs, mostly lipoid tissues, where it is gradually absorbed at a slow and constant rate according to the needs of the organism and subsquently eliminated gradually and continuously. The chief advantages of iodized oils are summarized: they are highly tolerated—being closely related to the edible oils, and slow absorption and elimination avoids the risk of iodism. Therapeutically, iodized oils are indicated in lymphatic gland disorders, scrofula, thyroid disturbances, and in various rheumatic and syphilitic conditions. Recently, iodized oils (with an iodine content of 25% and above) have been used in radiological diagnosis as substitutes for the barium meal since the high iodine content renders them very opaque to X-rays. Iodized oils are prepared by saturating fatty oils containing unsaturated fatty acids with reagents such as hydrogen iodide, iodine monochloride and iodine monobromide—these reagents adding to the double bonds in the fatty acid molecule. Iodine monochloride appears to be the best reagent while fatty edible oils such as sesame and ground-nut oils—which have high iodine values—give iodized oils with a higher iodine content. One method of preparing iodized oils using iodine monochloride is: Iodine monochloride is first prepared by treating 75 Gm. iodine trichloride with 200 cc. cold water (15°) until a clear orange solution is obtained. The resultant mixture is cooled in ice water and 100 cc. sesame oil previously cooled to 0° is added in small portions with constant shaking during the course of 15 minutes. The reaction flask is then removed from the cooling bath, corked and the contents vigorously shaken with occasional cooling until a homogeneous thick, ivory-white emulsion is obtained. The emulsion is allowed to stand in the dark for one hour, transferred to a separatory funnel by means of 100 cc. chloroform, the mixture shaken and then allowed to stand in the dark for 3–4 hours until separation of the layers occurs. The organic layer is separated, washed with water and dried over calcium chloride. The solvent was recovered by distillation using a current of dry air toward the end. The residual liquid (devoid of the odor and taste of chloroform) is cooled and transferred to amber-colored containers. The yield of iodized oil is 100-cc. On shaking 1 cc. of the product with 1 cc. distilled water and 1 cc. chloroform, the aqueous layer does not react acid to litmus; the absence of free iodine was indicated by a negative test with starch paste. The above method was repeated but instead of obtaining iodine monochloride from iodine trichloride, it was prepared directly from iodine and chlorine. Using this modification, from 100 cc. sesame oil and 40 Gm. iodine, an iodized oil containing 28% iodine was obtained. When the quantity of iodine was increased to 50 Gm., the iodized oil obtained had an iodine content of 32%. When sesame oil was replaced by arachis oil, the iodized oils obtained had an iodine content of 28 and 30% when 40 and 50 Gm. of iodine were used, respectively.—S. RANGASWAMI. *Indian J. Pharm.*, 2 (1940), 3–8. (N. L.)

Marine-Animal Oils—Modifying the Rate of Oxidation of. The oxygen absorption (determined manometrically) of marine-animal oils is very much greater when the oil is distributed over dry pelt than when it is in like contact with chromium-tanned leather or cotton wool, indicating that the skin substance plays a definite part in the oxidation and, hence, presumably, in the chamoising process. The degree of oxygen absorption (which is small compared with the theoretical even with the most active fish oil) could be greatly increased by addition of catalysts such as cobalt linoleate, but the relative effect of pelt, leather or cotton as contact fibers is preserved. The presence of free fatty acids reduces the oxygen absorption, as also does sulfonation of the oil or dilution with mineral oil.—J. JANY. *Fette u. Seifen*, 46 (1939), 340–343; through *J. Soc. Chem. Ind.*, 58 (1939), 963. (E. G. V.)

Oil Seeds—Continuous Extraction of. A lecture.—K. HILDEBRANDT. *Fette u. Seifen*, 46 (1939), 350–352; through *J. Soc. Chem. Ind.*, 58 (1939), 961. (E. G. V.)

Oleic Acid—Study of the Methods of Separation of, from Saturated Acids and Linoleic Acid with Observations on the Preparation of Oleic Acid. Various methods for the purification of oleic acid were compared as to efficiency of separation from saturated acids and from linoleic acid. A scheme was devised, consisting of crystallization from acetone at −20°, −60° and −40°, followed by a precipitation of part of the remaining saturated acids as lead soaps in alcohol, and finally a fractional distillation at 1 mm. pressure, which yielded a sample of oleic acid 97.8% pure, as determined by iodine number and thiocyanogen number analyses. This probably represents as pure a sample of oleic acid as has thus far been obtained.—P. J. HARTSUCH. *J. Am. Chem. Soc.*, 61 (1939), 1142. (E. B. S.)

Olive Oil—Analysis of. The properties and characteristics of unrefined and refined (I) expressed and refined solvent-extracted (II) olive oils are reviewed in relation to various methods for the detection of blending and adulteration. I and II are differentiated by the notable different clouding points (about 30° and 45–40°, respectively) of the unsaponifiable matter of the oil (methods for the ether-extraction of the unsaponifiable matter and the determination of the clouding points and freezing points are detailed), and figures for typical mixtures of I and II are shown. II tend to have very high index of refraction and may also be detected by the Fachini-Dorta modification of the Morawski color test for rosin.—G. B. MARTINENGHI. *Fette u. Seifen*, 46 (1939), 333–337; through *J. Soc. Chem. Ind.*, 58 (1939), 961. (E. G. V.)

Olive Oil—Detection of Semidrying Oils in. To 100 cc. of the purified petroleum ether cooled to 0° C. add about 4 cc. of bromine, drop by drop, while stirring. Pour 1 cc. of the oil sample in a dry test-tube (1 inch in diameter), dissolve in 10 cc. of petroleum ether, allow to stand in an ice bath for about 15 minutes, add in small successive portions (with shaking) sufficient bromine reagent (generally about 10 cc.) to ensure excess of bromine (as shown by the brown color of the liquid); presence of a turbidity (due to precipitation of tetrabromide of linoleins) after standing for 1 hour in an ice bath indicates the presence of at least 5% of soy bean oil, or 5% of sunflower seed oil, or 10% of corn oil.—VIZERN and GUYOT. *Ann. Fals.*, 32 (1939), 252–254. (A. P.-C.)

Perilla Seed from Burma. The seed of *P. ocymoides* contained 44.8% of oil (on dry basis) having density at 15.5° 0.9336, index of refraction at 20° 1.4816, acid value 1.7, saponification value 191.3, iodine value (Wijs, 1 hour) 193.4, and unsaponifiable matter 1.0%. The oil conforms to the requirements of the British and American Standard Specifications.—ANON. *Bull. Imp. Inst.*, 36 (1938), 467–468; through *J. Soc. Chem. Ind.*, 58 (1939), 288. (E. G. V.)

Plant Fatty Oils of Different Sources. A review of 66 oils with a statement of their saponification values.—WALTER MEYER. *Wien. Pharm. Wochschr.*, 73 (1940), 64–65. (H. M. B.)

Rape Oil—Hydrogenation of. Rape oil is hydrogenated at 250–255° (copper carbonate-nickel carbonate-nickel bicarbonate catalyst).—E. BOTKOVSKAJA and A. DIMSCHITZ. *Maslob. Zhir. Delo*, 2 (1939), 21–22; through *J. Soc. Chem. Ind.*, 58 (1939), 742. (E. G. V.)

Sesame Oil—Hydrogenated, as a Rancidity Inhibitor. Partially hydrogenated sesame oil appears to have a definite inhibitory action to rancidity in lard when used in very large amounts. Smaller amounts reduce the extent of rancidity, but do not prevent it. As little as 20% retards rancidity; a mixture of 60% of hydrogenated sesame oil and 40% of lard did not develop rancidity in seven days whereas untreated lard became definitely rancid within that time. A mixture of 80% hydrogenated sesame oil and 20% of lard did not develop rancidity within 28 days. The unsaponifiable matter obtained from hydrogenated sesame oil did not possess rancidity-inhibiting properties. Two tables are given in the experimental portion of the article.—G. W. FIERO. *Pharm. Arch.*, 11 (1940), 1. (W. B. B.)

Soap—Hydrogenated Fats for. A brief discussion. Aging tests by ultraviolet are recommended.—ANON. *Am. Perfumer*, 39 (1939), No. 6, 37, 78. (G. W. F.)

Soaps from Coal. Fatty Acids and Alcohols and Wax Esters from Hydrocarbons. A review dealing with the oxidation of saturated hydrocarbons by means of combined and molecular oxygen. 115 references.—WALTER MEYER. *Riechstoff-Ind. Kosmetik*, 15 (1940), 1–7. (H. M. B.)

Waxes—True. The more important substances which are erroneously called waxes are bayberry, ceresin, earth, mineral, Japan and paraffin waxes. Among the substances which are true waxes but are often not designated as such are Arctic sperm oil, dolphin oil, jojoba oil, mutton bird oil, sperm oil and wool fat.—L. W. GREENE. *J. Chem. Educ.*, 16 (1939), 170–171. (E. G. V.)

Unclassified

Acylamino Acids and Their Salts—Polyiodo Derivatives of. A process for the manufacture of polyiodo derivatives of acylamino acids or their neutralization products comprises reacting a di- or tri-iodo aromatic acyl halide with an amino acid in the presence of a neutralizing agent. Such products, though difficultly soluble themselves, form more easily soluble salts with alkali metals and with organic bases such as alkyl amines and alkoxy amines, and various of the salts may be used for internal and external disinfection.—MAX DOHRN and PAUL DIEDRICH, assignors to SCHERING A. G. U. S. pat. 2,160,413, May 30, 1939. (A. P.-C.)

Alkenyl Amides—Aliphatic Mercurated. Details are given of the production of various mercury derivatives of the alkenyl amides of aliphatic acids, especially those containing one or more hydroxyl groups, which are effective diuretics of relatively low toxicity.—DONALEE L. TABERN, assignor to ABBOTT LABORATORIES. U. S. pat. 2,163,296, June 20, 1939. (A. P.-C.)

Alkylene Oxide-Tannic Acid Reaction Products. Ethylene oxide or propylene oxide is introduced into a solution of tannic acid maintained at a temperature of about 0° to 10° C., the reaction is permitted to go to completion and impurities are removed from the reaction mass, as by precipitation with alcohol. The resulting products may be used as therapeutic agents.—KARL M. HERSTEIN, assignor to SKOL CO. U. S. pat. 2,167,073, July 25, 1939. (A. P.-C.)

2-Alkylmercurithiopyridine-5-Carboxylic Acids. Brief reference to the literature introduces the report. In general, alkylmercurimercapto compounds dissolved in aqueous solution in the form of their alkali metal salts acquire properties that make them undesirable in medicine. These solutions have been stabilized by the addition of small amounts of aliphatic amines and diamines. The present report describes alkylmercuri derivatives of 2-mercaptopyridine-5-carboxylic acid. Stability tests carried out at room temperature and at 60° C. on aqueous solutions of sodium 2-ethylmercurithiopyridine-5-carboxylate indicate that compounds of this type are quite resistant to oxidation even in the presence of metal ion catalysts. Details of experimental work are reported.—LEWIS A. WALTER and RUSSEL J. FOSBINDER. *Jour. A. Ph. A.*, 29 (1940), 211. (Z. M. C.)

***C*-Alkylresorcinols. IV. Nuclear Methylation of 4-Acylresorcinols.** The nuclear methylation of various 4-acylresorcinols, *viz.*, respropiophenone, resbutyrophenone, 2,4-dihydroxyphenylbenzyl ketone and 2,4-dihydroxybenzophenone has been studied. Respropiophenone on nuclear methylation affords 2-hydroxy-3-methyl-4-methoxy-propiophenone, demethylation of which gives 2,4-dihydroxy-3-methyl-propiophenone which is identical with the ketone prepared by the application of the Hoesch reaction to 2-methylresorcinol and propionitrile. Kostanecki acetylation of the nuclear methylated ketone gives 7-methoxy-2:3:8-trimethyl-chromone. Similarly, the nuclear methylation of the other 4-acylresorcinols has been studied.—H. A. Shah and R. C. Shah. *J. Indian Chem. Soc.*, 17 (1940), 32. (F. J. S.)

Benzaldehyde—3-Chloromethyl-4-Methoxy. A study of the compound especially with the view of synthesizing medicinally valuable products. A new method is given for the preparation of 3-oxymethyl-4-methoxy benzaldehyde. The following were also synthesized: 1-(3′-chloromethyl-4′-methoxyphenyl-)2-nitroethylene; the (3′-oxymethyl-4′-methoxyphenyl-)2-nitroethylene; 1-(3′-chloromethyl-4′-methoxyphenyl-)2-nitropropylene(1,2); 1-(3′-oxymethyl-4′-methoxyphenyl-)2-nitropropylene-(1,2); oxime of (3-oxymethyl-4-methoxyphenyl)-acetaldehyde; (3-oxymethyl-4-methoxyphenyl)-acetaldoxime; β-(3-oxymethyl-4-methoxyphenyl-)-ethylamine; 3-oxymethyl-4-methoxy-cinnamic acid; 3-methyl-4-methoxy-hydrocinnamic acid; *p*-methoxy-isophthalic aldehyde; *p*-methoxy-isophthalic acid; dioxime of *p*-methoxy-isophthalic aldehyde.—Benno Reichert and Karl Auf dem Kampe. *Arch. Pharm.*, 277 (1939), 261–271. (L. K.)

α-Bromonaphthalene—Conversion of, to the β-Isomer. The conversion of α-bromonaphthalene into the β-isomer is of importance in the synthesis of naphthyl-2-acetic acid, one of the synthetic plant hormones. Roux's method (*Ann. chim. phys.*, 12 (1887), 6) of bringing about this conversion by warming the α-isomer with aluminum chloride and carbon disulfide has been improved upon. The addition of small amounts of nickel, tungsten and molybdenum as promoters for the reaction increased the yield of the desired product by more than 100%.—Herbert E. Fisher and R. H. Clarke. *Can. J. Research*, 17 (1939), 251–252. (W. T. S.)

Camphane Series—Synthetical Investigations in the. V. Synthesis of Ethyl Bicyclo-(1:2:2)-Heptanedione Dicarboxylate from Ethyl Cyclopentanone-2:5-Dicarboxylate. The monosodium salt of ethyl cyclopentanone-2:5-dicarboxylate has been reacted with one molecule of ethyl bromoacetate to yield *cis-* and *trans*-ethyl-2:5-dicarbethoxy-cyclopentanone-5-acetate, which on Dieckmannization yields a product containing bicyclo-(1:2:2)-heptanedione-dicarboxylic ester. The latter on hydrolysis and decarboxylation yields bicyclo-(1:2:2)-heptanedione carboxylic acid.—P. C. Guha and G. D. Hazra. *J. Indian Chem. Soc.*, 17 (1940), 107. (F. J. S.)

Chaulmoogryl Chaulmoograte. In the course of a study of chaulmoogra oil, chaulmoogryl chaulmoograte (the mixed ester of chaulmoogryl and hydnocarpyl alcohols with chaulmoogric and hydnocarpic acid) was synthesized. Reduction of chaulmoogra oil by the Bouveaux-Blanc method using metallic sodium and absolute alcohol gave a mixture of hydnocarpyl and chaulmoogryl alcohols. A mixture of these alcohols was then condensed with chaulmoogric acid chloride, previously prepared by reacting chaulmoogric acid with phosphorus trichloride. The chaulmoogryl chaulmoograte thus obtained was recrystallized from 90% alcohol; it melted at 31°; $[\alpha]^{23}_{D} = +55.40°$; saponification value 114.—Tatuo Kariyone and Takeo Sugahara. *J. Pharm. Soc. Japan*, 59 (1939), 29–32 (in English, 18–20). (N. L.)

Dehydrogenation—Studies in. V. The syntheses and selenium dehydrogenation of tetrahydrophenanthrene-2:2-spiro-cyclopentane and 9-methyltetrahydrophenanthrene-2:2-spiro-cyclopentane have been described. The former on dehydrogenation gives chrysene and the latter forms 3-methyl-1:2-benzanthracene.—Suresh Chandra Sen-Gupta. *J. Indian Chem. Soc.*, 17 (1940), 101. (F. J. S.)

Diazoamino Compounds. For the manufacture of diazoamino compounds which may be used for biological and pharmaceutical purposes, an amine is diazotized and the product is condensed, in a medium which must not be strongly acid, with another amine which does not contain a phenolic hydroxyl group, one of the amines being an aniline-arsonic acid and the other being a primary or secondary amine containing at least one sulfonic acid group.—Hans E. Fierz-David and Willy G. Stoll, assignors to Etablissements Kuhlmann. U. S. pat. 2,166,681, July 18, 1939. (A. P.-C.)

Dihydroestrin Series—Partially Esterified Compounds of the. A process for the manufacture of partially esterified compounds of estradiol, dihydroequilenin and estriol having a phenolic hydroxyl group involves treating a completely esterified compound of such dihydroestrin series with a hydrolytically acting agent such as potassium hydroxide, sodium carbonate, hydrochloric acid (suitably in the presence of an alcohol as solvent, although other solvents also may be used). It may be advantageous to start from mixed esters of which the phenolic hydroxyl has been substituted by especially easily eliminated acid residues, *e. g.*, the acetyl or the formyl radical. This is particularly so in making compounds of the dihydroestrin series which are substituted in 17-position by aromatic residues, for instance, the estradiol 17-monobenzoate which has been prepared, *e. g.*, from estradiol 3-butyrate-17-benzoate or the like. The products are suitable for therapeutic use.—Karl Miescher and Caesar Scholz, assignors to Society for Chemical Industry in Basle. U. S. pat. 2,160,555, May 30, 1939. (A. P.-C.)

Diketene—New Industrial Chemical. Diketene reacts with hydroxyl groups to form acetoacetic esters such as ethyl acetoacetate, with amino groups to form acetoacetamides such as acetoacetanilide, and with phenyl hydrazines to form phenyl-methyl-pyrazolones. When reacted with ureas, diketene forms 4-methyluracils, and the reaction between diketene and aromatic hydrocarbons in the presence of aluminum chloride yields 1,3-diketones such as benzoylacetone. Halogens add to diketene to form γ-haloacetoacetyl halides, and β-butyrolactone is formed when diketene is hydrogenated.—A. B. Boese. *Ind. Eng. Chem.*, 32 (1940), 16–22. (E. G. V.)

Ephedrine and Adrenaline Analogs and Their Esters Containing the Morpholine Nucleus. Since the discovery that pressor activity lies in the grouping Ar—C—C—N and anesthetic activity in the grouping Ar—CO—O—C—C—N—R several attempts have been made to combine these groupings in a single compound. While some success has come of these efforts, no definitely superior compound possessing both activities has resulted. Now it is proposed to condense morpholine, derivatives of which are known to be anesthetic in activity, with certain groupings known to possess pressor activity. Morpholine was condensed with phenacyl bromide, α-bromopropiophenone, *p*-hydroxyphenacyl chloride, 3,4-dihydroxyphenacyl chloride and phenylethyl bromide to yield amino ketones. The resulting amino ketones were reduced to the corresponding carbinols. The carbinols were converted to the benzoates and in one instance to the cinnamate. Since certain hydantoins substituted in the five position have been shown to possess hypnotic activity, attempts were made to prepare the hydantoins corresponding to each of the four amino ketones. By the method used, that of the Bucherer, only one hydantoin could be prepared, namely 5-phenyl-5-morphinomethylhydantoin. Directions are given for the preparation of the amino ketones as well as for the several intermediates needed for their syntheses. The amino ketones were catalytically reduced and the resulting alcohol esterified with benzoyl chloride at 120–130° or with cinnamoyl chloride at 150° depending on which ester was desired. No report of the pharmacological activity of the compounds is included.—Nathan Rubin and Allan R. Day. *J. Org. Chem.*, 5 (1939), 54. (W. T. S.)

Ethers—New Modification of the Williamson's Synthesis for. The synthesis of ethers from carbinols by the method of Williamson, developed eighty-nine years ago, has the following inherent disadvantages. The yields are seldom greater than 50%, the desired product is always contaminated and the higher molecular alcohols combine with potassium so sluggishly that heat is necessary for the reaction. The present authors have been able to prepare good yields of the methyl ether of several alcohols by forming the sodium derivative of a selected alcohol with sodium naphthalene (*J. Am. Chem. Soc.*, 58 (1936), 2442) and then adding this to methyl iodide or sulfate. Methyl ethers of the higher alcohols are obtained in better yields than those of lower alcohols. Several precautions are given concerning the selection of a suitable reaction medium as well as other factors which influenced the separation of the desired product.—Philip G. Stevens and Sidney A. V. Deans. *Can. J. Research*, Sec. B., 17 (1939), 290–292. (W. T. S.)

Homoisovanillinic Acid—Synthesis of. A new method is described for the synthesis of the acid. The melting point obtained is 5° higher than that given by Späth. The yields of homoisovanillinic acid, based on isovanillin, were 30% to 40%.—H. W. Bersch. *Arch. Pharm.*, 277 (1939), 271–286. (L. K.)

Isoquinolines. IV. Synthesis of Benzo-Isoquinolines and Investigation of Methods to Prepare Isoquinolines from Naphthalenes. The investigation was undertaken for the purpose of preparing benzoisoquinolines of the type of 1-methyl-3-hydro-4,5-benzo-isoquinoline from the easily obtainable α-naphthyl-methylamines. The influence of the agents usually used for ring closure were investigated on the acetyl derivatives of 2-methoxy- and 4-methoxy-naphthyl-methylamines and on the acetyl derivatives of 4-methoxy-naphthyl-α-methylamine. Only non-basic substances were obtained. The expectation that the Bischler-Napieralsky reaction could be used on these acet-α-naphthyl-methylamines to obtain benzo-isoquinolines by condensation was not fulfilled. The failure to achieve ring closure with these compounds parallels previous fruitless attempts by other investigators to prepare isoquinolines from bases of the benzylamine type. Attempts were made to prepare substituted naphthyl-β-ethylamines from easily accessible naphthalene compounds and to convert the former to benzo-isoquinolines, but these efforts were unsuccessful. A simple method was devised for the preparation of acyl-ω-amino-acetonaphthones and acetophenones through condensation of naphthylphenyl ethers with hippuryl- and acetyl-glycyl-chlorides. Several of these compounds were converted by usual procedures into 3,4-dihydro-4-keto-benzo-isoquinolines which were obtained in moderately good yields. The benzo-isoquinolines which were prepared in this manner are rather weak bases. Up until the present, it has not been possible to reduce them to the corresponding tetrahydro-isoquinolines. Thirty-one references.—B. B. Dey and S. Rajagopalan. *Arch. Pharm.*, 277 (1939), 359–374; 377–398. (L. K.)

Lactone of Saturated Aliphatic Hydroxy Ether Acids. A lactone suitable for fixing perfumes is produced by a process comprising heating under vacuum (suitably with magnesium chloride) a linear polyester such as that of ω-(β-hydroxyethoxy)undecanoic acid.—Edgar W. Spanagel, assignor to E. I. du Pont de Nemours & Co. U. S. pat. 2,163,109, June 20, 1939. (A. P.-C.)

Lupeol. IV. A detailed description of the following is given: oxidation of lupeolacetate, preparation of oxolupeanic acids I and II, preparation of the 2,4-dinitrophenylhydrazone of oxolupeanic acid methyl ester I and II, preparation of the keto alcohol, preparation of the diketone, oxidation of lupeol with chromic acid, thermal decomposition of lupeolbenzoate, preparation of lupeylxanthogenic acid methyl ester, thermal decomposition of the lupeylxanthogenic acid methyl ester, preparation of dibromlupeolacetate, splitting off HBr from dibromlupeol acetate, preparation of monobromlupeol.—F. Biedebach. *Arch. Pharm.*, 277 (1939), 163–173. (L. K.)

Methyl Oleate—Preparation and Properties of Highly Purified. In an effort to separate pure oleic acid from the other unsaturated acids of edible oils, the methyl esters were fractionated, *in vacuo*, in an electrically heated column. The first distillation removed palmitic and lower esters. After most of the linoleic ester was crystallized from acetone at −60° C., the bulk of the saturated esters were precipitated from acetone at −37° C. and filtered off. Methyl linoleate was then eliminated from the filtrate by two crystallizations from acetone at −60° C. Any remaining methyl palmitate was removed by fractional distillation *in vacuo*, and traces of linoleate were crystallized from redistilled petroleum ether. Analysis of all the fractions indicated a final product of 99% purity, or better. Some physical and chemical properties of the purified methyl oleate, and of the oleic acid obtained from it were reported.—D. H. Wheeler and R. W. Riemenschneider. *Oil & Soap*, 16 (1939), 207; through *Squibb Abstract Bull.*, 13 (1940), A-61. (F. J. S.)

Pechmann Condensation of Methyl β-Resorcylate with Some β-Ketonic Esters. Methyl β-resorcylate has been condensed with ethyl α-chloro and α-benzoyl acetoacetates and with ethyl acetone dicarboxylate in the presence of sulfuric acid. The results obtained show that, as in the condensation of methyl β-resorcylate with ethyl α-alkyl acetoacetates, the 4-carbomethoxy group in the resorcinol nucleus has only little retarding influence on the Pechmann condensation.—S. M. Sethna and R. C. Shah. *J. Indian Chem. Soc.*, 17 (1940), 37. (F. J. S.)

Pyrones and Related Compounds. I. Formation and Structure of 2,6-Dihydroxy-1:4-Pyrone. From acetone dicarboxylic acid, 3,6-dihydroxy-1:4-pyrone has been obtained and its various derivatives have been described.—R. Kaushal. *J. Indian Chem. Soc.*, 17 (1940), 138. (F. J. S.)

Theophylline and Monoamino Polyhydric Alcohols—Soluble Double Salts of. A soluble double salt of theophylline is prepared by reaction with ethyl-, methyl- or ethanol-glucamine.—Ernest H. Volwiler and Edmond B. Moore, assignors to Abbott Laboratories. U. S. pat. 2,161,114, June 6, 1939. (A. P.-C.)

BIOCHEMISTRY

Alanine and the Sum of the Serine and Aspartic Acid in Proteins—Colorimetric Determination of. Application to the Protein of the Yellow Enzyme. The method of Fromageot and Heitz for the determination of amino acids in products of hydrolysis, applied to proteins, gave the following results: in edestin—5.55% alanine, 0.7% serine, 10.6% aspartic acid; in casein—2.7% alanine, 2.3% serine, 4.1% aspartic acid; in yellow enzyme—8.2% alanine, 1.7% serine and 3% aspartic acid.—P. Desnuelle. *Enzymologia*, 5 (1938), 37–43; through *Chimie & Industrie*, 41 (1939), 885. (A. P.-C.)

Amines—Reaction between, and Sodium 1,2-Naphthoquinone-4-Sulfonate. The amount of color given by some 27 amines, including both aliphatic and aromatic, which react with sodium 1,2-naphthoquinone-4-sulfonate was found to be influenced by the quantity of alkali and acid added to the reaction medium. The quantitative nature of the reaction was studied by comparing the amount of color given by ammonium hydroxide and the amines with that given by an equivalent quantity of glycine.—E. G. Schmidt. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 99–100. (E. G. V.)

Aneurin—Manufacture of. The condensation of 3-chloro-2-alkoxy-2-methyl-tetrahydrofurans with 4-amino-2-methyl-5-thioformamido-methylpyrimidine (I) is claimed. For example, I is heated with 3-chloro-2-ethoxy-2-methyltetrahydrofuran in 95% formaldehyde at 45–50° for 20 hours.—F. Hoffmann-La Roche & Co. Brit. pat. 500,519; through *J. Soc. Chem. Ind.*, 58 (1939), 665. (E. G. V.)

Arsenic Compounds upon Erythocytes in Vitro—Fixation of. Fixation *in vitro* depends solely on the valence of the arsenic; only trivalent arsenic compounds are rapidly fixed upon the red corpuscles; pentavalent arsenic compounds are not adsorbed *in vitro*, regardless of time of contact. Organic trivalent arsenic compounds seem to be more actively adsorbed than mineral arsenic compounds. Fixation is reversible, *i. e.*, globules saturated with arsenic, partly give it over to plasma when in contact with it, forming a new equilibrium.—J. Thuret. *J. pharm. chim.*, 28 (1938), 22–30; through *Chimie & Industrie*, 41 (1938), 462. (A. P.-C.)

Ascorbic Acid and Its Isomers—Production of. Various examples with details are given for the conversion of esters of 2-ketohexonic acids to the corresponding saccharosonic acids in aqueous solution by heating in the presence of iron, nickel, cobalt, manganese, cadmium or zinc (as for the production of *l*-ascorbic acid from the methyl ester of 2-keto-*l*-gulonic acid).—Richard Pasternack and Peter P. Regna, assignors to Charles Pfizer & Co. U. S. pat. 2,165,141, July 4, 1939. (A. P.-C.)

Ascorbic Acid—Photochemical Decomposition of, in Black Currant Syrup. Storage tests on black currant syrup show that exposure to light destroys a considerable proportion of the ascorbic acid, while storage in a refrigerator (0°) appears to have little advantage over storage at room temperature (18°) in the dark. The destruction of the vitamin by light is accompanied by a simultaneous fading of the color. A possible relationship between the two is suggested. "Bulk storage" in the dark appears satisfactory in conserving the vitamin content of the syrup, about 85% of the original ascorbic acid being still present after 435 days storage.—H. T. Fawns. *J. Soc. Chem. Ind.*, 58 (1939), 193–194. (E. G. V.)

Ascorbic Acid—Process of Producing. 2-Keto-gulonic acid is converted into ascorbic acid by heating its methyl ester in a solvent (suitably water and alcohol or water and dioxane in the presence of metallic magnesium). Various examples with details of procedure (which may involve heating with refluxing) are given.—Richard Pasternack and Peter P. Regna, assignors to Charles Pfizer & Co. U. S. pat. 2,165,184, July 4, 1939. (A. P.-C.)

Bismuth—Determination of, in Biological Material. A photometric "mixed color" dithizone method for the determination of bismuth, applicable to biological material, has been devised. Quantitative extractions are made possible by isolating the bismuth as the sulfide, interference by other metal sulfides being prevented by complex salt formation with potassium cyanide and specific separation of the bismuth at p_H 2. Although used specifically for the analysis of blood and urine samples, the method is applicable to other materials. It is very sensitive; amounts of bismuth below 5 micrograms can be determined with a high degree of accuracy and 95% recoveries have been obtained for quantities above 50 micrograms.—D. M. Hubbard. *Ind. Eng. Chem., Anal., Ed.* 11 (1939), 343–345. (E. G. V.)

Bleeding Period—Stable Products Shortening the. In the preparation of a stable product shortening the bleeding period, the spinal cord or brain of mammals such as the ox or calf is extracted with about 50% aqueous alcohol, and the extract is dried under sterile conditions.—Otto Ripke and Karl Döttle, assignors to Winthrop Chemical Co. U. S. pat. 2,162,863, June 20, 1939. (A. P.-C.)

Calcium and Blood Coagulation. In the serum of the fowl calcium appears not to combine with fibrinogen in the formation of fibrin since the calcium content of the serum and plasma are found to be the same. Calcium has no influence on the rate of coagulation of fowl plasma by thrombase but coagulation by thrombokinase is prevented when calcium readily precipitated by oxalate is removed, a concentration of at least 0.3 mg. % being required for this latter reaction. Only 8–9 mg. % of calcium is readily precipitated from plasma by soluble oxalate. The rate of activation of prothrombase by thrombokinase is accelerated by the presence of calcium ions.—J. Mellanby and C. L. G. Pratt. *Proc. Roy. Soc.* (London), B., 127 (1939), S108. (W. T. S.)

Calcium Lactate—Useful Diet Supplement. The addition of calcium lactate or skimmed milk to the generally restricted diet of Indian children resulted in weight and height increments, with the skimmed milk supplement producing the greater improvement.—W. R. Aykroyd and B. G. Krishnan. *Ind. J. Med. Research*, 27 (1939), 409. (W. T. S.)

Capillary Permeability—Substances Increasing the, in Blood Serum in Various Ailments. Human serums were injected intracardially in the salamander, and the electrical potential differences between the blood and the liver cells were determined. By the aid of these potential measurements, there was shown in the blood, during many ailments, the presence of substances increasing the permeability of the vessels, especially in cases of serious inflammation. These substances disappear from the blood as convalescence proceeds. By means of investigations with deproteinized serum, it was shown that these substances are converted to proteins, are heat stable and can be attacked by body enzymes.—Bruno Schober. *Z. f. Klin. Med.*, 133 (1938), 50–55. (L. K.)

Carotene—Assimilation of, by Rats from Fat-Free Diets. In view of conflicting reports M. has determined whether carotene is assimilated by rats on a fat-free diet. By using the degree of improvement of xerophthalmia in vitamin A-depleted rats as a criterion it was found that this test animal was able to assimilate carotene fed in colloidal solutions in water even when the diet contains less than 0.04% fat.—B. N. Majumdar. *Ind. J. Med. Research*, 27 (1939), 413. (W. T. S.)

Carotene—Determination of. The author outlines the various steps in the usual processes for the separation of the carotene from other pigments. Notes are also given on the determination of some of the other pigments, *e. g.*, xanthophyll, lycopene, cryptoxanthin. The colorimetric determination of carotene is dealt with and it is shown that the carotene solution as obtained from dried grass by the ordinary processes usually contains only about 80% of β-carotene. In spite of this, such a process is considered to give a useful commercial valuation. Spectrophotometric and chromatographic methods are discussed. The author suggests a very simple chromatographic method depending upon the use of a 3% solution of acetone in petroleum ether as the solvent and alumina as adsorbent. Examples are given of the determination of carotene in some special cases, *e. g.*, in flour, butter, palm oil and eggs.—Seaber. *Chemist and Druggist*, 132 (1940), 117. (A. C. DeD.)

Citrus Juices—Refractometric Determination of Soluble Solids in. Correction tables are given for obtaining Brix or actual soluble solids from refractometric readings of citrus juices.—J. W. Stevens and W. E. Baier. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 447–449. (E. G. V.)

Cobra Venom—Study on the Hemolysin of. Several workers claim to have separated the hemolysin of cobra venom from its neurotoxin by various methods. By the use of two different procedures D. has now purified the hemolysin fraction of this venom to eleven times the original concentration. In his first method the inert proteins were precipitated with methanol and then with acetone, the hemolysin being finally absorbed on ferric hydroxide. The second method consisted of precipitating the inert material with sodium chloride, then with metaphosphoric acid and lastly extracting with pyridine. The method used to determine the hemolytic activity of the fractions is outlined.—S. S. De. *Indian J. Med. Research*, 27 (1939), 531. (W. T. S.)

Ditocopherols—Process for the Preparation of. Trimethyl- or dimethyl-hydroquinone is treated with phytol, isophytol or phytyl halogenides.—Produits Roche, Soc. Anon. Belg. pat. 432,667, March 31, 1939. (A. P.-C.)

Estradiol Derivatives. Estradiol 3-benzyl ether is acylated with reagents such as acetic anhydride, chlorocarbonic ethyl ester, glacial acetic acid or succinic anhydride, to produce products such as 17-acetyl-estradiol, 17-carbalkoxyestradiol or estradiol 17-succinic acid ester (hormone preparations).—Rezzö Weisz, assignor to Chinoin Gyogyszer as Vegyészeti Termékik Gyara R. T. U. S. pat. 2,167,132, July 25, 1939. (A. P.-C.)

Estrogens and the Urinary Volume. After the injection of estrogens no change could be detected in the urinary volume of women before and after menopause, of castrate women, or of men.—E. P. Sharpey-Schafer and I. Schrire. *Lancet*, 237 (1939), 973. (W. H. H.)

Estrone. New Reagent for Quantitative Estimation of. A 10% solution of potassium guaiacolsulfonate in sulfuric acid was used in the Kober reaction with the following modifications: (1) Six minutes initial heating on the water bath. (2) Cooling in ice water for 5 minutes. (3) After diluting, heating in water bath for 7 minutes. (4) Cooling again in ice water for 5 minutes before final dilution. The color of the reaction is pink. The reaction is prompt with estrone, slower with estriol, negative with estradiol, androsterone, sodium pregnandiol glycuronidate or cholesterol. The immediate reaction is specific for estrone.—Clara M. Czego and Leo T. Samuels. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 263. (A. E. M.)

Fatigue, Inflammation, and Death. In illness the blood capillary walls are so altered that they become very permeable to the protein bodies of the blood plasma. Probably, the normal external cell membrane can exercise a control over osmosis and diffusion, and over differences in electrical potential. This phenomenon is called "biological permeability." Illness and fatigue both involve changes in "biological permeability" and are different degrees of the same phenomenon. Life signifies intactness of "biological permeability"; in death this "biological permeability" is lacking, and there is an equilibrium between mineral content of the cell and its environment; illness signifies a disturbance of "biological permeability" with the consequence that the potassium content of the cell sinks, while its sodium content rises; fatigue is on the border between normality and illness.—Hans Eppinger. *Z. f. Klin Med.*, 133 (1938), 1–35. (L. K.)

Halogenated Sterols—Derivatives of. A process for the production of certain male sex hormones involves treating a halogenated sterol with a mixture of a silver salt (acetate) and a solution of an alkali or alkaline earth metal (potassium acetate) in a solvent such as glacial acetic acid (the use of silver benzoate and molten benzoic acid also being described, and similar reacting agents such as silver acetate with calcium acetate, etc., being mentioned).—John Weijlard and Joseph R. Stevens, assignors to Merck & Co. U. S. pat. 2,168,379, Aug. 8, 1939. (A. P.-C.)

Hemoglobin Solution as a Blood Substitute. This very small series of cases serves only to indicate that the solution is tolerated by the human being even when seriously ill. Further work will show what value it is in tiding over for two or three days an otherwise healthy patient who has sustained a severe hemorrhage. Present knowledge suggests that the solution can be stored for a considerably longer period than whole blood. The results in one of the cases emphasize the importance of keeping the urine alkaline, and support the hypothesis that hemoglobin is taken up by the reticulo-endothelial system, as the only patient of the four to excrete it freely in the urine was one in whom this system had been seriously impaired by leukemia. It should be stated in conclusion that there is no complete substitute for blood.—L. O'Shaughnessy, H. E. Mansell, and D. Slome. *Lancet*, 237 (1939), 1068. (W. H. H.)

Heparin—Neutralization of Action of, by Protamine. It was found that the hemostatic action of protamine administered (in the manner described) against parenchymatous hemorrhages was much more effective than that of Stypven, or a 2% solution of thionine, or of a solution of protamine applied locally. These results demonstrate the possibility of removing the heparin from the blood stream in man in case of need. Such partial or complete removal of vascular heparin may be achieved by giving intravenously small doses of protamine (clupein) corresponding to 40–70% of the amount of heparin present in the blood. The protamine injections must only be used as the last resort when other ordinary means of stopping hemorrhages are of no avail. The tissue kinase liberated from macerated muscle is a very effective local hemostatic, and in internal hemorrhages a blood transfusion usually brings about the necessary hemostasis.—E. Jorfes and T. Thaning. *Lancet*, 237 (1939), 975. (W. H. H.)

Histamine—Liberation of, by Trypsin. Trypsin, like proteoses and certain snake venoms has the ability to liberate histamine from tissues of the intact animal. It remains uncertain whether the toxicity of trypsin can be explained by this property.—M. Ramírez de Arellano, A. H. Lawton and C. A. Dragstedt. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 361. (A. E. M.)

Honey—Determination of Mineral Constituents of, by Spectroscopic Analysis. Flower honey can readily be distinguished from "wood honey" by the number and intensity of the spectral lines. All honeys give in the region 460–210 millimicrons the lines of calcium, magnesium, iron, manganese, phosphorus, silicon, copper and nickel and, in addition, wood honey gives those of barium, silver, palladium, vanadium, tungsten, aluminum, iridium, cobalt, zinc, arsenic, tin, platinum and molybdenum and, irregularly, titanium, chromium, potassium and strontium. Honey dew from the tamarisk and oak show the same lines as does wood honey. Adulteration of flower honey with 1% of wood honey is detectable. The ash of glucose syrup is similar to that of honey.—G. Gorbach and F. Windhaber. *Z. Untersuch. Lebensm.*, 77 (1939), 337-346; through *J. Soc. Chem. Ind.*, 58 (1939), 658. (E. G. V.)

Human Milk—Antirachitic Value of. The literature on vitamin D does not contain precise information as to the range of antirachitic potency of human milk. The results of an analysis of human milks for vitamin D, calcium and phosphorus are here recorded and an attempt is made to correlate the vitamin D content of the diet with that of the milk. There is need for more information, not only about the composition but also concerning the yield of milk from mothers whose diet, adequate in all other respects, provides at least 2 Gm. of calcium, 1.5 Gm. of phosphorus and 300 I. U. of vitamin D daily. If such milk were made the subject of metabolic investigation on infants it is possible that some of the disturbing discrepancies would be dispelled.—J. C. Drummond, C. H. Gray and N. E. G. Richardson. *Brit. Med. J.*, 4110 (1939), 757. (W. H. H.)

Insulin Requirement of the Diabetic—Influence of Estrogen on. Daily estrogen administration permitted a considerable reduction of insulin in diabetic women. The degree of effect was different depending whether the patients were in premenopausal or postmenopausal age.—Anna R. Spiegelman. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 307. (A. E. M.)

Insulin—Influence of Higher Doses of, on the Mineral Content of Human Blood Serum. Insulin exerts a considerable influence on the mineral content of the human blood serum. Those ions normally present in large quantities increase; their antagonists, the tissue salts, decrease. It may be assumed that probably the former increases because the latter are increasingly excreted. Insulin increases the "bilogical permeability."—Wilhelm Beiglbock. *Z. f. Klin Med.*, 133 (1938), 36–49. (L. K.)

Insulin—Possible Physiologic Significance of the Zinc Content of. Insulin inhibits the activity of succino-oxidase, which is due solely to its zinc content. The possible physiologic significance depends upon whether zinc is an integral part of the insulin molecule and if so, whether the zinc exerts a similar effect *in vivo*. Crystalline insulin has a constant percentage of zinc, which is not decreased by recrystallizations nor can be separated by dialysis.—O. Hechter, R. Levine and Samuel Soskin. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 361. (A. E. M.)

Insulin Sensitivity. In an editorial it was stated that the variable insulin sensitivity observed in patients being treated with huge doses of insulin may have its mechanism in the adrenal cortex. The remedy for prolonged insulin shock is a blood transfusion.—Anon. *Southern Med. J.*, 33 (1940), 91. (W. T. S.)

Iron in Vegetable Foods—Total and Available. A method has been described for the estimation of total and ionizable iron using $\alpha\alpha'$-dipyridyl and glucose as a reducing agent. Fifty-six kinds of local foodstuffs have been analyzed for their total and available iron contents. Matured cereal grains contain 45–70% of iron in ionizable form, matured legumes about 85%; while fresh and sprouted beans, and fresh corn contain much less ionizable iron. Green vegetables show great variation in the amount of available iron present. Alfalfa, water-celery, celery, lettuce, shepherd's purse, spinach, calabash and loofah are very good sources of available iron. Peiping cabbage, small cabbage, mustard leaves, turnip and water bamboo are moderately good. Salted vegetables are high in ionizable iron which is probably introduced with the salt.—E. F. Yang and M. Y. Dju. *Chinese J. Physiol.*, 14 (1939), No. 4, 479–488. (F. J. S.)

Nicotinic Acid—Urinary Excretion of. In a paper dealing with the metabolism of nicotinic acid in humans, the author reports that wheat-eaters excreted more nicotinic acid than did a group of laboratory workers on an otherwise fairly well balanced diet. The amount of nicotinic acid excreted by hospital patients of the poorer class is about one-third that of the laboratory workers. A 100-mg. test dose of nicotinic acid to hospital patients without signs of deficiency diseases resulted in a seven-fold increase in the urinary output of nicotinic acid. An identical test dose to hospital patients showing deficiency diseases resulted in only a two-fold increase. The cyanogen-bromide-anilin method was used to determine the nicotinic acid in the urine. The results of the work are well shown by numerous charts and tables.—M. Swaminathan. *Ind. J. Med. Research*, 27 (1939), 417. (W. T. S.)

Pancreatic Juice—Influence of Ingestion of, upon Liver Fat in Depancreatized Dog Maintained with Insulin. A factor possessing the property of inhibiting the infiltration of excessive deposits of fat in the liver of completely depancreatized dogs maintained with insulin is present in the external secretion of the pancreas. This is not in agreement with the contention of Dragstedt that the factor is unrelated to the external secretion of the pancreas.—M. Laurence Montgomery, C. Entenman, G. E. Gibbs and I. L. Chaikoff. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 349. (A. E. M.)

Phenol—Quantitative Estimation of, and Related Compounds in Tissues. A method is reported for the separation and determination of volatile phenols, free and conjugated, in tissues. The non-volatile ether-soluble substances present have been separated into three fractions—acidic, neutral and basic—and the extent to which they react as phenol has been determined.—W. Deichmann and E. W Scott. *Ind. Eng. Chem. Anal. Ed.*, 11 (1939)· 423–424. (E. G. V.)

Phosphorus of the Phosphatides of the Suprarenals—Detection of, by Radioactive Phosphorus. When sections of the suprarenal glands were exposed to radioactive phosphorus, it was possible to detect the latter in the phosphatides of the fascicular zone, but not in the nucleoproteins of the glomerular and medullary regions.—H. Bulliard, I. Grundland and A. Moussa. *Compt. rend. acad. sci.*, 207 (1938), 745–747; through *Chimie & Industrie*, 41 (1939), 885. (A. P.-C.)

Phosphorus in Foods—Total and Phytic Acid. The total and phytin phosphorus contents of a number of local foodstuffs have been determined. In cereals an average of 53.8% of the total phosphorus is in the form of phytin, in soy bean, 43%, in potato, 15%. Other vegetables contain little or no phytin. It has been calculated that 24.5–50% of the total phosphorus in some typical diets in Shanghai is in the form of phytin.—E. F. Yang and M. Y. Dju. *Chinese J. Physiology*, 14 (1939), No. 4, 473–478. (F. J. S.)

Pregnanolones from Pregnanediols. A method for the production of pregnanolone compounds involves subjecting a pregnanediol to a treatment whereby one hydroxyl group is substituted by a group which on hydrolysis is reconvertible into a hydroxy group, and oxidizing the free secondary alcohol group to the keto group. Various details and modifications of procedure are described.—Adolf Butenandt, assignor to Schering A.-G. U. S. pat. 2,160,719, May 30, 1939. (A. P.-C.)

Progesterone and Androstenedione—Preparation of, by Direct Oxidation of Cholestenone. By oxidizing cholestenone in glacial acetic acid by means of chromic anhydride at moderately high temperature there are obtained progesterone and androstenedione, which are easily separated in the pure state by extracting a solution of the mixture in ligroin by means of concentrated hydrochloric acid.—W. Discherl and F. Hanusch. *Hoppe-Seyler's Z. Physiol. Chem.*, 252 (1938), 49–52; through *Chimie & Industrie*, 41 (1939), 729. (A. P.-C.)

Prolactin and the Gonadotrophic Substance of Pregnant Mares' Serum—New International Standards for. The International standard for the gonadotrophic substance of pregnant mares' serum is dispensed in the form of 25-mg. tablets, each sealed tube containing ten of the tablets, and the International unit has been defined as the specific gonadotrophic activity contained in 0.25 mg. of the standard preparation. The International standard for prolactin is dispensed in the form of 10-mg. tablets, and the International unit has been defined as the specific activity contained in 0.1 mg. of the standard preparation.—Anon. *Pharm. J.*, 143 (1939), 477. (W. B. B.)

Prontosil in Serum and Blood Plasma. The penetration of white and red prontosil in gelatin with, or without, the presence of blood serum or plasma has been studied. A quantitative, colloidal combination of these substances has not been found constant either *in vivo* or *in vitro*.—R. A. Hockstra and A. J. Ch. Haex. *Arch. intern. pharmacodynamie*, 63 (1939), 40. (W. H. H.)

Prothrombin Deficiency—Production of, and Response to Vitamins A, D and K. Prothrombin deficiency has been produced in rats by feeding an adequate diet containing 20% by weight of mineral oil. The subcutaneous administration of vitamin K corrected the prothrombin deficiency; activated ergosterol brought about improvement, vitamin A was without effect.—Margaret C. Elliot, Bertha Isaacs and A. C. Ivy. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 240. (A. E. M.)

Provitamin D for Producing Vitamin D by Irradiation. A process for producing a pure provitamin D having a melting point of about 150° C. and a specific rotation in benzene of −118°, comprises extracting the fatty material from sea mussels, saponifying it with a saponifying agent, extracting therefrom the unsaponifiable portion with an organic solvent, crystallizing such unsaponifiable portion, converting the crystallized product into the acetate, dissolving the acetate in a solvent, adsorbing the dissolved acetate on alumina, removing therefrom the unactivatable sterols with a mixture of benzene and light petroleum, obtaining the activatable sterol acetate by lixiviating the adsorbed material with a mixture of benzene and methanol, crystallizing the activatable sterol acetate and saponifying the resulting material in order to obtain the pure provitamin D. Details are also given of the production of provitamins from oysters, periwinkle, whelk, snails, crabs, meal worms, beetles, locusts' eggs, earthworms, leeches and water-worms.—Albert G. Boer, Johannes van Niekerk, Engbert H. Reerink and Aart van Wijk, assignors to N. V. Philips' Gloeilampenfabrieken. U. S. pat. 2,163,659, June 27, 1939. (A. P.-C.)

Pyruvic Acid—Presence of, in Blood. From trichloroacetic acid extracts of 48 Gm. of blood of pigeons on a vitamin B_1-deficient diet, 1.5 mg. of pure 2,4-dinitrophenylhydrazone of pyruvic acid was isolated; 150 Gm. of blood from human beriberi patients gave 2 mg.—T. Shindo. *Hoppe-Seyler's Z. Physiol. Chem.*, 251 (1938), 285–286; through *Chimie & Industrie*, 41 (1939), 462. (A. P.-C.)

Quantitative Fluorescence Photometric Microanalysis. II. Determination of Bile Acids in Serum. The bile acids are first extracted by means of alcohol, with precipitation of the proteins; coloring matter is removed by means of a solution of barium hydroxide and barium acetate according to Josephson; the filtrate containing the barium salts of the bile acids is evaporated; the residue is treated with lime and ethyl acetate which dissolves the lipides (hot). The residue is finally taken up in a mixture of 10 cc. of acetic acid and 90 cc. of sulfuric acid, which produces a green fluorescence which is measured by means of a special photometer.—H. Minibeck. *Biochem. Z.*, 297 (1938), 29–39; through *Chimie & Industrie*, 41 (1939), 461. (A. P.-C.)

Quantitative Fluorescence Photometric Microanalysis. III. The determination of bile acids in urine is carried out in similar manner to their determination in serum. Urine from normal persons contains 6 to 16 mg. for 24 hours.—H. Minibeck. *Biochem. Z.*, 297 (1938), 40–45; through *Chimie & Industrie*, 41 (1939), 461. (A. P.-C.)

Raspberry Juices—Analyses of Fermented and Unfermented. The per cent of ethyl alcohol, extract, sugar, total and volatile acid, ash, alkalinity, the degrees Oechsle and refraction are tabulated.—G. Meyer. *Mitt. Lebensm. Hyg.*, 29 (1938), 356–357; through *J. Soc. Chem. Ind.*, 58 (1939), 424. (E. G. V.)

Riboflavin Content of Foodstuffs—Fluorometric Method for Determining the. A fluorometric method is described for determining riboflavin in alfalfa, fish meal, meat, liver meal, dried skim milk, dried whey, dried yeast, soy beans and cereals. It was found to compare well with the microbiological method of Snell and Strong and a modification of Sullivan and Norris' absorption photometric method. No solvent extracted more riboflavin than 0.25*N* H_2SO_4 or the acid-acetone mixture and the resultant extracts appeared to be better suited for fluorometric determination. Complete details for carrying out the test and a table of results (comparison of three determination methods) are given.—A. Z. Hodson and L. C. Norris. *J. Biol. Chem.*, 131 (1939), 621; through *Squibb Abstract Bull.*, 13 (1940), A-34. (F. J. S.)

Riboflavin in Milk—Determination of, by Photoelectric Fluorescence Measurements. Riboflavin in milk was determined by adding 50 cc. of acetone to 25 cc. of milk, filtering and comparing the fluorescence of the filtrate with that of a cube of uranium glass which had previously been calibrated against solutions containing known amounts of riboflavin. The comparison of fluorescence was made with a photoelectric cell and microammeter, using suitable glass filters.—D. B. Hand. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 306–309. (E. G. V.)

Riboflavin—Microbiological Assay for. A biological assay for riboflavin, based on the essential nature of this substance for the growth of *Lactobacillus casei*, is described. The reliability of the method is supported by the assay results at different levels, recovery of added riboflavin, successful determination of riboflavin in the presence of photolyzed extracts, and specificity of the structure required for activity. The results compare well with other bioassays for riboflavin on the same products. The method is rapid, and requires only very small amounts of sample.—E. E. Snell and F. M. Strong. *Ind. Eng. Chem. Anal. Ed.*, 11 (1939), 346–350. (E. G. V.)

Seminal Stains—Importance of Chemical Tests for the Detection of. Most qualitative tests for seminal fluid depend on the fact that it contains choline which forms characteristic crystalline compounds with several alkaloidal reagents. A survey of the various tests for these stains showed that the Florence reaction (using I_2 in KI as a reagent) is the most popular for medico-legal work. An appraisal of this test however revealed that while a positive Florence reaction always indicates semen, a negative reaction is often obtained although spermatozoa can be demonstrated in the stains. This is explained on the basis that choline quickly disappears from the seminal fluid especially under concontaminated conditions. The author concluded aspermia is not rare and therefore the presence of spermatozoa should not be used as a sole criterion for giving a positive diagnosis.—Rai Bahadur and K. N. Bagghi. *Indian Med. Gaz.*, 74 (1939), 683. (W. T. S.)

Sex Hormones—Significance of Excretion of, in Urine. A preliminary review is made of recent work on the structure, extraction and assays of excreted sex hormones. The nature of the œstrogens, androgens, progestin and gonadotropic hormones excreted in the urine differs from that of the hormones isolated from the organs of secretion. Some of these biological transformations involve complex chemical changes, for example, the derivation from the secreted testosterone of the excreted androsterone and *trans* - dehydroandrosterone. *Trans*-dehydroandrosterone occurring in the urine of patients suffering from adrenal tumor, suggests its formation by the adrenal rather than by the gonads. Administration of active hormones by injection led to the excretion of only a very small proportion in recognizable form, and these are often inactive. Recent work shows that œstrone and non-ketonic œstrins are interconvertible in the body of the monkey. Details are given of the author's colorimetric method of estimating excreted androgens, using alkaline *m*-dinitrobenzene, and data are recorded of this method compared with capon-assays carried out by Emmens. From experiments on human subjects receiving testosterone in doses of 5 mg. twice or three times a week and others given up to 100 mg. of testosterone propionate, it is concluded that destruction and inactivation of the male hormone is so intense and the yield of urinary hormone so small, as to render androgen assay of doubtful value in tracing the fate of the hormone in the body. The levels of androgen excretion in the urine of normal men, women, eunuchs, ovariectomized women, patients with Addison's disease and cases of hirsutism are examined. Adrenal tumor can be quickly diagnosed by the androgen assay of the urine, owing to the large excretion of *trans*-dehydroandrosterone. Improvements in technic have enabled methods to be devised which give results capable of correlation with known or deduced physiological processes, notably in pregnancy, the normal menstrual cycle and in certain tumors. There is no definite sexual differentiation possible, as injections of male hormone may lead to increased production of oestrogens. It is concluded that, while relatively excessive amounts of excreted hormone afford valuable diagnostic evidence, mildly abnormal excretions are not significant or their estimation must be judged empirically. Recent improvements in the technic of differential extraction of excreted hormones, and refinement of the author's method of estimation, give promise of more exact forms of diagnosis.—R. K. Callow. *Proc. Roy. Soc. Med.*, 31 (1938), 841; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 289. (S. W. G.)

Sodium Chloride and Desoxycorticosterone—Effect of, on Body Weight and Carbohydrate Stores of Adrenalectomized Rats. Adrenalectomized rats given a 1% solution of sodium chloride to drink *ad libitum* in place of water for a 10-day period after operation gain in weight and are able to store fed glucose in amounts comparable to that of adrenalectomized rats given 0.5 mg. desoxycorticosterone daily or to that of non-operated rats.—Evelyn Anderson and Virgil V. Herring. *Proc. Soc. Exptl. Biol. Med.*, 43 (1940), 363. (A. E. M.)

Steroidal Hormones. The author discusses the various sex hormones and cortical hormones from the standpoint of their history and general relationship, chemically and physiologically. A chart illustrating their formulæ and general method of converting some of these hormones into others is also given.—Amin Tyabji. *Indian J. Pharm.*, 2 (1940), 77–82, 89. (N. L.)

Suprarenal Cortex Hormones—Process for the Preparation of New Derivatives of. These compounds are converted into heterosides by known methods.—Société pour l'Industrie Chimique à Bâle. Belg. pat. 432,776, March 31, 1939. (A. P.-C.)

Surgical Tape of Submucosa Tissue. A ribbon of submucous animal intestinal tissue is used as a surgical tape (suitably after chrome-tanning or drying on a metal or wax-coated glass plate).—Allen Rogers, assignor to Davis & Geck, Inc. U. S. pat. 2,167,251, July 25, 1939. (A. P.-C.)

Thrombin. Thrombin is precipitated from fibrin solutions by means of organic liquids miscible with water and the precipitate is extracted with water in the presence of a substance of alkaline reaction whereby the p_H of the extraction medium is maintained at a value of about 6.5 to 7.5. The extract is treated with an organic liquid to reprecipitate the thrombin and the product is then dried. The initial fibrin solution may be obtained by boiling fresh pork fibrin with water containing sodium chloride and then filtering. Acetone may be used for the precipitation.—Hans Dyckerhoff. U. S. pat. 2,164,804, July 4, 1939. (A. P.-C.)

α-Tocopherol—Constitution of. Oxidation of α-tocopherol with silver nitrate or ferric chloride yields α-tocopherylquinone which is very similar to duroquinone in its ultraviolet-absorption spectrum and behavior on reduction. Acetylation under reducing conditions yields a triacetate that melts at 75° C. The results show that the durhydroquinone system of α-tocopherol is part of a chroman or coumaran structure.—W. John. *Hoppe-Seyler's Z. physiol. Chem.*, 252 (1938), 222–224; through *Chimie & Industrie*, 41 (1939), 729. (A. P.-C.)

β-Tocopherol—Unsaponifiable of Wheat Germ Oil. β-Tocopherol separated as allophanate from wheat germ oil is slightly dextro-rotatory, whereas α-tocopherol is optically inactive. It reduces both alcoholic and ammoniacal silver nitrate solution. On pyrolysis it yields an unidentified, sublimed, crystalline compound.—A. Ichiba. *Sci. Papers*

Inst. Phys. Chem. Research, 34 (1938), 788–793; through *Chimie & Industrie,* 41 (1939), 528. (A. P.-C.)

Urogastrone—Preparation of Pyrogen-Free. Extracts of normal male urine prepared by the benzoic acid adsorption method of Katzman and Doisy contain the gastric secretion inhibitory factor urogastrone, together with large amounts of pyrogenic substance. The latter may be reduced by: (1) thorough washing of the precipitate, (2) preservation of the urine with tricresol and completion of the extraction in a shorter time, (3) by precipitation of impurities with 70% acid acetone (*N*/10 HCl) followed by precipitation of the active material with 95% acetone.—J. S. Gray, C. U. Culmer, E. Wieczorowski and J. L. Adkison. *Proc. Soc. Exptl. Biol. Med.,* 43 (1940), 225. (A. E. M.)

Veratrine Compounds and Ions. Veratrine sensitizes striated or smooth muscles of both vertebrates and invertebrates (with the exception of Echinodermes and Coelenteres) to the action of K, Na, Rb, Cs, NH_4 and Ba ions, Ca, Mg and Sr ions antagonize the effects of K and Ba ions upon the veratrinized muscle. To inhibit the effects of a K ion, it is necessary to have a Ca ion, three Mg ions or three Sr ions. The inhibitory effect of Ca ions is slower and more durable than the exciting action of the K ions. The action of H and Li ions is not modified by veratrine. Aconitine and delphinine are sensitized to potassium by veratrine. Veratrine may be used as an indicator for the presence of an excess of K ions upon Ca ions or more exactly an augmentation of the ratio $\frac{\text{Na} + \text{K}}{\text{Ca} + \text{Mg}}$. In particular, the effects of a liberation of K ions or a diminution of Ca ions are exaggerated by veratrine. The discussion shows that for the most part the properties of veratrine may be explained alone by the sensitization of potassium. It considers various hypothesis directed to the interpretation of this sensitizing mechanism.—Z. M. Bacq. *Arch. intern. pharmacodynamie,* 63 (1939), 59. (W. H. H.)

Vitamin Concentrates from Cod Liver Oil, Etc. A process of producing in concentrated form the therapeutically active substances of oils, fats and like vitamin-containing materials, comprises adding to an aqueous alcoholic saponified mass of a vitamin-containing material ether or a similar volatile organic solvent, which is immiscible with water but partially miscible with the aqueous alcohol saponified mass to form therewith a true solution in which a more rapid transfer of the therapeutically active substance from the vitamin-containing material to the volatile solvent takes place than is possible in an emulsion, the organic solvent being added in an amount sufficient to dissolve the aqueous-alcohol saponification mass and to produce a solution wherein the solvents are in balanced phase. Water is then added to the solution in an amount sufficient to upset the balanced phase of the solution, thereby to effect a rapid separation of the organic solvent extract which contains the therapeutically active substances from the soap solution without necessitating prolonged settling or filtration. The organic solvent extract is separated and the solvent is evaporated. Ether may be used as a solvent.—James A. Patch. U. S. pat. 2,161,882, June 13, 1939. (A. P.-C.)

Vitamin A—Collaborative Investigation of the Spectrophotometric Method for Assay of. Six samples were submitted for optical readings with various types of instruments, in a number of laboratories in order to determine whether these instruments achieve results that are comparable with biological assays. The report contains many details of the work: procedure, comments on the specimens, data concerning instruments used and comments about the assays with numerous tabulations. Comments from individual laboratories are quoted. The authors summarize their conclusions as follows: "In the determination of vitamin A potency by physical instruments, it is apparent that the conversion factor is of paramount importance. To achieve the greatest degree of accuracy in results the E. value, of the U. S. P. reference oil, its unsaponifiable fraction and/or any other suitable standard, should be determined every day and the conversion factor calculated to check the constancy of conditions necessary for accurate operation of the instrument. In this manner, errors due to conditions in the laboratory, the instrument or the human element, can be obviated, or at least, reduced to a minimum. However, it is obvious that expertness, as a consequence of experience in the technic and knowledge of the fundamental principles of the instruments, is an essential factor for the attainment of accurate results. Under specified and well-controlled conditions of operation of the physical instruments, capable of accuracy of measurement, results can, and should, be obtained which are in closer agreement than those obtainable by biological assay. When there is any doubt or question as to the source of the oil under consideration, the optical determination should be made on the unsaponifiable fraction. The suggestion that a spectrophotometric method be adopted as an alternate for the biological assay, is discussed."—C. L. Barthen, F. F. Berg, E. B. Carter, D. M. Copley, R. J. Fosbinder, J. Lewis and F. O. Taylor. *Jour. A. Ph. A.,* 28 (1939), 661. (Z. M. C.)

Vitamin A Esters. Products which have good stability are obtained by subjecting an animal oil containing vitamin A in the alcohol form to molecular distillation (suitably at 70° to 250° C. under a pressure below 0 to 1 mm.) to obtain a separated distillate containing vitamin A in the alcohol form, and esterifying the alcohol content of the distillate with an aliphatic acylating agent such as oleyl chloride.—Kenneth C. D. Hickman and Arthur O. Tischer, assignors to Distillation Products, Inc. U. S. pat. 2,169,195, Aug. 8, 1939. (A. P.-C.)

Vitamin B (Aneurin) and Cocarboxylase—Chemical Determination of. On shaking a mixture of cocarboxylase (0.7 to 8γ per cc.) and vitamin B_1 dihydrochloride (0.7 to 8γ per cc.) with 0.3 cc. of 1% potassium ferricyanide and 3 cc. of twice normal sodium hydroxide and 4 cc. of butyl alcohol, both layers show fluorescence before the quartz lamp. The oxidation products of the cocarboxylase remain in the aqueous layer. In another sample the cocarboxylase is determined enzymically, since the monophospho-aneurin does not split off acetaldehyde from pyruvic acid, and can thus be determined by difference.—H. Roth. *Biochem. Z.,* 297 (1938), 52–55; through *Chimie & Industrie,* 41 (1939), 528. (A. P.-C.)

Vitamin B_1 in Pure Preparations, Food and Urine—Estimation of Free. The diazotized *p*-aminoacetophenone test for vitamin B_1 suggested by Prebluda and McCollum has been developed for the quantitative estimation of the vitamin B_1 content of foodstuffs and urine with an accuracy of 10% and a sensitivity of 0.5γ.—E. F. Yang and B. S. Platt. *Chinese J. Physiology,* 14 (1939), No. 3, 259–268. (F. J. S.)

Vitamin B_1—Insufficient. In commenting on Cowgill's proposal that pure vitamin B_1 be added to wheat flour to correct the widespread deficiency of this vitamin in America, the Editor states that the only serious objection to this plan is a possible large increase in the price of wheat products which might reduce their public consumption. "This difficulty might be solved by Government aid, since the prevention of disease, when mass measures are involved, is an acknowledged function of public health agencies. Certainly, with widespread beriberi and pellagra, a possibility unless national intake of vitamin B_1 is increased, the situation calls for immediate study and remedial action by the Government and the flour industry."—EDITORIAL. *N. Y. Med. Week*, 18 (1939), 5; through *Squibb Abstract Bull.*, 13 (1940), A-32. (F. J. S.)

Vitamin B_1 Metabolism—Observations on. I. Urinary Excretion by Normal Individuals and Beriberi Patients. Using the quantitative diazo color reaction method, the urinary excretion of vitamin B in several groups of "normal people" and beriberi patients was investigated. The range of normal excretion for eight Chinese was from 28 to 170γ per 24 hours. Surgical and medical patients showing no signs of beriberi gave considerable lower values for vitamin B excretion in 24 hours. In various groups of beriberi patients there was found in all cases no vitamin B excretion in the urine. The doses required for complete saturation therefore were quite large. In individuals showing some vitamin B excretion in the urine, following parenteral administration of vitamin B there was a maximum increased excretion within the first hour which returned to a normal level within five hours. The excretion of vitamin B did not always follow the volume of urine.—H. C. HOU and E. F. YANG. *Chinese J. Physiology*, 14 (1939), No. 3, 269–282. (F. J. S.)

Vitamin B_1—Preparation of. 2-Methyl-6-amino-5-pyrimidylacetic acid is treated with bromine (preferably in the presence of phosphorus trichloride as catalyst, and suitably by heating in a sealed tube at 70° to 75° C. for 1 hour) to produce 2-methyl-6-amino-5-pyrimidylbromoacetic acid and the latter is condensed with 4-methyl-5-β-hydroxyethylthiazole to produce vitamin B_1 (suitably by heating at 120° C. for 20 minutes in the presence of a small proportion of butyl alcohol).—EDWIN R. BUCHMAN, assignor to RESEARCH CORP. U. S. pat. 2,166,233, July 18, 1939. (A. P.-C.)

Vitamin B_1—Synthetic. Synthetic aneurin can be prepared from 2-methyl-6-amino-5-aminomethylpyrimidine by treating it at 65° to 67° C. with sodium or potassium nitrite to deaminate it, neutralizing the mixture with sodium bicarbonate, evaporating to a small volume under reduced pressure and recrystallizing from alcohol-acetone mixture. The alcohol thus obtained is treated with hydrobromic acid, and the hydrobromide is treated at 125° C. with 4-methyl-5-hydroxyethylthiazole; the excess of thiazole is removed with ether and the product is converted into hydrochloride passing through the picrolonate.—T. IMAI and K. MAKINO. *Hoppe-Seyler's Z. physiol. Chemie*, 252 (1938), 76–80; through *Chimie & Industrie*, 41 (1939), 729. (A. P.-C.)

Vitamin C Comparison of the Crystalline and Natural Product. The chemical purification of the vitamins has resulted in much advertising to the public and the sale of these potent substances over the counter. That the pure vitamin may not be superior to a natural product rich in the particular vitamin in question is indicated by this report. A group of guinea pigs receiving crystalline ascorbic acid gained as much weight as a group receiving the same amount of the vitamin in lemon juice but showed a greater tendency to the hemorrhagia characteristic of scurvy. Hence, it seems possible that the anti-ascorbutic activity of lemon juice is not entirely due to its vitamin C content. Two groups of college women were saturated with vitamin C after which the first group received daily a measured amount of crystalline ascorbic acid while the second group received raspberries containing an identical quantity of vitamin C. The level of the vitamin in the blood and its excretion in the urine was checked daily and found to be the same in both groups. This indicates that the vitamin C in raspberries is as easily assimilated as the pure crystalline vitamin. Considerable difference was noted in the vitamin requirements of the individual subjects.—E. N. TODHUNTER, R. C. ROBBINS, G. IVEY and W. BREWER. *J. Nutrition*, 19 (1940), 113; through *Southern Med. J.*, 33 (1940), 444. (W. T. S.)

Vitamin C—Is It Possible to Determine, in Urine Containing Arsphenamine? Arsphenamines in urine reduce dichlorophenolindophenol. If the necessary number of readings can be made with sufficient rapidity, it may be possible to estimate the approximate vitamin C content by using Meunier's method (*Bull. soc. chim. biol.*, 19 (1937), 877–892).—A. MIRIMANOFF. *Compt. rend. soc. biol.*, 129 (1938), 292–294; through *Chimie & Industrie*, 41 (1939), 662. (A. P.-C.)

Vitamin C—Resistance of, to the Action of Heat. Vitamin C is rapidly destroyed when its solutions are heated in the presence of oxygen. Rapid destruction is also produced in the cold by contact with air. The present study has as its object to determine whether vitamin C is, or is not, saved at temperatures higher than those reported, particularly 120°. The protection for contact with air has been assured by working in an atmosphere of nitrogen or carbon dioxide gas. The authors found from their experiments that sterilization by heat, in the presence of atmospheric oxygen produced destruction of ascorbic acid. In the presence of air 50% is destroyed. In the presence of nitrogen or carbon dioxide 5 to 10% is destroyed. Sterilization in the absence of air (presence of inert gas) effects the percentage very little, as may be noted by the p_H of the solution.—J. PIEN and H. MEINRATH. *Acad. Sci.*, (Sept. 11, 1939); through *Presse Medicale*, 78 (1939), 1445. (W. H. H.)

Vitamin E Activity of α-Tocoquinone. Two preparations of α-tocoquinone were made by oxidizing natural α-tocopherol with $FeCl_3$ for 90 minutes at room temperature, diluting the reaction mixture with water and extracting with ether, and distilling the quinone in a simple molecular still at 120°. They showed a vitamin E potency substantially identical with that of α-tocopherol.—OLIVER H. EMERSON, GLADYS A. EMERSON and HERBERT M. EVANS. *J. Biol. Chem.*, 131 (1939), 409; through *Squibb Abstract Bull.*, 13 (1940), A-34. (F. J. S.)

Vitamin E Compositions. The effectiveness of materials containing vitamin E, such as wheat germ oil, egg yolk oil, soy bean oil, cottonseed oil, corn oil, is increased by the addition of a manganese compound, such as manganese oleate, to supply manganese in a proportion of 0.05 to 0.5%.—AUGUST J. PACINI, assignor to U. S. VITAMIN CORP. U. S. pat. 2,167,002, July 25, 1939. (A. P.-C.)

Vitamin K Deficiency in Normal and Sick Infants. In normal infants a moderate vitamin K lack develops during the first few days after birth, and disappears within a week. This results in a hypoprothrombinemia, which is the cause of the commonly seen slight hemorrhagic diathesis in newborn. Its cause must be insufficient supply of vitamin K from the intestine. In diseases belonging to the clinical triad of icterus gravis neonatorum, anemia neonatorum and hydrops congenitus, a very considerable hypoprothrombinemia has been demonstrated. Ingestion of vitamin K (together with bile salt) by one of the patients resulted in a rapid increase in prothrombin; one may therefore presume that the hypothrombinemia in this case was due to vitamin K-lack. In cases where a complete lack of prothrombin is seen one day after birth, other causes than insufficient absorption from the intestine must be present.—H. DAM, E. TAGE-HANSEN and P. PLUM. *Lancet*, 237 (1939), 1157. (W. H. H.)

Vitamin K—Nutritional Deficiency of, in Man. In four patients, each presenting a history and physical signs of dietary deficiency disease unassociated with jaundice, the prothrombin time was found to be prolonged. The oral administration of vitamin K without bile salts was followed by a prompt return of the prothrombin time to normal. It appears that there may be dietary deficiency of vitamin K in man.—R. KARK and E. L. LOZNER. *Lancet*, 237 (1939), 1162. (W. H. H.)

Vitamin K. Properties of the Anti-Hemorrhagic Factor. A review of the properties, occurrence, clinical uses, dosage and unit of measurement of vitamin K.—ANON. *Pharm. J.*, 143 (1939), 526. (W. B. B.)

Vitaminic Oil Products. A vitaminic oil such as a fish liver oil is used with glycerol, a predominantly mono-oleic acid ester of diglycerol, and sucrose, or like admixtures to form a composition which may be added to aqueous media such as milk or water, to form a stable emulsion or dispersion which may be subjected to refrigeration, long standing, boiling, or centrifuging without separation.—RAYMOND W. BARTON and WARREN M. COX, JR., assignors to MEAD JOHNSON & CO. U. S. pat. 2,167,144, July 25, 1939. (A. P.-C.)

Vitamins A and D—Sea Animals as Sources of. A lecture. The vitamin A and D contents of liver oils from a large variety of fishes are listed, and the potentialities of possible commercial sources such as whale liver and fish scrap for the production of vitamin extracts for the German market are discussed.—F. UNGER. *Fette u. Seifen*, 46 (1939), 152–154; through *J. Soc. Chem. Ind.*, 58 (1939), 626. (E. G. V.)

Wines—Filtration of. Filtration may be due to adsorption, as with cellulose pulp, which will retain particles much smaller than the pores, or to purely mechanical screening due to the smallness of the pores, as with asbestos and kieselguhr. With media of the former type filtration is clear and rapid from the beginning, but is apt to become cloudy later if the adsorptive capacity of the medium approaches saturation; such media alone are suitable for the removal only of slight precipitates. With the other class of media, filtration may be cloudy at first but becomes and continues clear later; filtration rate is much slower than with adsorption filters, but large quantities of precipitates may be retained. Under pressure or when admixed with asbestos, cellulose acquires an intermediate character between the two extreme classes. Different kinds of suspended matters in wines behave much in the same way towards different filters, but protective colloids tend in certain cases to impair the efficiency of filters of the fine-pored class. Well-conducted filtration does not impair the quality of the wine, and in the case of white wines it may avoid the opportunities for deterioration associated with prolonged clarification in cask.—J. RIBEREAU-GAYON. *Bull. Assoc. chim. sucr.*, 54 (1937), 730–757; through *J. Soc. Chem. Ind.*, 58 (1939), 423. (E. G. V.)

Zinc—Action of, on the Effects of Testosterone and Prolans. As a result of tests carried out on rats it may be concluded that zinc reinforces the gonadotropic activity of testosterone and of prolans in the rat, provided it is associated with these products in a certain proportion. For example, when an oily solution containing 0.040 mg. of testosterone propionate per 100 Gm. is injected into castrated male rats, addition to the solution of 3 mg. of zinc increases the activity of the hormone 115%. This synergistic effect of zinc toward sexual hormones recalls the action of metallic ions in diastatic phenomena.—A. URBAIN, R. CAHEN, M. A. PASQUIER and J. NOUVEL.—*Compt. rend. acad. sci.*, 207 (1938), 941–943; through *Chimie & Industrie*, 41 (1939), 956. (A. P.-C.)

Zinc and Copper Content of Blood in Beriberi, in Conditions Associated with Protein Deficiency and in Diabetes Mellitus. In sub-acute, acute and chronic beriberi the zinc content of whole blood is subnormal whereas the copper content is slightly raised. Similar changes occur in pellagra, in nutritional edema and in semi-starvation in all of which nutritional states protein deficiency is a characteristic feature. In diabetes mellitus the zinc appears to be normal but there are indications that the copper is slightly raised. The blood zinc and copper contents of well-nourished Europeans, (6.75 and 1.60 mg./Kg., respectively) and well-nourished Chinese, (6.79 and 1.72 mg./Kg., respectively) are not significantly different.—W. G. E. EGGLETON. *Chinese J. Physiology*, 15 (1940), No. 1, 33–44. (F. J. S.)

Zinc Content of Epidermal Structures in Beriberi. The method of analysis used was essentially that described by Sylvester and Hughes (1936), which involves dry-ashing the clean, ether-extracted material, dissolving in HCl and extracting with dithizone at a specified p_H. The zinc, after isolation from the dithizone, was estimated by the volumetric method of Lang (1929; 1933). The author found that in beriberi the zinc contents of the toe nails, finger nails and skin are reduced to half their normal value and there is a strong indication that the ash content is increased. Data are produced to show that the amount of zinc in natural foodstuffs is positively correlated with that of aneurin. It is suggested that zinc deficiency may be a factor in the beriberi syndrome.—WILLIAM GEORGE ELFORD EGGLETON. *Biochem. J.*, 33 (1939), No. 4, 403–406. (F. J. S.)

ANALYTICAL

Acetone—Determination of. The three methods in general use were submitted to comparative study, since there has been criticism of the U. S. P. method. This method converts acetone to iodoform with an excess of iodine and determines the excess with thiosulfate. Another method precipitates acetone as a yellow mercury complex which is then determined. The third method uses hydroxylamine hydrochloride to form acetoxime and hydrochloric acid which is titrated with alkali. Details of experiments are reported and discussed. It was found that the mercury method gives the lowest results, the oxime method high results and both are variable. The iodoform method was most uniform but results were high. The author believes the high results are due to a secondary reaction involving formate and consuming ten atoms of iodine instead of six.—MELVIN W. GREEN. *Jour. A. Ph. A.*, 29 (1940), 33. (Z. M. C.)

Acetylsalicylic Acid, Acetphenetidin and Caffeine—Separation of. A method has been worked out (technic described in detail in *J. Assoc. Official Agr. Chem.*, 22 (1939), 91) using separation of acetylsalicylic acid from acetphenetidin and caffeine by means of socium bicarbonate; the acetphenetidin and caffeine are then treated with dilute sulfuric acid which removes all the caffeine plus a small quantity (usually about 75 mg.) of acetphenetidin, leaving the main bulk of the latter behind; the caffeine is then seprated from the remaining acetphenetidin by means of the acid hydrolysis method. Results of a collaborative study of the method showed agreement between collaborators which is believed to be as satisfactory as could be expected in a mixture of this type, and adoption of the method as tentative is recommended.—DONALD C. GROVE. *J. Assoc. Official Agr. Chem.*, 22 (1939), 723–726. (A. P.-C.)

Alchemillæ Vulgaris L.—Knowledge of the Constituents of. With the exception of a short study by Kröbers, nothing is known of the constituents of Herba *Alchemillæ vulgaris* L. The dried herb had the following composition: 7.35% water, 9.06% total ash, 1.30% acid insoluble ash, 25.98% water soluble constituents, 4.15% alcohol soluble constituents, 6.4 to 8.4% tannin. The drug contained no saponin, nor β-glycoside but contained an α-glycoside or glycotannin split by invertin. Steam distillation of the drug yielded traces of substances giving a blue color with ferric chloride, probably salicylic acid. The powdered drug was successively extracted with petroleum ether, ether, acetone, methyl alcohol, 70% alcohol and 10% alcohol. Another sample of drug was extracted with water. The petroleum ether extract on saponification yielded a hydrocarbon of the formula $C_{32}H_{66}$, probably dotriacontane, and a phytosterol melting 131–132° in the unsaponified portion, and a mixture of palmitic and stearic acids with small amounts of liquid fatty acids (not identified) from the soap solution. The ether extract also contained the hydrocarbon $C_{32}H_{66}$. The acetone extract yielded no crystallizable substances. The methyl alcohol extract after solution in water and treatment with lead acetate yielded a crystalline compound melting 214.5° and having the formula $C_{16}H_{26}O_6$. The compound was acetylated but the results were indefinite. Saponification of the acetylated product did not yield the original substance. Too little of the material was obtained for physiological testing. Acetylation of the material extracted by 70% alcohol gave tetraacetylellagic acid which could be saponified to yield ellagic acid. The presence of gallic acid was shown although the amounts of it were small. The extract with 10% alcohol yielded no crystals of organic nature. Treatment of the total aqueous extract with lead acetate and purification of the precipitate gave the same crystalline compound melting at 214.5° which was obtained in the methyl alcohol extract. No constituents could be isolated which could account for the actions ascribed to the drug in folk-medicine.—H. MÜHLEMANN. *Pharm. Acta Helv.*, 13 (1938), 277–299. (M. F. W. D.)

Alcohol Content of Extractive Preparations. Work on the problem has been devoted to (1) a study of the several varieties of distilling and condensing apparati, (2) the effect of temperature throughout the determination and (3) the exactness of the various methods for determining specific gravity and the following conclusions drawn: The difference in efficiency of the condensers tested is negligible and placing the Liebig type in an angular position does not alter its efficiency; the type of flask appears to have some bearing on the efficiency of the determinations; the temperature of the sample is very important and should be emphasized; the vacuum-jacketed pycnometer should be recommended for the specific gravity determinations.—REPT. AMER. PHARM. ASSOC. LAB. *Bull. Natl. Formulary Committee*, 8 (1940), 149–154. (H. M. B.)

Aminopyrine and Phenobarbital—Determination of, in Mixtures. A study on individually weighed samples of phenobarbital and aminopyrine (without excipients) of the previously described method (*Pharm. Abs.*, 6 (1940), 6) gave recoveries of 99.6 to 100.7% and 99.3 to 99.5%, respectively. A method based on extraction of phenobarbital from acid solution (1 + 9 sulfuric acid) with chloroform or ether, and later removal of aminopyrine after making alkaline with ammonia gave incomplete separation of the phenobarbital; but further extraction of the original acid solution with solvent yielded no more extract, which might be explained by a slight interaction between aminopyrine and phenobarbital. A somewhat different technic in which the aminopyrine is extracted as above but the phenobarbital is extracted in a continuous extractor using chloroform as solvent gave 100.1 to 100.3% recovery for aminopyrine and 100.4% for phenobarbital.—E. C. PAYNE. *J. Assoc. Official Agr. Chem.*, 22 (1939), 735–736. (A. P.-C.)

Ammoniacal Silver Nitrate. A new monograph is offered.—HAROLD HANSEN. *Bull. Natl. Formulary Committee*, 8 (1940), 167–168. (H. M. B.)

Asclepias Syriaca Linné—Phytochemical Study of. The following constituents were determined: moisture 5%, ash 0.76, lignin 20.35 and 21.16, cellulose 55.00, α-cellulose in cellulose 65.25, in seed hairs 5.28, uronic acids in air-dried seed hairs 5.28, petroleum ether extract (A) 2.8, ether extract 0.80, chloroform extract 0.80, alcohol extract 1.50, diluted alcohol extract 2.20, water extract 3.00. A contained fatty acids with a molecular weight of 188.1 corresponding to $C_{10}H_{21}COOH$, a sterol (melting at 125° C.), a wax alcohol, melting at 114° C. (trichloracetate melting at 125° C.). The alcohol, diluted alcohol and aqueous extracts were combined and upon examination showed the presence of a glucoside or non-reducing sugar; potassium nitrate and a complex sugar were also shown to be present. The follicle wall showed moisture 7.65%, total ash 11.08 (soluble ash 7.11; insoluble ash 3.97), lignin 15.80, petroleum ether extract 7.66, petroleum ether extract insoluble in alcohol 25, crude rubber 1.91. Detailed procedures for the separation of rubber, treatment of "oily droplets," separation of the fatty acids and the purification of amyrin esters are offered. Fifteen references.—ALFRED E. RHEINECK. *Pharm. Arch.*, 10 (1939), 69–80. (H. M. B.)

Azochloramid. Azochloramid contains approximately 96% of N,N-dichloroazodicarbonamidine $[H_2N(ClN){:}C{-}N{=}N{-}C{:}(NCl)NH_2]$ and is made by the careful chlorination of azodicarbonamidine, $HN{=}C(NH_2)N{=}N(NH_2)C{=}NH$, or of hydrazodicarbonamidine, $HN{=}C(NH_2)NH{-}HN(NH_2){-}C{=}NH$. Azochloramid shows dimorphism, crystallizing either in bright yellow needles or in plates. It has an odor suggestive of chlorine and a burning taste. When pure it is odorless and almost tasteless. It decomposes explosively at 155–155.5° C. without melting. It is very slightly soluble in water, slightly soluble in glycerin and ether; soluble in alcohol; soluble (incompletely) in glacial acetic acid, acetone and ethyl acetate; very slightly soluble in chloroform, and nearly insoluble in carbon tetrachloride and liquid paraffin. Solutions of azochloramid decompose on exposure to light. It does not liberate iodine from a solution of potassium iodide until the solution is acidified; this is indicative of the stable nature of the compound. In action and use, azochloramid is similar to chloramine, dichloramine and diluted solution of sodium hypochlorite. It is claimed that it possesses advantages over these preparations on account of its lower reactivity with extraneous organic matter and its higher bactericidal activity in the presence of organic material.—ANON. *Pharm. J.*, 143 (1939), 527. (W. B. B.)

2,2',-Biquinolyl. A Reagent for Copper. Since 2,2'-bipyridyl produces coördination compounds with many metals, especially ferrous iron, 2,2',-biquinolyl has been studied as a possible reagent for metallic ions. 2,2'-Biquinolyl, prepared by catalytic dehydrogenation of quinoline, has been found to give a purple color with the cuprous ion under certain conditions. The color reaction is sensitive, specific for copper, and the intensity of the color produced follows Beer's law. A procedure has been worked out for the detection and estimation of copper, the smallest amount of copper detectable being 1 part in 100,000,000. Stable complexes with cupric copper and cobalt have also been prepared.—J. G. BRECKENRIDGE, R. W. J. LEWIS and L. A. QUICK. *Can. J. Research,* 17 (1939), 258–265. (W. T. S.)

Cacao Shell in Cocoa and Cacao Products. The sample is partially defatted by extraction with petroleum ether and filtering. After drying, the material is powdered to pass through a No. 10 sieve or bolting silk (size of aperture, 0.145 mm.) A weighed sample is then completely defatted in a continuous extractor and dried. Two Gm. of dried material are rapidly weighed and mixed with 100 cc. of water contained in an all-glass refluxing apparatus, followed by 90 cc. of water, used to wash down the sides of the flask, 10 cc. of sulfuric acid (25% by weight) and 2 cc. of amyl alcohol. The mixture is rapidly heated to boiling and boiled 30 minutes with frequent shaking. The mixture is filtered and the flask and filter washed twice with hot water. The residue is washed back into the flask with 180 cc. of hot water, mixed with 25 cc. of 10% sodium hydroxide solution, 2 cc. of amyl alcohol and refluxed for 30 minutes. The residue is filtered through two thicknesses of 12.5 cm. filter paper, the top one of which is tared, on a 9 cm. Buchner funnel. The papers are washed twice with boiling water, 100 cc. of 50% alcohol and finally with hot water. The top paper and residue are dried to constant weight, ashed and the loss in weight calculated as fiber on the dry fat-free basis. The calculation of shell from the fiber figure is given in detail. A table is given based on certain arbitrary standards for fat and moisture in nib and shell and the effect of variations in these arbitrary standards has been considered.—H. C. LOCKWOOD. *Analyst,* 64 (1939), 92. (G. L. W.)

Calcium Acetylsalicylate. Hydrolysis of calcium acetylsalicylate caused by its water of crystallization and leading to the formation of polysalicylides as well as calcium salicylate and acetic acid, is prevented by the addition of about 5% of calcium chloride. The stabilized powder having about the same degree of stability as acetylsalicylic acid may be prepared by suspending 90 Gm. of finely powdered acetylsalicylic acid in 126.6 Gm. of 40% w/v solution of calcium chloride, adding, with stirring, a suspension of 26 Gm. of precipitated calcium carbonate in 300 cc. of the calcium chloride solution and warming the mixture to 50° C. until frothing ceases (about three hours). The paste is filtered under pressure, washed with 200 Gm. of the solution of calcium chloride, drained well and dried *in vacuo* at 60° C. The product contains 5 to 7% of calcium chloride. An alternative method is to suspend 180 Gm. of finely powdered acetylsalicylic acid in 706.9 Gm. of 25% w/v solution of calcium chloride and add, while stirring rapidly, 85 Gm. of sodium bicarbonate. When gas evolution ceases, the paste is filtered, washed and dried as before. Tablets may be prepared from the stabilized powder by granulation, by the use of high-pressure, employing a special compressor hopper in constant motion containing a discharging rotor to fill the matrices and using highly polished punches made of a non-ferrous alloy to avoid the need for a lubricant. Starch of low moisture content may be added as a disintegrating agent. Tablets so prepared are readily soluble in water giving a neutral, tasteless solution. The pharmacological properties of acetylsalicylic acid and its stabilized calcium salt are summarized.—I. GELLMAN. *Mfg. Chem.,* 10 (1939), 5; through *Quart. J. Pharm. Pharmacol.,* 12 (1939), 282. (S. W. G.)

Camphorsulfonic Acid—New Salts of. At least six sulfonic acids of camphor are known, but the only one of pharmacological importance is the dextrorotatory camphor-10-sulfonic acid of Reychler. Salts were prepared by dissolving molecular proportions of the components in alcohol and evaporating slowly at ordinary temperature, recrystallizing from alcohol. The salts thus obtained were anhydrous. *p*-Phenetidine camphorsulfonate, white needles, m. p. 158° to 159°, very soluble in water, moderately soluble in alcohol, very slightly soluble in ether, $\alpha_D^{18} = +15.33°$. Benzocaine (anesthesin) camphorsulfonate, white acicular crystals, m. p. 150° to 152°. Slightly soluble in alcohol, more soluble in water, insoluble in ether, $\alpha_D^{15} = +14.43°$. Crystallized from water, the salt has one molecule of water of crystallization, it softens at 85° and melts completely at 148°. *p*-Aminobenzoyldimethylaminomethylbutanol camphorsulfonate, the base is prepared by adding ammonia to tutocaine dissolved in water and shaking out with ether, an alcoholic solution of the acid is added, the whole evaporated and the residue dried over sulfuric acid in vacuum. This is then rubbed in a mechanical mortar with a mixture of one part of alcohol and four parts of ether. The product is a yellow powder, slightly hygroscopic, m. p. about 100°, $\alpha_D^{19} = +14.19°$. α-Butyl-oxy-cinchoninic acid diethylethylenediamide camphorsulfonate; the base is prepared by precipitating with ammonia from an aqueous solution of percaine, filtering with suction, washing and drying. The salt is a yellow powder, hygroscopic and very soluble in water, fairly soluble in alcohol, almost insoluble in ether. It does not show a definite m. p., $\alpha_D^{19} = +11.95°$.—R. LENOCI. *Boll. chim.-farm.,* 77 (1938), 41; through *Quart. J. Pharm. Pharmacol.,* 12 (1939), 127. (S. W. G.)

Cantharides—Studies on. II. The Assay of Cantharides. The U. S. P. XI assay is time-consuming and results are not uniform. Extraction of cantharidin is incomplete and it is volatile. Method of purification is faulty, purification of extracted cantharidin is incomplete and the final residue does not represent the amount extracted. Neither a colorimetric determination nor a distillation method was successful. Since titration of cantharidin is possible, experiments were undertaken to find a way to apply the method to the improvement of the U. S. P. process. Extraction, evaporation and purification procedures were studied. A number of samples were determined by the U. S. P. method and most of them were found to be below the requirement of 0.6%. Cantharidin was determined by titration and results were compared with those by the U. S. P. method. Volatility of cantharidin from a 1 to 2 mixture of petroleum ether and benzene with, and without, chloroform was determined. Study of the results showed that low results were due in part to losses of cantharidin during the evaporation procedure of the assay because of its volatility. Extracting with chloroform and titrating was tried but the mean was somewhat lower than when the official solvent was used. Experiments on the removal of fat showed that this procedure is responsible for loss of cantharidin. The residue weighed as cantharidin contains much inert material. A short evaporation period and titration of extracted residue is an improvement. It gives results above U. S. P. but overcomes loss due to volatilization. It does not overcome loss due to removal of fat from the extracted residue. Benzene and petroleum ether were satisfactory as a solvent; so was chloroform but alcohol is unsatisfactory. Attempts to improve the method of removing fats and inert material from extracted residue were not successful.—BENJAMIN P. HECHT and LLOYD M. PARKS. *Jour. A. Ph. A.,* 29 (1940), 111. (Z. M. C.)