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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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PHARMACOLOGY (*Continued*)

Vitamin B_1—Pigeon Assay of. Pigeons suffering from their first attack of retracted neck have been examined for their response to crystalline vitamin B_1. The effect, as measured by the duration of the cure, bore no relation to the size of the dose, but when percentage of birds cured was made the criterion, a response graded with the dose was observed. Thus the "day dose" method, which has been shown to be applicable to more crude sources of the vitamin, is useless for the pure material, in confirmation of the findings of Kinnersley and Peters. A statistical analysis of the results on over 200 birds is presented, and the conclusion is drawn that the pigeon test is the least accurate of the usual methods of biological assay for vitamins.—K. H. COWARD and B. G. E. MORGAN. *Biochem. J.*, 33 (1939), 658; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 769. (F. J. S.)

Vitamins—Influence of, on the Function of the Anterior Lobe of the Pituitary. Vitamin A (and probably vitamin E) reëstablishes the glycogenolytic action of adrenaline in the livers of virgin frogs. Water soluble B and C do not have this property. This effect is only manifested in the livers of frogs in which the anterior pituitary lobe is intact. It is concluded that vitamin A excites the formation of the "glycogenotropic" hormone of the pituitary.—LEON KEPINOV. *Compt. rend.*, 209 (1939), 358. (G. W. H.)

TOXICOLOGY

Aliphatic Hydrocarbons (Chlorinated) Used as Solvents and Their Significance in Medical Practice. These solvents as a class are toxic, capable of producing acute poisoning and occasionally blood changes. The lungs are the chief portal of entry into the body. Skin absorption is possible. Frequently, on long exposures the chloride and neutral sulfur content of the urine increases as does the acidity. Danger from fire and explosions exists in many instances. Thermal decomposition produces hydrochloric acid and phosgene. Exposure to chlorinated solvents frequently produces intolerance to alcohol and, in the case of women, menstruation disturbances. No specific medical prophylaxis for chronic poisoning by this class of compounds is known. They should, with few exceptions, be regarded as active toxic agents.—W. GUEFFROY and W. EHRHARDT. *Zentr. Gewerbehyg.*, 25 (1938), 224–230; through *Chimie & Industrie*, 41 (1939), 682. (A. P.-C.)

Analeptics—Quantitative Comparison of Different. The author studied the substances picrotoxin, strychnine, ephedrine, benzedrine, cardiazol and coramine as to toxicity in mice, power to awaken mice narcotized with nembutal, power to antagonize toxic action of nembutal convulsive and emetic action in pigeons, the power of stimulating respiration in cats and mice depressed with nembutal and, finally, the power of these substances to increase the carotid sinus reflex. When considered in the light of comparative toxicity, benzedrine has the greatest awakening power; picrotoxin and cardiazol were found to be the only substances which antagonized the toxic action of nembutal; picrotoxin, cardiazol and ephedrine all caused vomiting in pigeons when given intravenously. It was found that benzedrine and ephedrine were excellent respiratory stimulants in mice, being similar in potency to lobeline. As compared to lobeline the others were almost of no value as respiratory stimulants for mice. These stimulants increased the carotid sinus reflex when this was depressed. The dose required was so large as to make this action of little use in therapeutics.—M. CHAKRAVARTI. *J. Pharmacol.*, 67 (1939), 153. (H. B. H.)

Benzene Hemopathies—Prevention of. The use of benzene in various industries is discussed and its substitution by less toxic materials containing 1 part in a hundred of aromatic products is advocated.—M. DUVOIR. *Sang*, 12 (1938), 620–626; through *Chem. Abstr.*, 33 (1939), 2608. (E. G. V.)

Benzene Poisoning—Chronic Diagnosis and Treatment of. On account of the similarity of the clinical picture of chronic benzene poisoning and scurvy, it is reasonable to suppose that both diseases are due to a vitamin C deficiency. In subjects that suffer from benzene poisoning there is observed a decrease in the vitamin C elimination, while, on the other hand, no toxic leucopenia is apparent in animals receiving sufficient vitamin C. Experiments carried out on rabbits subjected during 5 months for 5 to 7 hours a day to an atmosphere containing 25 to 40 mg. of benzene per cu. m., showed an intense aplastic anemia and a decrease in the urinary vitamin C. Though the benzene inhalation treatment was continued, treatment with vitamin C (100 to 800 mg. per day) produced a rapid rise in the white corpuscles content and also in the vitamin C elimination. Post-mortem examination of the treated animals showed no lesion of the marrow, contrary to what occurred with the control animals which received no vitamin C.—J. HAGEN. *Arbeitsschutz* (1938), 150–152; through *Chimie & Industrie*, 41 (1939), 268. (A. P.-C.)

Cadmium Poisoning—Chronic, Experimental. Incorporation of 0.0031–0.05% cadmium in chloride form, in the diet of albino rats led to bleaching of the enamel of the incisor teeth, anemia and cardiac hypertrophy. The bleaching and anemia were proportional to the dose. The cardiac hypertrophy was most evident on 0.0062–0.025% concentrations, and less evident on 0.05% because the rats died before the hypertrophy could fully develop. Since the hypertrophy was not limited to the left ventricle, it was attributed to the anemia rather than to renal hypertension.—R. H. WILSON and F. DEEDS. *Science*, 90 (1939), 498; through *Squibb Abstract Bull.*, 12 (1939), A-1586. (F. J. S.)

Calcium Chloride in Cocaine Intoxication. Two cases of acute cocaine intoxication were successfully treated by the intravenous injection of 10 cc. of 10% calcium chloride.—R. E. CARRATALA and ALFREDO BUZZO. *Rev. assoc. méd. argentina*, 52 (1938), 966–968; through *Chem. Abstr.*, 33 (1939), 2207. (F. J. S.)

Chemical Warfare Agents—Toxic Effects of. The toxic effects of the various chemical warfare gases, fluids and solids are reviewed. Tear gases considered include bromoacetone, benzyl bromide and chloroacetophenone; sneeze gases include diphenylchloroarsine, diphenylcyanoarsine and diphenylaminocloroarsine (Adamsite); suffocating agents include chlorine, phosgene, diphosgene and chloropicrin; corrosive agents include mustard gas (dichlorodiethyl sulfide) and Lewisite (a chlorovinylchloroarsine compound). Gas masks are considered and, in view of the fact that the usual gas mask does not protect from carbon monoxide, the toxicity of CO is discussed. Other industrial noxious vapors are briefly considered, sulfur dioxide, ethyl chloride, carbon tetrachloride, benzol and aniline.—J. C. BOCK. *Arch. Pharm. Chemi*, 46 (1939), 567. (C. S. L.)

Diethylene Glycol—Dermatitis Caused by, in Tobacco. An inveterate smoker reported developing a dermatitis on his fingers and upper lip. He was tested with several brands of cigarettes and one brand, recently adopted, which contained diethyl-

ene glycol gave a positive reaction as did diethylene glycol itself. Prompt recovery occurred when the irritant brand was discontinued.—BEN A. NEWMAN. *J. Am. Med. Assoc.*, 111 (1938), 25. (G. S. G.)

Digitalin, Ouabain and the Glucosides of Adonis Vernalis—Comparative Toxicity of. In the chloralosed dog smaller doses of digitalin, ouabain, adonidoside and adonivernoside are required to produce death when injected slowly over a period of 2 hours than when injected in 30 minutes.—F. MERCIER and MLLE. S. MACARY. *Compt. rend. soc. biol.*, 128 (1938), 228–230; through *Chimie & Industrie*, 41 (1939), 521. (A. P.-C.)

Eberthella Typhosa—Toxicity of "Q" Substance from. The acid-alcohol soluble protein, extracted from *Eberthella typhosa*, which is called *Q* substance, is lethal to rabbits and mice when given in adequate doses. The toxicity is attributed to a necrotizing action which appears to be due to the formation of a toxic compound from *Q* with serum protein.—E. W. DENNIS. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 89. (A. E. M.)

"Elixir" Sulfanilamide—Study of the Toxicity of. In September and October 1937 approximately 203 gallons of a proprietary "elixir," composed of 72% diethylene glycol, 8% sulfanilamide and 20% aromatics and water, were distributed for medicinal use. Consumption of this "elixir" resulted in a mass poisoning. From the data available on 105 deaths caused by the "elixir" and from additional reports concerning 248 individuals who survived after taking the preparation, the authors have analyzed the cases involved. Tables are given to show the various conditions for which the preparation was taken and the number of patients who took the "elixir" on physicians' prescriptions. The age of the patients, the amounts of "elixir" given in fatal and non-fatal cases and the survival time in the fatal cases are also tabulated. The symptoms of poisoning and the laboratory findings, where available, are discussed. Attention is called to the surprising fact that most individuals are able to survive doses of the preparation equal to or greater than those which proved fatal in other cases. The authors attributed the toxicity of the "elixir" in the main to its diethylene glycol content.—HERBERT O. CALVERY and THEODORE G. KLUMPP. *Southern Med. J.*, 32 (1939), 1105–1109. (W. T. S.)

Epididymitis—Blenorrhagic. This was treated by intravenous injection of cyanide of mercury, 0.01 Gm. being given daily. The mercuric cyanide was dissolved in physiological sodium chloride solution.—BELMIRE VALVERDE. *Gazeta Pharm.*, (April 1937); through *Noticias Farm.*, 4 (1938), 466. (G. S. G.)

Ethylene and Propylene Glycols—Toxicity of. Ethylene glycol caused no ill effects in doses of 0.70 to several cc. daily; doses of 10–15 cc. produced oxaluria and 40–50 cc. caused death or severe intoxication in rats. Propylene glycol was much less toxic.—M. A. MANCINI. *Boll. soc. ital. biol. sper.*, 14 (1939), 68–71; through *Chem. Abstr.*, 33 (1939), 3886. (F. J. S.)

Glycols and Derivatives—Toxicology of. The relative acute toxicities of some glycols and their derivatives have been determined using rats, mice and guinea pigs, the order of increasing toxicity being: propylene glycol, diethylene glycol, ethylene glycol, diethylene glycol monoethyl ether, dioxan and ethylene glycol monoethyl ether. The regression coefficients (a measure of the sensitivity as shown by mortality of a given population to a change in the dose) and LD50, with their respective standard errors, have been calculated for each species and for each substance administered. A complete pathological report with photomicrographs is included Small doses of propylene glycol appear to be tolerated safely by the animal body since the substance can be oxidized and probably converted to a normal body constituent. In this respect it resembles ethyl alcohol and glycerol. In larger doses all of these substances are toxic and with the exception of propylene glycol produce definitely demonstrable tissue injury. Correlation of the information in the literature with the results of the experiments leads to the conclusion that ethylene glycol, ethylene glycol monoethyl ether, diethyleneglycol monoethyl ether and dioxan should be entirely omitted from food and drug preparations and that propylene glycol should be avoided except in very small concentrations.—E. P. LANG, H. O. CALVERY, H. T. MORRIS and G WOODARD. *J. Ind. Hyg. Toxicol.*, 21 (1939), 173; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 285. (S. W. G.)

Hydrocyanic Acid Poisoning—Treatment of Gaseous, by Sodium Thiosulfate and Sodium Nitrite Combination. Experiments were done on dogs exposed to hydrocyanic gas. It was found that sodium thiosulfate and sodium nitrite mixtures will protect these animals for a considerable length of time against normal convulsive concentrations. Once the convulsions have come on, however, treatment with these two chemicals is largely ineffective.—J. N. ETTELDORF. *J. Pharmacol.*, 66 (1939), 125–131. (H. B. H.)

Hydrogen Peroxide—Rapid Death Produced by Injection of. Four hundred cc. of a solution of hydrogen peroxide (concentration not given), injected by mistake, produced the death of a patient in 20 minutes.—A. LICURZI. *Rev. asoc. méd. argentina*, 52 (1938), 970–974; through *Chem. Abstr.*, 33 (1939), 2207. (F. J. S.)

Isopropyl Ether. A detailed account is given of the physiological effects of isopropyl ether in varying dosages on different animals. This ether is one and a half to two times as toxic as diethyl ether. In the monkey a concentration in air of 3 to 6% is fatal, but 1% or less can be tolerated for an hour or longer for twenty days without permanent damage. Death is due to depression of the respiratory center.—W. MACHLE, E. W. SCOTT and J. TREON. *J. Ind. Hyg. Toxicol.*, 21 (1939), 72; through *Brit. Med. J.*, 4088 (1939), 1014G. (W. H. H.)

Lead Poisoning—New Cause of. Treatment of vines, fruit trees and soil with lead arsenate has resulted in an alarming amount of saturnism among the workers handling the product. It is therefore suggested that the use of lead arsenate be prohibited and that it be replaced by aluminum arsenate which seems to be as active.—MORNAC. *Ann. Hygiène*, 16 (1938), 362–364; through *Chimie & Industrie*, 41 (1939), 681. (A. P.-C.)

Manganese—Toxicological Investigation of. The experiments were carried out chiefly on rabbits. The method of determination was based on conversion of the manganese into permanganate and titration with oxalic acid. Large doses of manganese chloride administered orally produce death, the poison being fixed chiefly in the heart, kidneys and liver; the suprarenals, bone marrow, bile and skin also contain more than the normal amount. Manganese sulfate, administered orally in moderate daily doses, produces a slight general impregnation, but when injected intramuscularly it concentrates in the liver, suprarenals, bone marrow and spleen. Inhalation of manganese dioxide in the form of dust produces impregnation, chiefly of the heart, kidneys, lungs and brain.—A. C. LEMOS. *Arch. Malad. Profess.*, 1 (1938), 119–123; through *Chimie & Industrie*, 41 (1939), 476–477. (A. P.-C.)

Mercurial Intoxication—Acute, Treatment of, with Methanol Sulfoxylate of Sodium. Seventy-two cases of poisoning by mercurial salts were treated with sodium methanol-sulfoxylate, orally and intravenously, saving the lives of sixty-seven. This method is superior to gastric lavage with albumin water. Under proper conditions sodium methanol-sulfoxylate keeps indefinitely.—E. HUG. *Semana méd.*, (1938), 42; through *Anales farm. bioquím (Sup.)*, 9 (1938), 64. (G. S. G.)

Mercurial Poisoning—Acute, Unusual Findings in a Case of.—I. M. RABINOWITCH. *Can. Med. Assoc. J.*, 39 (1938), 429–433; through *Chem. Abstr.*, 33 (1939), 2215. (F. J. S.)

"Meta Fuel" Tablets—Fatal Poisoning by. Meta-poisoning has serious possibilities, with a medico-legal significance; for diagnosis may be difficult unless there are reasons to consider such poisoning. So long as its sale is unrestricted it may become the popular choice of the suicide or criminal. The packing of such a dangerous poison in frail cartons is not conducive to safety. Once the carton is opened the tablets may easily drop out and fall within the reach of young children. To protect the child, the public should be warned of meta's dangerous qualities and measures for a safer distribution should be introduced.—D. R. LEWIS, G. A. MADEL and J. DRURY. *Brit. Med. J.*, 4094 (1939), 1283. (W. H. H.)

Methenamine Mandelate—Preparation, Toxicity and Bactericidal Activity of. The preparation of the compound is given. The compound, $C_{14}H_{20}O_3N_4$, melting at 129.2–129.5° C., is readily soluble in water, slightly soluble in alcohol, is practically odorless, it has a sweetish taste and p_H (10% aqueous solution) 4.5. It is toxic to rats on intraperitioneal injection, non-toxic on oral administration to rabbits and is bactericidal in urine *in vitro* at p_H levels of 5.5, 6.0 and 6.5.—GLENN L. JENKINS, LARRINE JACK and CHARLES H. DRAKE. *Pharm. Arch.*, 10 (1939), 81–85. (H. M. B.)

Mineral Dusts—Reaction of the Human Organism to Different Types of, with or without Infection Causing Complications. An experimental study of the action of the various dusts found in mines when injected as colloidal suspensions into experimental animals. Free silica in the colloidal state produces immediately extremely serious inflammation; in this state it acts as a poison for the tissues, whereas in the non-colloidal state it is much less irritating. The same is true of natural silicates, while artificial sodium silicate acts in the same way as colloidal silica. Among other substances, bituminous coal and rutile produce only a slight, but chronic, irritation and diamond, anthracite, alumina, etc., produce only a transient reaction. In the case of mixtures of dusts, there is a temporary inhibition of the action of colloidal silica, the extent of which is variable. On the other hand, pneumoconiosis favors infections, especially tuberculosis; there then occur combinations of silicosis and tuberculosis, with very rapid evolution. Conversely, silicosis develops more rapidly on tissues which were previously damaged by an infection or other source of irritation.—L. U. GARDNER. *Mining Techn.*, 2 (1938), No. 3, 1–15; through *Chimie & Industrie*, 41 (1939), 268. (A. P.-C.)

Morphine, Strychnine and Digitoxin—Influence of Temperature on the Lethal Doses of, for Bufo Arenarum.—C. LAMBRUSCHINI. *Compt. rend. soc. biol.*, 129 (1938), 1213–1214; through *Chem. Abstr.*, 33 (1939), 2212. (F. J. S.)

Mussel Poisoning. From one circumscribed area in Nova Scotia, 184 samples of mussels and clams, each consisting of five to ten shellfish, have been found toxic as measured by the capacity to kill an 18- to 20-gram mouse in thirty minutes. The frequency of toxicity and its intensity were highest at one place, Centreville, where 0.2 mg. of dried extract was lethal. A mussel, *Modiola modiolus*, has been found toxic for the first time.—J. GIBBARD, F. C. COLLIER and E. F. WHYTE. *Can. Pub. Health J.*, 30 (1939), 193; through *Brit. Med. J.*, 4095 (1939), 50F. (W. H. H.)

Nicotine Damage. Acute nicotine poisoning is uncommon, but disorders due to chronic poisoning are widespread, according to the author. Its effect upon the heart and blood vessels is well known. Gastro-intestinal symptoms also may be due to nicotine. Disturbances of vision and catarrh of the upper respiratory tract are often caused by excessive smoking.—H. ASSMANN. *Münch. med. Wochschr.*, 86 (1939), 457; through *Brit. Med. J.*, 4090 (1939), 1122B. (W. H. H.)

Nicotine Poisoning—Case of Fatal. A detailed description of a case in which death followed 2 minutes after ingestion of not more than 100 cc. of tobacco juice. The juice itself contained not more than 1% of nicotine. Traces of nicotine were found (method used described) in the blood, the stomach content and the intestinal content. Death was due to the combined action of the nicotine and of advanced alcoholism; the former alone, under the above conditions, would have been insufficient to cause the death of a healthy individual.—H. THÉLIN and S. WEHRLI. *Ann. méd. légale criminol. police sci.*, 18 (1938), 333–344. (A. P.-C.)

Occupational Intoxications—Spectral Analysis in the Diagnosis of Certain. A study of the possibility of using spectral analysis for the detection of minute quantities of thallium chloride. Thallium chloride equivalent to about 2 mg. per kilo body weight was injected hypodermically daily into rabbits. Spectroscopic examination of the urine showed the presence of thallium as early as the third or fourth day.—F. CAPELLI. *Medicina Lavoro*, 29 (1938), 321–332; through *Chimie & Industrie*, 42 (1939), 49. (A. P.-C.)

Phenylpropylamines—Action of, in Barbiturate Poisoning in the Guinea Pig. β-Phenylpropylamine (benzedrine) gives excellent results as an antagonist of the effects of barbiturates. It is more satisfactory than strychnine. The action of α- and γ-phenylpropylamines are similar to the action of the β-compound, but much weaker.—A. LUMIÉRE and P. MEYER. *Compt. rend. soc. biol.*, 128 (1938), 678–680; through *Chimie & Industrie*, 41 (1939), 525. (A. P.-C.)

Plasmochin Toxicity—Note on Intracorpuscular Methemoglobin in. There is some confusion concerning the identity of the pseudo-methemoglobin of blackwater fever and the intracorpuscular methemoglobin of plasmochin poisoning. A case of marked cyanosis in a malarial patient receiving plasmochin gave the authors an opportunity to ascertain the exact nature of the methemoglobin pigment associated with plasmochin toxicity. The serum of the patient's blood showed no methemoglobin but the lysed red cells contained a substance showing a prominent band in the red above 600 mμ which is typical of methemoglobin and not pseudo-methemoglobin. Further, the addition of $(NH_4)_2S$ to the supernatant liquid from the lysed cells caused the band to disappear, a characteristic of methemoglobin. The authors are unable to state whether the methemoglobin, after being liberated from the cells, is converted to the pseudo-methemoglobin of blackwater fever, a disease said to be provoked by plasmochin. It was found that the supernatant liquid from the lysed cells of the cyanotic patient formed a pseudo-methemoglobin on incubation with serum but this also happens when a weak solution of hemoglobin is similarly incubated.

Plates are included which show the spectrogram of all the pigments studied.—HENRY FOY and ATHENA KONDI. *Ann. Trop. Med. Paras.*, 32 (1938), 249–256. (W. T. S.)

Poisoning with Monoiodacetic Acid and Arakawa's Reaction. Monoiodacetic acid, which is stated to have a powerful glyoxalase inhibiting effect, was injected into lactating rabbits soon after delivery. The methyl glyoxal-like substance in rabbits' milk increased rapidly and qualitative tests for methyl glyoxal in it showed also a steady increase. In proportion to the increase of the methyl glyoxal-like substance, Arakawa's reaction of rabbits' milk became "intensely" negative or completely negative and the body weight of the lactating rabbits showed a decrease. These toxic symptoms of rabbits were easily cured by vitamin B_1 alone, when the condition was not severe. But if the condition was severe, the recovery took place only by a combined use of vitamin B_1 and yakriton. This hormone acts thus to intensify the vitamin.—SH. SATO. *Tôhoku J. Exptl. Med.*, 37 (1939), 255. (A. C. DeD.)

Pyramidone—Acute Fatal Agranulocytosis during Treatment with.—A. LEMIERRE, A. LAPORTE and A. DEPAILLAT. *Bull. mém. soc. méd. hôp. Paris*, 54 (1938), 632–633; through *Chem. Abstr.*, 33 (1939), 3456. (F. J. S.)

Saturnism—Detection of, in an Automobile Factory. Of 39 workers who finished electric welds by means of rods of metal containing 30% lead, 10 were definitely intoxicated with lead, 4 others were in the early stages of the disease and there were 2 doubtful cases. Such a proportion of intoxications is excessive, particularly as in other plants where the same work is being carried out no cases were observed.—P. MOLITOR, M. ARNOLDSON and G. HAUSSER. *Arch. Malad. Profess.*, 1 (1938), 124–128; through *Chimie & Industrie*, 41 (1939), 477. (A. P.-C.)

Saturnism in Munitions Workers. Medical examination (covering general condition, blood analysis, urine analysis, etc.) was made of 47 apparently healthy workers who attended to the melting of lead-antimony alloys in a munitions factory. These workers were found to be to some extent subject to saturnism, in most cases a hyposaturnism undetectable by chemical tests but only by blood examination. As this hyposaturnism can, after a certain number of years, become a true saturnism, the workers should be subjected to periodical blood tests. The latter, in the case of the hyposaturnism generally observed, reveal a slight hemolysis, generally higher in women than in men, and a slight reduction in the hemoglobin content. From a prophylactic standpoint it would seem to be advisable to substitute the daily ingestion of sulfurous water containing magnesium salts for that of milk.—U. DE PEPPE. *Medicina Lavoro*, 20 (1938), 257-268, 306–311, 332–340; through *Chimie & Industrie*, 41 (1939), 1093. (A. P.-C.)

Stilboestrol (4,4-Dihydroxydiethylstilbene)—Oestrogenic Activity and Toxicity of. 4,4-Dihydroxydiethylstilbene has indisputable oestrogenic properties. This substance is very active orally but it is certainly toxic. This has been determined in a very large number of cases with accidents of early and late intolerance. It is therefore believed that this substance should be prohibited in human therapeutic usage, because the active doses show toxicity.—J. VARANGOT. *Presse Méd.*, 38 (1939), 725. (W. H. H.)

Strychnine—Three Cases of Fatal Poisoning by. A description of 3 cases of children ($3^1/_2$ to 8 years) who died after taking what were supposed to be vermifuge santonin pills, which, through an error in manufacture, contained strychnine instead of santonin. In the case of the 8-year-old boy, who died 8 hours after ingestion of the poison, no strychnine was found in the viscera and stomach contents, and only traces in the urine and vomit, indicating that cases may arise where no strychnine would be found in the tissues when death ensues 8 hours after strychnine poisoning. In such cases, cadaveric rigidity persisting until putrefaction sets in may be a valuable indication of the cause of death.—MAURICE BUREAU and LOUIS DESCLAUX. *Ann. méd. légale criminol. police sci.*, 18 (1938), 506–512. (A. P.-C.)

Sulfanilamide—Acute Yellow Atrophy of Liver Following. A patient who was receiving sulfanilamide for gonorrheal infection took unauthorized doses in excess of prescription and developed severe gastro-intestinal symptoms with jaundice. There was no indication that any other drug had been taken. After two months' medication he died of acute yellow atrophy of the liver. This emphasizes the danger of self medication.—EDWARD W. CLINE. *J. Am. Med. Assoc.*, 111 (1938), 2384. (G. S. G.)

Sulfanilamide—Peripheral Neuritis Due to. A case is reported of a patient who received 400 0.3 Gm. tablets of sulfanilamide in 35 days for gonorrhea. He developed toxic neuritis with muscular weakness in his hips and legs but improved on bed rest, mild sedation and brewer's yeast.—A. M. ORNSTEEN and WILLIAM FURST. *J. Am. Med. Assoc.*, 111 (1938), 2103. (G. S. G.)

2-Sulfanilylaminopyridine and Di-(*p*-acetylaminophenyl)-Sulfone—Acute, Cumulative and Chronic Toxicity of. The acute oral toxicity of Rodilone (Di-(*p*-acetylaminophenyl)-Sulfone) and Dagenan (2-Sulfanilylaminopyridine) was determined in mice, rats, rabbits, dogs and monkeys and found to be considerably lower than that of sulfanilamide. Upon repeated administration, marked cyanosis was produced by Rodilone. After feeding of sufficiently large quantities of Dagenan the formation of uroliths was observed in rats, rabbits and monkeys, but not in mice and dogs. These uroliths were found to consist of the acetyl derivative of Dagenan.—H. MOLITOR and H. ROBINSON. *Arch. intern. pharmacodynamie*, 62 (1939), 281. (W. H. H.)

Sulfapyridine—Note on the Toxicity of. After a year of exceedingly conservative study in medical centers, sulfapyridine was released for general use by the F. T. C. Shown to be useful in pneumonias and certain other diseases, sulfapyridine is said to be less toxic than sulfanilamide but not entirely devoid of undesirable reactions. In the very young, sulfapyridine has been known to produce fatal cases of granulocytopenia given in amounts as small as 41 Gm. in two weeks. It was urged that the patient's blood be examined daily so that the drug may be withdrawn if leucocytes are found to be diminishing. Experimental feeding of sodium sulfapyridine has been shown to produce uroliths in rats, rabbits and monkeys. The minimum dosage necessary to produce urinary concretions range from 0.25 Gm. per Kg. in monkeys to 2 Gm. per Kg. in rats.—ANON. *Southern Med. J.*, 32 (1939), 1073. (W. T. S.)

Thallium Poisoning. One personal and several other cases of suicidal thallium intoxication by rat poison are described, together with a test for the recognition of thallium in the urine.—L. BATTISTONI. *Il Policlinico, Sez. Prat.*, 46 (1939), 539; through *Brit. Med. J.*, 4089 (1939), 1070B. (W. H. H.)

Thallium—Toxicological Determination of. A method for the detection and determination of thallium in organic material is given. It depends on the solubility of thallic chloride in ether and the insolubility of thallous iodide in water and alcohol. With large amounts the thallous iodide is weighed,

but with smaller amounts the iodine of the thallous iodide is set free and determined colorimetrically. The methods given are rapid and reliable.—H. KLUGE. *Z. Untersuch. Lebensm.*, 76 (1938), 156–169; through *Chimie & Industrie*, 41 (1939), 462. (A. P.-C.)

Toxic Gases and Vapors—Physiological Effects of. The physiological effects of a wide range of gases and vapors are described briefly.—T. MCCLURKIN. *J. Inst. Petroleum Tech.*, 25 (1939), 382–391; through *J. Soc. Chem. Ind.*, 58 (1939), 893. (E. G. V.)

Toxic Gases in Industry—Methods for the Detection of. V. Nitrous Fumes. A measured sample of air is drawn through a reagent prepared by dissolving (*a*) 0.5 Gm. of sulfanilic acid with slight warming in 150 cc. of a mixture of 70 cc. of acetic acid in 500 cc. of water and (*b*) 0.1 Gm. of α-naphthylamine in 20 cc. of boiling water added to 150 cc. of the dilute acetic acid above. Immediately before testing mix 5 cc. of each of (*a*) and (*b*). The solution is colorless after mixing but develops a rose-pink color in the presence of nitrous fumes. For quantitative results the volume of air required to give a color whieh matches the color of a solution of 0.00002 Gm. of dimethylaminoazobenzene in 10 cc. of approximately 7% hydrochlorie acid is determined.—DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH, LEAFLET NO. 5, H. M. STATIONERY OFFICE. *Analyst*, 64 (1939), 347. (G. L. W.)

Toxic Gases in Industry—Methods for the Detection of. III. Sulfur Dioxide. The principle of the test is the production of a stain on a special test paper impregnated with starch, potassium iodide, potassium iodate and glycerin and comparing this stain with a set of standards previously prepared. Details of the preparation of the test papers and method of testing are given. **IV. Benzene Vapor.** A color is developed when a measured volume of air containing benzene vapor is drawn through concentrated sulfuric acid containing a trace of formaldehyde. The test detects 1 part benzene in 10,000 of air. Details of the test are given.—DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH, LEAFLETS NO. 3 AND NO. 4, H. M. STATIONERY OFFICE. *Analyst*, 64 (1939), 277. (G. L. W.)

THERAPEUTICS

Acetarsone—Treatment of Presumed Congenital Syphilis with. Until seven years ago the authors treated congenital syphilis with sulfarsphenamine and neoarsphenamine combined with injections of bismuth or mercury salts. Recently, acetarsone has been given orally in combination with mercury inunctions, and the coöperation for the parents has improved, while the active lesions of syphilis in the children have apparently responded well. In patients less than two years of age, 67% showed a serologic reversal with acetarsone and mercury, while with the former method 79% showed similar results. The question arose of applying the acetarsone-mercury treatment to newborn infants whose mothers were known syphilitics but did not show diagnostic signs of syphilis themselves. A group of thirty-six such infants was treated on the presumption that they would otherwise develop syphilis. All except one remained Wassermann-negative after one to three years. This early routine treatment has much to recommend it, the authors believe.—R. A. LYON and M. SEYMOUR. *J. Pediatrics*, 15 (1939), 13; through *Abbott Abstract Service*, (1940), No. 599. (F. J. S.)

Alcoholism, Chronic, as a Causative Factor in Pellagra. Chronic alcoholism is a frequent cause of hypovitaminoses—especially of *B* factors and of *C;* it may thus cause pellagra. Pellagra resulting from this cause was cleared up rapidly under treatment by nicotinic acid and a diet rich in vitamin B.—G. BICKEL. *Schweiz. med. Wochschr.*, 68 (1938), 1159; through *Chinese Med. J.*, 56 (1939), 191. (W. T. S.)

Anemia—Tropical Macrocytic, in Puerto Rico. It is believed that tropical macrocytic anemia is a syndrome that can be distinguished from classical sprue and pernicious anemia. The blood picture bears a close resemblance to that of sprue and pernicious anemia. This condition appears to be brought about by a deficiency in the diet of some factor at present unidentified, but other than Castle's extrinsic factor. The parenteral use of adequate amounts of crude liver extracts or of autolyzed yeast extract by mouth, in addition to a well-balanced diet, appears to be the treatment of choice. When an iron deficiency is present, iron sulfate is also recommended.—R. RODRIGUEZ-MOLINA. *Puerto Rico J. Pub. Health and Trop. Med.*, 15 (1939), 177. (A. C. DeD.)

Antimalarial Drugs—Studies on the Effect of, upon the Infectivity of Patients to Mosquitoes. Prontosil in heavy doses failed to prevent the development of crescents in *Anopheles stephensi.* A high percentage of gut and gland infections was observed even after the administration of 40 tablets of this drug.—R. N. CHOPRA and B. C. BASU. *J. Malaria Inst. India*, 2 (1939), 153. (A. C. DeD.)

Antimalaria Measures in Quetta Cantonment in 1938. An account is given of the malaria control measures adopted in Quetta Cantonment in 1938. Malaria incidence among the troops was markedly low as compared with the figures recorded in previous years. The spraying of barracks with pyrethrum insecticide is thought to have played a considerable part in bringing about this result. A striking feature of the records of anopheline catches was the comparatively small numbers of *A. culicifacies*, a species which had formed a large proportion of the total in previous years.—B. DE BURCA. *J. Malaria Inst. India*, 2 (1939), 121. (A. C. DeD.)

Antimalaria Operations in Dehli. An account is given of the history of malaria in Dehli, of the various malaria problems existing in the Dehli urban area and of the distribution and intensity of the disease in that area immediately before the commencement of the antimalaria campaign in 1936.—G. COVELL. *J. Malaria Inst. India*, 2 (1939), 1. (A. C. DeD.)

Barbiturates—Treatment of Ether Convulsions with. Convulsions from general anesthesia are being reported in the literature with increasing frequency, and many of these prove fatal. For this reason, a review of the methods of treatment is opportune. The reasons assigned for the appearance of convulsions are many and varied. Impurities in ether, in oxygen, overdose of atropine, cerebral anemia, alkalosis, hyperventilation, disturbance of metabolism and several other reasons have been advanced. The signs preceding the onset of convulsions are definite and consist of muscular twitchings about the face which spread to other parts of the body. Cyanosis is marked after the convulsions are established. One case is reported: a child of six years of age had previously been anesthetized without any untoward reaction. She was given nitrous oxide, oxygen and ether and toward the end of anesthesia went into convulsions. Six or seven cc. of a 2.5% solution of pentothal sodium were given, with oxygen, and the convulsions stopped immediately.—L. H. MOUSEL. *Proc. Staff Meetings Mayo Clin.*, 15 (1940), 34; through *Abbott Abstr. Bull.*, (1940), No. 620. (F. J. S.)

Barbiturates—Use of, in Ether Convulsions. Slevin considers it very strange that there is no men-

tion of convulsions due to ether in the medical literature prior to 1926, despite the fact that ether was used to produce anesthesia for at least eighty years before that time. Observations on this pathological condition since it was first recognized indicate that the predisposing factors are youth and acute infections with toxemia. The convulsion begins with rapid and labored respiration, twitching of the muscles of the neck and widely dilated pupils. The twitching spreads to the muscles of the neck, shoulders, arms, legs and abdomen; as it spreads it becomes more active. Finally, violent and sustained epileptiform convulsions with cyanosis occur. In treatment, the main reliance is placed on the barbiturate administered parenterally. These drugs may be administered after the convulsion has developed or, for prophylaxis, they may be used as a preoperative sedative. The use of oxygen and carbon dioxide inhalations is recommended.—J. G. SLEVIN. *J. Michigan State Med. Soc.*, 38 (1939), 482; through *Abbott Abstr. Bull.*, (1940), No. 621. (F. J. S.)

Benzedrine and Other Compounds—Analeptic Activity of. In experiments on mice anesthetized with paraldehyde, benzedrine was compared with other similar substances. Benzedrine is the trade name for a racemic mixture of *d*- and *l*-phenylisopropylamine. The *d*-isomer was always found to be the more active. In comparison with other compounds, *d*-phenylisopropylamine and *d*-phenylisopropylmethylamine were most active, followed by ephedrine and *nor*-ephedrine. *d*-Phenylisopropyldimethylamine, *nor*-ω-ephedrine, ω-ephedrine and methyl-ω-ephedrine were practically inactive. Picrotoxin and cardiazol were as active as any of the benzedrine series and picrotoxin is probably better for the treatment of anesthetic poisoning, since benzedrine is considered to be more toxic in anesthetized animals. Cardiazol and picrotoxin can be given to anesthetized animals in doses greater than the lethal dose for normal animals.—J. W. TREVAN. *Proc. Roy. Soc. Med.*, 32 (1939), 391; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 305. (S. W. G.)

Beriberi—History of. A study of beriberi extending for 27 years in the city of Manila where only white rice is used. It is less common in country districts where brown rice is customary. Tests made with different kinds of rice on 27 condemned prisoners in Bilibid Prison proved that a monotonous diet with polished rice may cause beriberi, and its incidence is proportionate in places where polished rice is used. Tikitiki extract from clean fresh rice polishings macerated in alcohol has reduced the rate of infant mortality and has provided a cure for adult cases of beriberi. It is distributed in the Philippines through the Public Welfare Commission.—FLORA S. DAVID. *Rev. Filipina Med. Farm.*, 29 (1938), 346. (G. S. G.)

Bile—Sterilized Beef, Treatment of Angina and Stomatitis of Pneumonia by Local Application of. The authors have applied, in the clinic, the property of bile in hindering the development of pneumococci upon the culture medium and its bactericide action upon the germ. They report three observed cases of pseudomembrane angina and two observations of ulcero-stomatitis or pseudomembranes in which inoculation has shown the presence of pneumococci when this treatment has been applied with success. After a siphoning with Seltzer water and a washing of the mouth with bicarbonate water, it is soaked with the sterilized beef bile. The treatment is very disagreeable, less in the beginning. The applications of bile produced a rapid descent of the temperature, the throat is cleansed, the lesions present recede in a variable time, but sufficiently short. According to the age and the mass of lesions, one has obtained manifested improvement in 1 to 3 days, complete cure in 2 to 5 days. This therapeutic method rendered service in certain anginas or particular cohesive stomatite pseudomembranes in pneumonia.—J. CHALIER and J. LEDRU. *J. Med. Lyon*, 20 (1939), 13; through *Presse méd.*, 35 (1939), 81. (W. H. H.)

Bismuth Compounds—Jaundice from, in Syphilis. Arsphenamines are usually blamed for jaundice occurring during treatment of syphilis. Bismuth is not usually hepatoxic but has non-specific action on a liver previously damaged by syphilis, arsphenamine, alcohol or some other agent. Seventy-five cases in which jaundice occurred during therapy for syphilis were studied; in 32 the cause was thought to be bismuth, since some had received no other medication and others had had no arsphenamine within 12 weeks of the onset of jaundice. All bismuth cases recovered and most of them were later given bismuth without its causing harm.—REUBEN NONLAND, *et al.* *J. Am. Med. Assoc.*, 110 (1938), 19. (G. S. G.)

Blood Coagulation—Defective, Use of Vitamin K in Treatment of. After reviewing the history of the development and the theory of action of vitamin K, the authors set down some of the results they have obtained from the use of this vitamin. The material has been used in 9 cases of obstructive jaundice showing lowered values for prothrombin, and in every case a prompt response was indicated by a rise in the prothrombin content and a return of the clotting power of the blood to normal. In cases with hepatocellular icterus, and especially in cases of cirrhosis, the administration of the vitamin did not have such favorable effects; this strengthens the theory that prothrombin is manufactured in the liver. The authors obtained a preparation which could be injected intramuscularly; the dose was 250,000 Dam units, repeated several times. This exerted the typical vitamin K effect. The authors also treated three cases of sprue which showed prolonged clotting times, and found the hemorrhagic condition amenable to vitamin K.—F. KOLLER and F. WUHRMANN. *Klin. Wochschr.*, 18 (1939), 1058; through *Abbott Abstract Service*, (1940), No. 595. (F. J. S.)

Cardiotherapy. *Digitalis purpura* is so carefully standardized that exact known amounts can be given and 0.65 cc. of the tincture or 0.065 Gm. (1 gr.) U. S. P. powdered leaf to each 10 pounds body weight gives optimal effect in lowering the ventricular rate in auricular fibrillation. Ten to thirty per cent more may be given with safety although the dose should be altered to keep the heart rate between 60 and 70 beats per minute. *Digitalis lanata* is best for intravenous medication in desperate cases with a high ventricular rate (150–200). Auricular fibrillation due to infections, chemicals, physical exertion, etc., with no organic heart disease responds to quinidine. There is danger in its use since it is toxic to heart muscle but it is reasonably safe if digitalis is used first. Extra systole is treated first with sedatives and the withdrawal of coffee or tobacco; if it is persistent give strychnine, $^1/_{30}$ gr. (0.002 Gm.), three times daily, or quinidine 3 grs., three times daily. Digitalis should not be given in such cases. Paroxysmal tachycardia is treated with acetyl-β-methylcholine, or large intravenous doses of digitalis. When tachycardia stops, the patient should take daily maintenance doses of 9 grs. (0.6 Gm.) of quinidine. Heart block may be reduced by $^1/_{100}$ gr. (0.0006 Gm.) atropine, or 5 to 10 minims (0.32 to 0.65 cc.) epinephrine, subcutaneously, or 3 to 5 minims intracardially in syncope. Give ephedrine hydrochloride in capsules $^3/_4$ gr. (0.048 Gm.) four to six times daily for a systole of ventricles; but if the electrocardiogram shows Adams-Stokes syndrome due to ventricular fibrilla-

tion, quinidine should be given rather than epinephrine or ephedrine.—GEORGE FAHR. *J. Am. Med. Assoc.*, 111 (1938), 2268. (G. S. G.)

Cerebrospinal Meningitis—Treatment of. Eleven consecutive cases of fully authenticated meningococcal meningitis treated with M. & B. 693, extrathecal serum and spinal drainage are reported with one death, a case mortality of 9.09%. Six of the patients were under 1 year of age, and of these five recovered—a case mortality of 16.66% for this age group, as compared with 78.26% in a series of forty-six cases under 1 year of age treated with intrathecal serum. None of the cases treated by the new method developed hydrocephalus or other disability. In the one fatal case of the series, death occurred suddenly from respiratory failure during the acute stage of the disease. Generally speaking, within three or four days of the beginning of treatment, a striking clinical improvement was noticed, as contrasted with a much more delayed reaction in the cases successfully treated by the older methods. The good results of this line of treatment were confirmed by a smaller series of cases treated along similar lines—that is, M. & B. 693 plus extrathecal serum—by Dr. W. R. F. Collis.—W. J. ROCHE and C. J. MCSWEENEY. *Brit. Med. J.*, 4094 (1939), 1278. (W. H. H.)

Chinese Materia Medica—Review of, during the Last Decade.—BERNARD E. READ. *Natl. Med. J. China*, 25 (1939), 3–14; through *Chem. Abstr.*, 34 (1940), 1127. (F. J. S.)

Cobalt—Effect of, on Erythropoiesis in Anemic Rabbits. Cobalt injected into animals subjected to repeated bleedings or treated with benzene results in a rapid recovery from the anemia. This effect is produced by stimulation of the formation of erythrogenic precursors in the bone marrow.—WILLIAM KLEINEBERG, ALBERT S. GORDON and HARRY A. CHARIPPER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 119. (A. E. M.)

Convalescent Serum—Treatment of Measles with. Convalescent serum will prevent or modify measles in exposed children if it is given by the fifth day. It is usually unsuccessful if given in the active stage. Twenty-four children showing Koplik spots, none of whom had previously received any measles convalescent serum, were given varying amounts of the serum intravenously. Intramuscular injections were added in six cases. Nine other children were given intravenous injections of normal adult serum during the preëruptive stage and four other children were given concentrated normal serum intravenously, also during the preëruptive stage. Nineteen of the cases receiving convalescent serum obtained a modification, 40 to 50 cc. being the effective dose. Normal adult serum affected none and concentrated normal serum only 2. This therapy is indicated especially in weak and debilitated children, in those just recovered from whooping cough or other infectious diseases of childhood, and in those in whom measles developed during the course of another acute or chronic disease.—JEROME L. KOHN, *et al. J. Am. Med. Assoc.*, 111 (1938), 2361. (G. S. G.)

Copper—Rôle of, in Carrion's Disease. Experiments with rats show that copper influences the mechanism of resistance to anemia from *Bartonellas*. Excess of copper in the diet maintains rats deprived of their spleens. Vitamin B_1 is used in combating Peruvian verruga. Inadequate diet has a definite effect on verruga. The disease is more prevalent among poorer classes who fail to get a variety of foods containing essential minerals, especially copper. A group of laborers who had acquired mild forms of Carrion's disease were treated with vitamin B_1, copper and iron and showed marked improvement. One patient who had severe eruptions received 4 mg. of copper added to his diet daily and responded with a prompt cure. Copper with iron augments the defenses of immunity and stimulates phagocytosis. This study is being continued.—MAX KUCZYNSKI-GODARD. *Reforma Medica*, 24 (1938), 638. (G. S. G.)

β-Diethylaminoethyl *p*-Ethoxy Benzoate Hydrochloride—New Local Anesthetic. A series of alkoxy benzoates has been investigated in the Squibb laboratories. One of them, β-diethylaminoethyl *p*-ethoxy benzoate hydrochloride, designated as "Intracain," proved so successful that it was given an extended clinical trial. The results in 175 cases show that, although slightly more toxic than novocain, it is effective in lower concentrations, longer in action and capable of greater diffusion. It appeared to cause no unfavorable effects generally or locally. Further investigation is recommended.—E. A. ROVENSTINE and S. C. CULLEN. *Current Researches Anesthesia and Analgesia*, 18 (1939), 86; through *Brit. Med. J.*, 4092 (1939), 1216F. (W. H. H.)

Digitalis—Rational Use of. The main indication for digitalis is congestive failure and when the symptoms are absent, little or nothing can be gained by the use of digitalis. Tachycardia in itself is not an indication, nor is bradycardia necessarily a contraindication. The most generally useful form for administration in general practice is the powdered leaf in pills containing $1^1/_2$ grains. The routine use of digitalis in pneumonia, hyperthyroidism, shock and collapse and other toxic states is harmful. —A. R. GILCHRIST. *Edinburgh Med. J.*, 46 (1939), 233; through *Brit. Med. J.*, 4090 (1939), 1122A. (W. H. H.)

Diodoquin in Amœbiasis. Forty-one cases of amœbiasis were treated with a new oxyquinoline compound (diodoquin). According to the author the results proved that this is a valuable drug, fulfilling the criteria of the ideal amœbicide more exactly than any other preparation available at the present time.—H. HUMMEL. *Am. J. Digestive Diseases Nutrition*, 6 (1939), 27; through *Brit. Med. J.*, 4092 (1939), 1216D. (W. H. H.)

Drug Hypersensitivity. A discussion with sixteen references.—MILTON A. LESSER. *Drug and Cosmetic Ind.*, 45 (1939), 36–38, 47–48. (H. M. B.)

Eczema—Infantile, Treatment of. Infantile eczema includes seborrheic, atopic, contact and mycotic dermatoses, plus those of traumatic or chemical irritation, or pyogenic infection. The seborrheic type, common in fat babies, is a dry scaly eruption, with the scales often yellowish and greasy. The atopic type, usually of allergic origin, may take the form of erythema, macules, vesicles, crusts or wheals. Local treatment includes lotions and ointments, coal tar being especially effective. A diet relatively low in fat and high in proteins is best for the seborrheic type. For the atopic type, cutaneous tests with egg, milk, cereal grains, tomato, spinach, orange, fish oil and chicken are used. Milk usually is the most likely cause and a substitute diet of cornmeal or oatmeal, carrots or string beans, banana, fish oil and ascorbic acid may be used. Environmental allergins are a less likely cause.—LEWIS WEBB HILL. *J. Am. Med. Assoc.*, 111 (1938), 2113. (G. S. G.)

Endocrine Products—Misuse of, in the Treatment of Gynecological Symptoms. P. outlines the glandular forces concerned in a normal menstrual cycle and then emphasizes the danger of unbalancing these forces by the indiscriminate use of glandular products. Estrogin, progestin, the anterior pituitary and the anterior pituitary-like substances are then discussed from the standpoints of standardization, indications, dosage and methods of adminis-

tration. In view of the information contained in these discussions P. believes that there is definitely a place for female sex hormone therapy but that it should be used in moderation and with discretion. Attention is also called to the attitude of the drug manufacturers in this matter. Some manufacturers, the author states, are trying to remove the confusion which exists in hormone therapy by thorough research while others are eagerly exploiting this therapy by marketing "shot gun" preparations for which they claim high unitage per cc.—GRIDER PENICK. *Southern Med. J.*, 32 (1939), 994–1000. (W. T. S.)

Estrogenic Hormone—Use of, in the Treatment of Infant Vulvovaginitis. Irrigation with germicides and non-specific protein therapy were formerly used to treat this disease, but a review of the literature from 1933 reveals that this condition is best remedied by the use of estrogenic hormones. Of the several methods employed to administer this therapy that of vaginal suppositories seems to offer the best approach since it gives a direct action and is not disturbing to the patient. The present paper describes a series of 26 patients who are treated for infant vulvovaginitis by estrogenic hormones and in some cases with adjunct therapy. The routine treatment described and a tabulation of the cases show that the estrogenic hormone therapy is superior in this disease just as other investigators have reported.—JOHN CONANT and CONRAD G. COLLINS. *Southern Med. J.*, 32 (1939), 1000–1004. (W. T. S.)

Estrogenic Substance—Treatment of Vulvovaginitis with. Twelve small girls, 2 to 10 years old, were treated with estrogenic substance, progynon B. They received 10,000 International units, intramuscularly, once a week for vulvovaginitis of gonorrheal origin. Vaginal lavage of 1:1000 silver protein was administered every other day. A cure was obtained in 3 to 4 weeks with no recurrences. The criterion of cure is the examination of vaginal smears. Estrogenic treatment has a biologic action stimulating cellular proliferation of the vaginal epithelium; the reaction of the vaginal discharge, is modified (acidity) and the vaginal mucosa is regenerated.—L. HOEPPNER DUTRA. *Annaes Brasil. Gyn.*, 4 (1938), 326; through *J. Am. Med. Assoc.*, 111 (1938), 2342. (G. S. G.)

Estrone—Effect of, on Progress of Experimental Tuberculosis. There have been some reports that tuberculosis in women occasionally undergoes exacerbation just prior to the onset of the menstrual period, and some observers have supposed that the progress of the tuberculous infection might be adversely affected by certain hormones present in the blood during the cycle. Since one of these hormones is the estrogenic one, it was determined to carry out experiments in animals attempting to test out the theory. Guinea pigs were artificially infected with the causative organism of tuberculosis and some of the animals were then given injections of estrogenic substance. Another group of artificially infected animals was not treated, but served as a control. After allowing a sufficient period to elapse so that the effect of the estrogenic substance could not show itself, the animals were examined for signs of the disease. No difference between the two groups could be demonstrated, so that estrogens apparently do not exacerbate the disease.—L. A. GRAY and C. B. BRACK. *Endocrinology*, 24 (1939), 645; through *Abbott Abstract Service*, (1940), No. 591. (F. J. S.)

Follicular Hormone—Effect of, on Menopausal Flushes. Follicular hormone (œstradial) was administered to fifty-one women suffering from "hot flushes" after an artificial menopause induced by radium. The hormone was given only by mouth and the dosage purposely kept very low so as to estimate the effect of the limited quantities likely to be available for such cases in general practice. In nearly all cases the number and severity of the "flushes" were reduced, and most of the less severe cases were cured. After the tablets had gradually been withdrawn there was seldom any recurrence of symptoms within the next six months.—B. C. MURLESS. *Lancet*, 236 (1939), 1205. (W. H. H.)

Glandular Treatment for Undescended Testes. The anterior pituitary-like principle from the urine of pregnant women is successful in producing descent of testes in only 20% of cases. Operative procedures are necessary in the majority because of mechanical factors. Treatment with *A-P* principle is useful in differentiating the cause but it should be discontinued before genital growth becomes excessive. It is possible that this material causes descent only in those testes which would descend without treatment at puberty.—WILLARD O. THOMPSON and NORRIS J. HECKEL. *J. Am. Med. Assoc.*, 112 (1939), 397. (G. S. G.)

Gold Salts and Benzoate Derivatives—Association of, in Treatment of Pulmonary Tuberculosis. The authors have employed diethanolamine benzoate instead of sodium benzoate, which exhibits the same expectorant and antiseptic properties, because injection of the latter causes venous sclerosis. They were unable to administer a gold-benzoate complex because of the variance in dose of the two medicinals. The mixture of the two causes vomiting, but the compounds may be given alternately. This method proved that the association of the salts of gold and the benzoates is useful in the control of the exudative forms or the exudative pressure of the forms producing pulmonary infections during the period when collapsotherapy may not be used. The treatment also prevents the reactivation of newly healed lesions.—FANIEL and JEURISSEN. *Rev. therap. Maurice*, 20 (1939); through *J. pharm. Belg.*, 21 (1939), 680. (S. W. G.)

Gonadotropic Hormones—Treatment of Distress of Menstruation with. The influence of anterior pituitary hormone on the development and function of the gonads is accepted. A clinical study is reported on 13 cases of genital insufficiency treated satisfactorily with anterior pituitary combined with folliculin.—A. RAMOS PERALTA, *et al. Prensa Medica Argentina* (Feb. 26, 1936); through *Rev. sudamericana endocrinol. inmunol., químioterap.*, 21 (1938), 575. (G. S. G.)

Incontinence—Urinary, Treatment of, with Estrogenic Substance. The author conducted experiments with estrogenic substances in an attempt to control postoperative atony of the bladder such as is seen in women who have undergone pelvic operations. Little success was obtained in these patients, but the treatment gave benefit in certain cases of another type of urinary difficulty which often confronts the gynecologist. Various degrees of urinary incontinence are often seen following Wertheim's radical operation, and estrogenic substances favorably influence this condition. In general, only small doses are needed, but the treatment must be extended over considerable lengths of time. The material used in the cases reported was estradiol benzoate, in doses of 10,000 International benzoate units. At first this is given by injection, but later the dose may be reduced to one tablet of 10,000 I. U. every two days, orally. The effect may be due to an improvement in the thickness and tone of the tissue surrounding the urethra.—E. STEINKAMM. *Deut. med. Wochnschr.*, 65 (1939), 1237; through *Abbott Abstract Service*, (1940), No. 601. (F. J. S.)

Labor—Induction of, Use in Estrogens in the.

It has been known for some time that sufficiently large doses of estrogenic substances in animals are able to prevent implantation of the fertilized ovum and, if pregnancy exists, to bring about premature delivery of the fetus. It occurred to the authors of the present paper that these substances might be used to induce labor at or near term in certain patients where this was desirable. Accordingly, 36 patients at or near term were chosen and were given injections of 10,000 to 350,000 International units of an estrogenic substance. In some cases, the injections were repeated up to six times. Because the onset of labor might have taken place regardless of the medication, and because of numerous other factors, the evaluation of the response to the medication was most difficult. However, when all factors were considered, the authors felt able to conclude that 8 patients out of the group probably owed the onset of labor to the medication. Two were primiparæ; the other 6 multiparæ.—S. LUBIN and R. WALTMAN. *Surg. Gynecol Obstet.* 69 (1939), 155; through *Abbott Abstract Service*, (1940), No. 602. (F. J. S.)

Leprosy and Vitamin B_2. Physiological tests carried out on white mice showed that vitamin B_2 deficiency is an important factor in leprosy, as it favors persistence of the infection.—N. K. BASU. *Z. Vitaminforsch.*, 7 (1938), 297–298; through *Chimie & Industrie*, 41 (1939), 529. (A. P.-C.)

Liver Extract—Treatment of Acne Vulgaris with Injections of. Marshall recently published a preliminary report (*Med. World*, 57, 101) on the beneficial effect of liver extract in cases of acne vulgaris which had not responded to other treatment. He noted that the seborrhea seemed to be the first component of the "acne complex" to improve; following this the thickness, induration and rigidity of the skin seen in these patients improved. Later, comedones and pustular lesions disappeared. The present paper deals with efforts to analyze the liver extract to determine the nature of the specific beneficial factor. The first procedure which suggested itself was to boil the commercial extract (Abbott's Injectable Liver Extract) to see whether the anti-acne factor (called the *S* factor) was heat labile or not. Boiling seemed to increase the potency of the material. Patients receiving the boiled extract improved more rapidly, and those who had been improving slowly on the plain extract showed more rapid progress when given the boiled material.—W. MARSHALL. *J. Invest. Dermatol.*, 2 (1939), 205; through *Abbott Abstract Service*, (1940), No. 610. (F. J. S.)

Malaria Therapy and Prophylaxis with Synthetics and Quinine. A summary of the work in several countries directed by the League of Nations. Quinine hydrochloride is effective in primary infections at a dose of 0.5 to 2 Gm. per day. It must be continued five to six days after the disappearance of parasites from the blood stream. It has no depressor or toxic effect but should not be continued indefinitely. Atebrin has action similar to quinine but requires smaller dosage; it has more speedy action in the benign tertian form, and in malignant tertian fever it is used satisfactorily following quinine. The residual effects are not completely understood; the yellowing of the skin in prolonged prophylaxis is a drawback. Plasmoquin is ineffectual alone but useful in conjunction with quinine or atebrin. Quinine-plasmoquin combination is more toxic than atebrin-plasmoquin in long prophylaxis; it is useful in brief curative courses. Simultaneous administration of atebrin and plasmoquin intensifies the toxicity of each. The preferred method is to follow one drug with another. Plasmoquin following atebrin or quinine reduces the number of relapses and is effective on the gamete form of the parasite. Collective therapy should emphasize prompt medication on diagnosis and prevention by attacking the gamete stage. Eradication is possible only through comprehensive treatment and prophylaxis of people in malarial regions.—LEAGUE OF NATIONS REPORT. *Bol. Ofic. Sanit. Panamericana*, 17 (1938), 681. (G. S. G.)

Malaria—Treatment of. It is necessary to consider the diversity of reactions to the same species of parasite in different patients. Indications for parenteral administration of various medicaments may vary and there are difficulties with certain synthetics, such as the yellow coloring of the skin with atebrine and the toxicity of plasmoquin. The species of parasite must be established microscopically. *Plasmodium vivax* responds to plasmoquin with quinine or atebrin chiefly by reducing the frequency of recurrence; *P. falciparum* responds to plasmoquin and quinine or atebrin by their attack on the gametocytes. Intensive treatment is necessary for cures. Destruction of gametocytes reduces the possibilities of transmission; plasmoquin being especially valuable for this. Prophylaxis consists of the protective dosing of the people of a district and an effort to eradicate mosquitoes. Quinine daily and atebrin weekly afford protection. Quinine is relatively innocuous, but synthetics should be used only under the supervision of a physician. Combining prophylaxis and treatment of a population usually suppresses the incidence of infection, but complete suppression is more successful where the population is small and stationary.—ANON. *Lab. Clin.*, 18 (1938), 351. (G. S. G.)

Malaria—Treatment of, in the 18th Century. A manuscript of natural remedies from Lima, 1771, has excerpts dealing with remedies for, and treatment of malaria, both tertian and quartan. (1) An infusion of powdered cinchona bark in the juice of bitter orange with sugar is to be drunk daily before each chill. (2) A concoction of cinnamon, lemon syrup, powdered cinchona and white wine was to be taken before each chill with barley water. (3) Pills made of powdered cinchona and syrup of lemon were to be taken three each day, and to be washed down with water or lemonade. In severe cases this was given regularly every six or eight days for a month and a half. (4) An infusion of cinchona was used as an enema because a larger amount can be injected than the bitter taste will permit taking by mouth. Dosage of this type is proportionate to the age and the vigor of the patient but it is retained a sufficient length of time and is well tolerated. (5) Transfusions are suggested also but are not recommended unless the patient cannot tolerate quinine.—CARLOS E. PAZ SOLDAN. *Reforma Medica*, 24 (1938), 480. (G. S. G.)

M. & B. 693 for Cerebrospinal Fever. Three cases of meningococcal cerebrospinal meningitis were treated by M. & B. 693 and with daily lumbar puncture. An average dose of 29 Gm. of M. & B. 693 was given. All cases responded well to the treatment, from six to seven days being required before the cerebrospinal fluid was clear and before the pressure came within normal limits. Two of the cases showed a low-grade pyrexia during convalescence, although the cerebrospinal fluid was practically normal.—W. H. OSBORN. *Brit. Med. J.*, 4094 (1939), 1281. (W. H. H.)

M. & B. 693—Treatment of Gonorrhea by. One hundred and fifty-two cases of gonorrhea under treatment with M. & B. 693 are reviewed. Thirteen of these patients defaulted or attended irregularly, and five failed to respond to the drug. Of the remaining 134 cases, eleven relapsed, due to alcohol in all instances. Early cure was obtained in 90% of the cases. This cure was possible in, on an aver-

age, under five days. Apparent failures cleared up quickly with subsequent irrigation. Toxic effects occurred in 39% of the cases, and these were generally slight. No complications during treatment were encountered.—J. SOMMERVILLE. *Brit. Med. J.*, 4093 (1939), 1128. (W. H. H.)

Mapharsen—Study of Its Use in the Treatment of Congenital Syphilis. During the past thirty years a great number of organic arsenicals have been introduced as antisyphilitics. After stating the requirements for an ideal antisyphilitic drug the author set out to determine by an exhaustive study to what extent mapharsen (*m*-amino-*p*-hydroxyphenyl arsine oxide) fulfils these requirements. In some instances the mapharsen was used in conjunction with bismuth subsalicylate. An analysis of 204 cases of syphilis treated with mapharsen revealed that this drug is meritorious in treating prenatal and congenital syphilis. With the addition of bismuth subsalicylate to the therapy its action was enhanced. In addition to its effectiveness it was found that the drug produced amazingly few local or severe reactions upon injection. Thirty-eight references are appended to the article which also contains a number of charts showing the race, sex, age and general condition of the patients receiving treatments.—JAMES K. HOWLES. *Southern Med. J.*, 32 (1939), 940–953. (W. T. S.)

Maretine (Acetanilide Derivative)—Use of, in Undulant Fever. Two hundred cases of undulant fever have been treated satisfactorily with methylphenylhydrazine formimide carbonate (maretine) $CH_3.C_6H_4$-$NHNHCONH_2$ given by oral administration in doses of 0.2 to 0.3 Gm. twice or three times daily. In most cases the temperature fell after a few doses and most of the patients were discharged cured after about a fortnight's treatment. The drug was well tolerated and no relapses were noted, and it has since become widely adopted in Italy as a specific remedy against Malta fever.—A. FUSETTI. *Il Policlinico, Sez. Prat.*, 46 (1939), 7; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 304. (S. W. G.)

Neoarsphenamine—Rat Bite Fever Cured by. Two women bitten by rats suffered chills and fever, general debility and nervous symptoms. They were treated successfully with neoarsphenamine.—CONRADO POTENCIANO. *Bull. San Juan de Dios Hosp.* (Manila), 12 (1938), 418; through *Rev. Filipina Med. Farm.*, 29 (1938), 507. (G. S. G.)

New Products. A list of recommended pharmaceuticals includes: an extract of diaphragm muscle for use in angina; colloidal manganese for suppurative lesions of the skin; hepatic and gastric substance for anemia; neosynephrine emulsion for mydriasis and vasoconstriction; colloidal iron tonic for anemia; colloidal silver for mucus infections; and prophylactic vitamin C compounds.—ANON. *Rev. Farm.* (Puerto Rico), 3 (1938), 1039. (G. S. G.)

Nicotinic Acid in Endemic Glossitis. Small doses of nicotinic acid (50 mg. four to six times a day) brought about considerable improvement in twenty-one out of twenty-four cases of the stomatoglossitis that appears in Palestine in winter. In this condition there are no signs of pellegra apart from soreness of the tongue, sometimes also of the angles of the mouth, and sore throat. To prevent relapse nicotinic acid must be administered for a long period.—I. KATZENELLENBOGEN. *Lancet*, 236 (1939), 1260. (W. H. H.)

Nicotinic Acid—Pellagra and. Nicotinic acid is well established as effective in the treatment of pellagra. Some patients unresponsive to a curative diet show marked improvement when nicotinic acid is added. One per cent aqueous solution, with 1 cc. containing 10 mg. of acid, is used; it is given intramuscularly or added to parenteral infusions in quantities up to 100 mg. For oral administration the solution is diluted with a little water in doses of 100 to 200 mg. The maximum daily amount is 1000 mg., with no ill effects other than flushing or tingling of the skin. Cases presenting central or peripheral neuritis are treated with synthetic vitamin B_1 intravenously or interperitoneally in daily doses of 10 to 40 mg. The control diet used in this study included hominy grits with gravy of pork fat, corn bread or wheat bread, rice, potatoes, molasses, coffee with sugar, and pork fat. Thirteen cases of endemic pellagra responded to nicotinic acid therapy. Of four control patients, two had spontaneous remissions, two became worse but recovered after administration of nicotinic acid. Synthetic vitamin B_1 is necessary as an accessory to nicotinic acid in neuritic complications. There was also a lack of recurrence of pellagrous dermatitis in several pellagrins when exposed to sunlight during the period of nicotinic acid therapy.—R. S. MATTHEWS. *J. Am. Med. Assoc.*, 111 (1938), 1148. (G. S. G.)

Nicotinic Acid—Prevention of Pellagra by. It is effective in the cure of canine blacktongue and for the relief of part of the syndrome of pellagra. This study shows its value in preventing the relapse of pellagrins. Thirty-three known pellagrins showing signs of relapse were selected; sixteen received nicotinic acid, seventeen the regular ration of brewers' yeast. There was no attempt to modify the diet or environment. The dosage of nicotinic acid was in 100 mg. capsules, one given each Monday and Thursday; the control group received the routine dose of 90 Gm. of brewers' yeast daily. Treatment lasted six weeks. A slight but not perceptible improvement was found from nicotinic acid. A small daily dose of nicotinic acid might be more effective especially if the diet is made more adequate.—H. L. SCHMIDT and V. P. SYDENSTRICKER. *J. Am. Med. Assoc.*, 110 (1938), 2065. (G. S. G.)

Nicotinic Acid with Nucleotides—Combination of, in Anemia. Pentose-nucleotides occur in the nucleus and cytoplasm of cells which are rapidly dividing; this condition is characteristic of hemocytoblasts, and the intense basophilism of the cytoplasm in these cells is thought to be due to the presence of the pentose-nucleotides. Recently Elvehjem and his collaborators have shown that nicotinamide, a substance found in liver, forms a coenzyme system with pentose-nucleotide. It is reasonable to suppose that cells in which large amounts of pentose-nucleotide are actively present would also require nicotinic acid, and if this substance were lacking, cellular abnormalities might result. The author believes that the absence of nicotinic acid furnishes a logical explanation for the degenerative amitosis, the defective chromatin formation and the premature ripening of erythrocytes in pernicious anemia and other of the macrocytic anemias which present a similar cytologic appearance. Liver extract may be beneficial because of nicotinamide.—J. P. MCGOWAN. *Nature*, 144 (1939), 244; through *Abbott Abstract Service*, (1940), No. 614. (F. J. S.)

Nitrobenzoic Acid and Its Esters. *p*-Nitrobenzoic acid and certain of its derivatives have a marked chemotherapeutic action in the pneumococcal and streptococcal infections. This action may be compared to that of the sulfur derivatives and attributed in the two cases to the simultaneous presence of a principal group (aromatic functioning nitrogen) and a secondary group (sulfur or carboxylate function).—R. L. MAYER and CH. OECHSLIN. *Arch. intern. pharmacodynamie*, 62 (1939), 211. (W. H. H.)

Oestradiol in Experimental Tumorigenesis. Uterine and extra-uterine tumors can be produced in the guinea pig by introducing a tablet of oestradiol

beneath the skin. These tumors are similar to the uterine and extra-uterine fibroids or fibromyomas produced previously by a long course of injections of follicular hormones (free oestradiol and œstrone, different esters and stilboestrol). The uterine tumors (subserus and mesometrial) begin to appear as early as 2.5–3 weeks after the introduction of the tablet. Uterine bleeding also can appear at this early date. In about seven weeks a high degree of uterine and extra-uterine tumorigenesis may be attained with tablets of follicular hormones. The degree of tumorigenesis with tablets of oestradiol is much greater than with injections of free oestradiol when equal quantities are compared. This is evidently due to continuous absorption and the continuous flow of oestradiol in the case of tablets, as contrasted with the discontinuous flow in the case of three injections of free oestradiol in the week. The treatment with tablets is comparable—as regards the danger of tumorigenesis—to a treatment with esters of oestradiol administered by injection without intervals free from treatment.—A. LIPSCHÜTZ and L. VARGAS. *Lancet*, 236 (1939), 1313. (W. H. H.)

Ophthalmia—Gonorrheal, Local Treatment of, with Sulfanilamide. Fifteen cases of gonorrheal ophthalmia were treated by irrigating the infected eye every fifteen minutes night and day with a 0.5 per cent solution of sulfanilamide in normal saline. Enough of the solution was used to keep the eyes clean constantly. In some of the cases, where gonorrheal infection was present in other locations, 30 or 40 grains of the drug were given orally according to the age and weight of the patient. At the end of 24 hours of this treatment the cornea was usually cleaner and brighter, and the secretion of pus had almost stopped. Swelling of the lids was usually receding and any corneal ulcer which might be present was usually arrested and beginning to heal. The cases treated with sulfanilamide required on the average 6.8 days before a negative smear was obtained. Cases treated by older methods required on the average, 27 days before a negative smear was obtained. No relapses had been seen up to the time of publication of the report.—W. J. REIN and O. B. TIBBETTS. *Am. J. Ophthalmol.*, 22 (1939), 1126; through *Abbott Abstract Service*, (1940), No. 589. (F. J. S.)

Pellagra—Subclinical Forms, Prevalence of, in Chicago. Pellagra is not believed to be a common disease in Chicago, and therefore special interest attaches to this report from a private sanatorium in the vicinity of that city. Out of 205 cases of nervous and mental diseases admitted to the institution in 1938, 13 were diagnosed as pellagra. Before the advent of nicotinic acid therapy the author had noticed many patients with stomatitis and glossitis which could not be adequately accounted for on any basis then known. Some of these patients were treated with yeast but the results were slow and doubtful. In 1938, however, a better background for the understanding of unexplained stomatitis and glossitis was available, and nicotinic acid was widely available, and the thirteen patients were treated with this drug. The oral lesions responded well, and two patients were relieved of their mental symptoms. The other eleven had psychoses which were not caused by pellagra. Their mental conditions were not improved by the medication.—V. L. EVANS *Illinois Med. J.*, 76 (1939), 458; through *Abbott Abstract Service*, (1940), No. 598. (F. J. S.)

Phenylhydrazine in the Treatment of Polycythemia Vera. A woman sixty years old, who was subject to surface hemorrhages, had a mother and sister with the same history. She also had three brothers and two nephews who died of hemophilia. Her case was diagnosed as polycythemia vera with a red count of 13,000,000, a white count of 25,000, and hemoglobin 130. She was treated with phenylhydrazine hydrochloride over twelve weeks. Her blood counts returned to normal and she now carries on her usual activities.—SIDNEY M. GLASER. *J. Am. Med. Assoc.*, 110 (1938), 2071. (G. S. G.)

Plumbago Zeylanica—Use of, in the Treatment of Leprosy. In addition to other therapeutic uses, *Plumbago zeylanica* is used by natives in tropical Africa as a specific for leprosy. The root is powdered, mixed with the mucilaginous material of the fruit of *Hibiscus esculentus* and applied to the skin of lepers. The skin sloughs off, and the dried leaves of an unidentified resinous plant (called Nyrka in the Ibo dialect) are applied to the wound. Other tribes use *Plumbago rosea.*—A. CHEVALIER. *Rev. botan. appl. agr. trop.*, 18 (1938), 269–272; through *Chimie & Industrie*, 41 (1939), 520. (A. P.-C.)

Pneumonia—Use of Serum in Treatment of Higher Types. Thirty types account for 99% of all strains of pneumococcus. Antipneumococcus serum is still the only specific therapeutic agent proved useful; non-specific and polyvalent sera have failed. Type I still accounts for the majority of cases but Types IV to X and XIV are sufficiently frequent. Mortality is not so high as with Types II and III. This report is on 111 cases in which antipneumococcus rabbit serum was used with marked clinical response and appreciable effect on the mortality rate for Types IV, V, VII, VIII and XIV. Both horse and rabbit serum are available.—NORMAN PLUMMER. *J. Am. Med. Assoc.*, 111 (1938), 694. (G. S. G.)

Potassium Salts—Use of, in Hay Fever. There is a possibility that allergy is a disturbance of the electrolyte metabolism. The pharmacologic action of potassium chloride is similar to epinephrine because the latter liberates potassium from the tissues. Potassium salts were used in 29 cases of hay fever and pollen asthma. The patient was first given 5 grs. (0.32 Gm.) KCl in a glass of water; later a mixture of potassium salts in solution $3^1/_3$ grs. (0.2 Gm.) of each to a drachm, of potassium acetate, bicarbonate and citrate. Cases of chronic asthma treated with a salt-free diet and doses of potassium iodide were not cured but were ameliorated. Cases of urticaria and nasal polyps were relieved by dosage of KCl. An experiment was made on one case of food sensitivity. The patient was subject to hives after eating shrimp, candy or tomatoes which was counteracted by 5 grs. potassium chloride. It is suggested that allergy is a disturbance of the electrolyte metabolism, associated with endocrine (possibly adrenal) dysfunction.—BENSON BLOOM. *J. Am. Med. Assoc.*, 111 (1938), 2281. (G. S. G.)

Progesterone and the Nasal Mucosa. A case of spasmodic rhinorrhea associated with menorrhagia has been treated with progesterone, and the results have been discussed. The authors made no conclusions from one isolated case such as this but they wish to draw attention to the possible line of research which, if carried out on a sufficient number of suitable cases, may yield valuable results.—J. K. WILLSON-PEPPER and H. ROYLE. *Brit. Med. J.*, 4088 (1939), 974. (W. H. H.)

Prontosil Prophylaxis. This is a report of forty-six cases of manual removal of the placenta in which serious infection was prevented by the prophylactic administration of prontosil.—A. POHL. *Med. Klin.*, 35 (1939), 346; through *Brit. Med. J.*, 4089 (1939), 1070A. (W. H. H.)

Protamine Zinc Insulin in Diabetes. The treatment of diabetes by one daily injection of the new zinc-protamine-insulin, either alone or with added soluble insulin, is described in detail. Mild cases easily respond to this one dose, but more severe cases require the addition of the previous soluble in-

sulin. Most cases can be reasonably controlled and the patients kept in good health by this method. It represents a great advance in simplicity for the practitioner and in comfort for the patient.—R. D. LAWRENCE. *Brit. Med. J.*, 4090 (1939), 1077. (W. H. H.)

Protamine Zinc Insulin—Some Reasons for Occasional Dissatisfaction with Its Use. K. stated that one or more of the following factors will explain the unsatisfactory results often obtained with protamine zinc insulin therapy: (1) Injudicious dietary regulation or dietary indiscretions on the part of the patient. (2) Insufficient consideration of the importance of the severity of the disease in the individual patient. (3) Incomplete consideration of details of administration and dosage, or an inadequate period of observation during attempted regulation. (4) Failure to use regular insulin in an accessory or supplemental way when indicated. (5) Failure to recognize the difference in the time of occurence, cause, symptoms, treatment and prevention of hyperglycemia with protamine zinc insulin as compared to regular insulin.—BERT F. KELTZ. *Southern Med. J.*, 32 (1939), 1058–1063. (W. T. S.)

Quinine in Myotonia Congenita. A case of myotonia congenita was ameliorated by a high dosage (50 grs.) of quinine sulfate. Symptoms were prevented by regular morning and evening dosage (15 and 10 grs., respectively). This confirms the value of quinine as a specific for myotonia.—ROBERT B. LONERGAN and HARRY A. PASKIND. *J. Am. Med. Assoc.*, 111 (1938), 2292. (G. S. G.)

Quinoline Compounds—Value of, as Antimalarials. Five diethylaminoalkyl derivatives of 6-methoxy-8-aminoquinoline have been prepared and examined for antimalarial activity, the most active compound, having a chemotherapeutic index of 40, being 6-methoxy-8-(ε-diethylamino-α-methyl-*n*-amyl-)aminoquinoline. The replacement of the ε-diethylamino group in the side chain by a dimethylamino group lowered the chemotherapeutic index, the value being lowered still further by a primary amino group. Replacement of the methoxy group by hydroxy in 6-methoxy-8-(γ-diethylaminopropyl-)aminoquinoline lowered slightly, while replacement by chlorine lowered considerably, the antimalarial activity. In the case of 6-methoxy-8-(β-diethylaminoethyl-)aminoquinoline, replacement of the methoxy by a hydroxy group considerably enhanced the antimalarial activity.—O. J. MAGUIDSON and M. D. BOBYSHEV. *J. Gen. Chem. (Moscow)*, 8 (1938), 899; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 297. (S. W. G.)

Sex Hormones and Peptic Ulcer. Pregnancy has a beneficial effect on the symptoms of peptic ulcer, which are often aggravated during the menopause. Injections of antuitrin-S into Mann-Williamson dogs had a curative effect on their ulcers, but the same treatment in human ulcer patients showed inconclusive results.—D. SANDWEISS, H. SALTZSTEIN and A. FARBMAN. *Am. J. Digestive Diseases Nutrition*, 6 (1939), 6; through *Brit. Med. J.*, 4092 (1939), 1216D. (W. H. H.)

Sulfanilamide and Related Drug—Eleven Cases of Trachoma Treated with. Trachoma is not frequently seen at the Mayo Clinic, but cases are occasionally found. A total of eleven have been treated with sulfanilamide or a related compound, and in each one marked subjective and objective improvement occurred. The disease is most favorably affected when in Stage II or Stage III. Only moderate concentrations of the drug are necessary to produce good results. Blood levels of about 3 mg. per 100 cc. seemed to be adequate. Four patients out of eleven were unable to tolerate sulfanilamide in the doses required, and were given neoprontosil with equally good results. Doctor Benedict discussed the paper and pointed out that since May 1939 other observers have reported favorably results from the sulfanilamide treatment of trachoma. The clinical results which are obtainable by properly supervised chemotherapy are so far superior to those which are obtained with any other form of treatment previously in use that the treatment with sulfanilamide is now established as the method of choice.—R. D. HARLEY, A. E. BROWN and W. E. HERRELL. *Proc. Staff Meetings Mayo Clin.*, 14 (1939), 641; through *Abbott Abstr. Bull.*, (1940), No. 617. (F. J. S.)

Sulfanilamide and Sulfapyridine—Further Studies on the Effect of, on Experimental Tuberculosis. In rabbits infected intravenously with bovine tubercle bacilli, the development of tuberculosis was inhibited by oral administration of sulfanilamide (I) in daily divided doses of 750 mg./Kg., but not by similar doses of sulfapyridine (II) or by smaller doses of I. The concentrations of drug attained in the blood with II were much less than those with I and, in fact, were so low that an effect could hardly have been expected. F. and R. stress that no conclusions regarding the effect of I or II upon human tuberculosis should be drawn from these experiments, and that I has never led to actual cure of tuberculosis in animals. However, they regard the ability of I to inhibit tubercle bacilli as "of considerable interest," since the experimental conditions were highly favorable for the bacillus. They suggest that if I proves of no appreciable therapeutic value in human tuberculosis, a modification of the structure of the compound may enhance its activity in this respect.—RICHARD H. FOLLIS, JR., and ARNOLD R. RICH. *Bull. Johns Hopkins Hosp.*, 65 (1939), 466; through *Squibb Abstr. Bull.*, 12 (1939), A-1532. (F. J. S.)

Sulfanilamide—Chronic Streptococcic Ulcer Cured by. Dermatoses of streptococcic origin are usually acute or subacute, and superficial. Two healthy individuals reported chronic ulcer on the skin produced by streptococci. In one case the lesions originated from insect bites and cultures showed streptococcus pyogenes of low virulence. Various antiseptic solutions and ointments were ineffective; sulfanilamide therapy, 60 grains daily, in 3 doses for 3 days produced marked improvement; the dose was reduced but continued daily for six weeks and gave complete healing of the ulcer. The second case had had sporadic ulcers on several previous occasions, healing after several months. These ulcers failed to respond to x-rays, ultraviolet rays, antiseptic fomentations and ointments and tar oils. The patient received three 20-grain doses of sulfanilamide daily for 3 days with definite improvement. Minimal doses produced complete healing in three months' time.—M. H. GOODMAN. *J. Am. Med. Assoc.*, 111 (1938), 1427. (G. S. G.)

Sulfanilamide Derivatives—Use of, in the Treatment of Some Constantly Recurring Infections. The use of M. & B. 693 and proseptasine will probably revolutionize the treatment of ear, nose and throat infections since drugs of this type often remove the causative agent in these cases. Subsequent treatment may not always be excluded but it is rendered less essential. Likewise these drugs have proved so effective in the treatment of gonorrhea that local washing and other none too dependable means of control have been reduced to a minimum. While proseptasine is quite active it appears to be less toxic than other allied compounds. Any likely toxic effect of M. & B. 693 may be prevented by giving it at meal time rather than on an empty stomach.—F. GORDAN COUSTAN. *J. Trop. Med. Hyg.*, 42 (1939), 281–282. (W. T. S.)

Sulfanilamide—Mechanism of Action of. Two

hundred and fifty patients suffering from a number of bacterial infections, in a general hospital, were studied for the mode of action of sulfanilamide on these infections. The bacteria were identified and each patient was seen daily. Sulfanilamide levels of blood were maintained at 50 micrograms when practicable and the drug was administered every 4 to 6 hours by mouth. Infections treated included those caused by hemolytic streptococcus, meningococcus, gonococcus, *Streptococcus viridans* and pneumococcus. Diseases treated in order of their frequency were: scarlet fever, tonsillitis, sinusitis, otitis, mastoiditis, lymphangitis, erysipelas, pneumonia, bacteremia, endocarditis, primary peritonitis, lymphadenitis, chronic surgical infections with draining sinuses, early abscess formation, cellulitis, infected diabetic gangrene, meningitis, puerperal fever and cutaneous infections. Approximately one-half of the adults and one-fifth of the children showed toxic manifestations which, however, bore no relation to the effectiveness of sulfanilamide in overcoming the infection. Sulfanilamide is most effective in bacteremia, lymphangitis, erysipelas and cellulitis; it is highly effective in early infections with little suppuration. Its effect is questionable in scarlet fever, tonsillitis, sinusitis, otitis and mastoiditis. It was ineffective when abscesses were well established, except for limiting their spread to the surrounding tissues. Its striking effect was the depression of invasive powers of the organism. The presence of debris, human or bacterial, diminished its effectiveness on hemolytic streptococcus. It seems possible that sulfanilamide may alter the total metabolism of the microörganism or interfere with its specific function, such as the capacity to digest protein. It supplements but does not supplant antibacterial immunity. —JOHN S. LOCKWOOD, *et al. J. Am. Med. Assoc.*, 111 (1938), 2259. (G. S. G.)

Sulfanilamide—Pneumococcus Type VII Meningitis Treated with. A case of bronchopneumonia, Type VII, was given Type VII antiserum and sulfanilamide, by mouth at first and later by subcutaneous infusion. Recovery was uneventful and five months later the patient was in excellent health.—RICHARD Z. QUERY. *J. Am. Med. Assoc.*, 111 (1938), 1373. (G. S. G.)

Sulfanilamide—Therapeutic Effectiveness and Toxicity of. A summary of the observations on sulfanilamide, di-methyl-di-sulfanilamide, and neo-prontosil given by oral administration in various infections. Sulfanilamide has a better therapeutic action but is more toxic; di-methyl-di-sulfanilamide has a tendency to produce peripheral neuritis; and neo-prontosil is less effective and is also less toxic than sulfanilamide. Cases of chronic ulcerative colitis respond favorably to neo-prontosil.—EDWARD G. BANNICK, *et al. J. Am. Med. Assoc.*, 111 (1938), 770. (G. S. G.)

Sulfanilamide Therapy—Anemia during. There is a high incidence of acute anemia as a complication of sulfanilamide therapy, especially marked in children. In the cases studied no one form of infection predominated but all had fever; and no anemia appeared in the afebrile cases. These cases did not receive on the average larger doses than other patients, nor was there a higher concentration of sulfanilamide in the blood. The development of anemia associated with rapid hemolysis appeared between 24 and 72 hours after the beginning of the treatment. Anemia was treated by withdrawal of the drug, forcing of fluids and blood transfusions. No deaths were reported. It is important that the hemoglobin be watched carefully during the first week of sulfanilamide therapy.—W. BARRY WOOD, JR. *J. Am. Med. Assoc.*, 111 (1938), 1916. (G. S. G.)

Sulfanilamide—Treatment of Acute Infections of Central Nervous System with. Infections of central nervous system are due to viruses and to bacteria. Of the virus diseases, human rabies, poliomyelitis, louping ill and various forms of encephalitis predominate. Meningitis is the chief bacterial disease of acute infections. Both prontosil and sulfanilamide are used by injection and prontosil is also occasionally given by mouth. Small doses at frequent intervals are more effective than larger doses at longer intervals. Five cc. of prontosil or less, every 4 hours, is given to young children, and 10 cc. to older children and adults; with 5 to 15 grs. (0.32 Gm.) of sulfanilamide every 4 to 6 hours. The toxic aspects of sulfanilamide demand extreme caution and frequent blood counts should be made, since it attacks the hematopoietic system. In types of meningitis other than those caused by hemolytic streptococcus, sera used in conjunction with sulfanilamide are more effective than either agent alone.—JOSEPHINE B. NEAL. *J. Am. Med. Assoc.*, 111 (1938), 1353. (G. S. G.)

Sulfanilamide—Treatment of Trachoma with. Two patients who had had previous treatment with silver nitrate were given 0.02 Gm. sulfanilamide with an equal amount of sodium bicarbonate per pound daily for ten days, then the dose was reduced to 0.016 Gm. daily for 14 days. No other medication was used during this period. There was a noticeable improvement within 5 days. With a maintenance dose of 0.016 Gm. the patients were apparently cured in one month with no recurrence in one year's time. A total of 140 patients were treated, with encouraging results, and a few mild reactions. They are still under careful observation. —FRED LOE. *J. Am. Med. Assoc.*, 111 (1938), 1371. (G. S. G.)

Sulfanilamide—Undulant Fever Treated with. Report of two cases of brucellosis, one of which failed to benefit from stock vaccines of *Brucella melitensis* but responding within 48 hours to sulfanilamide and having no recurrences.—E. F. TRAUT and CATHERINE ELIZABETH LOGAN. *J. Am. Med. Assoc.*, 111 (1938), 1092. (G. S. G.)

Sulfanilamide—Use of, in the Treatment of Ulcerative Colitis. Sulfanilamide has been used as an adjunct in the treatment of ulcerative colitis and 31 patients have received the drug for this purpose in the past two years. There was considerable difficulty in evaluating the results of this treatment since the patients did not return for a check-up, apparently feeling they were cured. Attempts to maintain a blood level of sulfanilamide of 8 mg. per 100 cc. when the drug was first used for this purpose gave rise to frequent complaints of toxic effects. For the past 18 months the drug has been administered in solution as a retention enema and seems to be more effective in this disorder when given by this route. The enemas are given on alternate weeks, the total dose for 24 hours being 45 grs., dissolved in a pint of water. The solution is divided into 4 parts which are administered to the patient at 4-hour intervals throughout the day and evening. Such courses on alternate weeks are usually continued for a period of two or three months.—E. N. COLLINS. *Surg. Clin. N. America*, 19 (1939), 1089; through *Abbott Abstract Service*, (1940), No. 607. (F. J. S.)

Sulfonamide—Pneumococcus Empyema Treated by Local Irrigation with. Sulfonamide and related compounds have produced good results by oral and parenteral routes in pneumonias. This drug has also been used successfully as a local treatment in other infections. The present report describes a month-old case of pneumococcus empyema, in a boy one year of age, which was treated very satisfactorily by the local use of sulfonamide. The details of the case and the method of treatment are

given along with an x-ray picture of the chest showing the lungs before and after the treatment.—TE-LUNG KUO. *Chinese Med. J.*, 56 (1939), 155–156. (W. T. S.)

Sulfur—Organic Derivatives of, in Treatment of Blenorrhagia. The modern treatment of blenorrhagia is by sulfo-conjugates of amino-aromatic series, especially *para*-amino-phenylsulfamide and *para*-amino-benzene-sulfamide. It was found to be specific for streptococcus and was extended to pneumococcus, micrococcus and staphylococcus. It is also used to advantage in meningitis and gonorrhea. The treatment for male gonorrhea combines sulfanilamide orally with local application of potassium permanganate or organic salts of silver and with vaccines. The dosage is usually 0.5 centigram daily, continuing over longer periods for chronic cases. Sulfonamide acts on bacilli, probably breaking the capsule and permitting phagocytosis. Small doses over a longer period are better than large doses for speedy elimination because of the toxicity of the drug. Reports of 77 cases treated thus produced 69 cures but 8 were unaffected. The treatment was a combination of sulfanilamide orally and local lavage and vaccine. It also has an inhibitory action on spermatogenesis. The drug is still in the experimental stage and should be used only on prescription.—LUIS ARIAS SCHREIBER. *Reforma Medica*, 24 (1938), 589. (G. S. G.)

Suprarenal Cortical Extracts in Addison's Disease. A procedure is recorded in which the administration of a high-potassium low-sodium chloride diet to a case of Addison's disease makes it possible to evaluate the potency of suprarenal cortical extracts and their synthetic substitutes by estimating the concentration of urinary sodium. The test demonstrates clearly the beneficial effects of desoxycorticosterone acetate on the urinary sodium elimination of a case of Addison's disease. The implantation of tablets of desoxycorticosterone acetate into the anterior abdominal wall brought about a prolonged improvement in the patient's general condition and also a return of his urinary sodium concentration toward the values found with normal people subjected to the above test. The administration of desoxycorticosterone acetate by injection produced a more profound but much more transient effect on the urinary sodium concentration. The administration of cortin (Organon) produced a similar though less marked effect.—H. W. DRYERRE. *Brit. Med. J.*, 4088 (1939), 971. (W. H. H.)

Syphilis—Treatment of, in Pregnancy. The treatment of syphilis in a pregnant patient carries increased risk and the dosage of the medication used should be reduced to about two-thirds of the ordinary size. Treatment must be individualized. Examination of the urine and determination of the blood pressure should be done weekly. Abortion is not indicated because of syphilis. The primary aim of antisyphilitic treatment during pregnancy is the prevention of congenital syphilis in the child, and therefore it is illogical to push therapy to the point where the child's life is endangered. Such procedures as lumbar puncture, fever treatments or the use of tryparsamide may produce abortion and should be avoided. Bismuth alone is inadequate, and an arsphenamine should be used, especially as the patient approaches term. It is essential to continue observations of the child for many years; a positive Wassermann in a child born to a seropositive mother indicates treatment only if the reagin titer is found on examination to increase over a period of from six to ten weeks.—J. H. STOKES. *Am. J. Syphilis Gonorrhea and Venereal Diseases*, 23 (1939), 549; through *Abbott Abstr. Bull.*, (1940), No. 619. (F. J. S.)

Tannic Acid Gauze. Tannic acid in aqueous solution is a stable substance provided the action of microörganisms is excluded. It cannot be assumed that because solutions of tannic acid are stable, the dry material on a dressing would be so, because, although in one sense the conditions are better for storage than when aqueous solutions are used, there is free access of air to the product spread over a large area. The fact that many drugs keep well in airtight containers, but not in paper packages, is a warning. Tannic acid gauze can be sterilized in an autoclave. Some hydrolysis results, but the quantity of gallotannin remaining is still 80% of that originally present. Whether this deterioration is enough to weigh against sterilization of the material is a matter of opinion and will depend on the importance attached to sterilization. Tannic acid gauzes are found to be stable materials over twenty-seven months' storage, no definite deterioration having been found. Adsorption of tannic acid occurs but is about equal to that which occurs with plain gauze soaked in fresh tannic acid solution. Apparent increases in gallic acid are traced mainly to differential adsorption and not to hydrolysis.—R. M. SAVAGE and W. P. CHAMBERS. *Pharm. J.*, 143 (1939), 105. (W. B. B.)

Testosterone Propionate. In a case of prostatic enlargement, the histology of the prostate was studied before and after the injection of 100 mg. of testosterone propionate daily for thirty-four days. No significant change was observed.—E. P. SHARPEY-SCHAFER and R. SHACKMAN. *Lancet*, 236 (1939), 1254. (W. H. H.)

Testosterone Propionate—Clinical Study of, in Impotence. After discussing psychic impotence from the standpoints of symptoms, contributing factors and complications the authors described 8 cases of psychic impotence which they treated with injections of the male sex hormone. Contrary to other reports no improvement could be observed in any of the cases nor was this therapy useful in relieving a male homosexual suffering from fatigue and nervousness. Since hypogonad patients have responded to testosterone propionate in the same dosage employed in the case of the impotent patients it would seem that this therapy was useless in the latter condition.—THOMAS A. C. RENNIE, SAMUEL A. VEST, JR., and JOHN EAGER HOWARD. *Southern Med. J.*, 32 (1939), 1004–1007. (W. T. S.)

Testosterone—Sedative Action of, in States of Excitation of the Female. The authors state that in different psychopathic conditions as confusion, mania or stupefaction, the administration of sterandryl brings about a remarkable sedation. There is a discussion of the possible mechanism of this action.—GUIRAUD and STORA. *Soc. Med. Psychol.*, March 27, 1939; through *Presse méd.*, 43 (1939), 867. (W. H. H.)

Therapeutic Preparation Suitable for Treatment of Coccidiosis in Fowls. There are used together an absorbing material such as calcium lactate, lactic acid absorbed in the absorbing material and a material such as white mineral oil for sealing the lactic acid in the absorbing material, the composition being in powdered or granular form so that on ingestion the lactic acid is carried into the lower bowel before complete release.—GROVER C. MILLER, assignor to KELP-OL LABORATORIES, INC. U. S. pat. 2,146,083, Feb. 7, 1939. (A. P.-C.)

Thiamin Chloride—Lightening Pains Treated with. On the assumption that the pathogenesis of tabes may depend on the interrelationship of dietary deficiency—possibly of vitamin B—with previously existing neurosyphilis, the author treated six patients suffering from severe continuous lightening pains with thiamin chloride intravenously with gratifying results. The dose was usually 10 mg. weekly.—P. F. METILDI. *Am. J. Syphilis, Gon-*

orrhea and Venereal Diseases, 23 (1939), 1; through *Brit. Med. J.*, 4084 (1939), 808D. (W. H. H.)

Tryparsamide Therapy—Pathologic Changes in Amblyopia Following. Pentavalent arsenicals used to treat protozoan disease caused blindness even when the drug was withdrawn since it had a specific action on the visual sensory mechanism. It is a striking fact that there are no tissue changes outside the eye and optic pathways; other organs and the central nervous system show no related pathologic process. In a case receiving tryparsamide for syphilis, acute degeneration of the cells of the inner portion of the inner nuclear layer developed. There was no evidence of acute primary degeneration in the optic nerves and tracts. General pathologic changes due to arsenic poisoning were not observed. Pathologic changes after pentavalent arsenicals are not due to arsenic.—P. J. LEINFELDER. *J. Am. Med. Assoc.*, 111 (1938), 1276. (G. S. G.)

Urinary Infections—Treatment of. The clinical phases of urinary infection have been briefly discussed. The etiology and pathogenesis are of utmost importance in the rational selection of treatment. If one relies on medical therapy alone, his results will be far less satisfactory than those of the clinician who thinks first in terms of potential accessory etiologic factors, and notably obstruction, and secondarily considers chemotherapy. The choice between mandelic acid and sulfanilamide should rest, first, upon specific bacteriologic indication and, second, upon renal function and tolerance of the patient for the drug. With intelligent chemotherapy, about two-thirds of the common urinary tract infections can be cured. In the remainder, instrumental or surgical treatment must be combined with medicinal therapy.—M. CAMPBELL. *Bull. N. Y. Acad. Med.*, 15 (1939), 609. (A. C. DeD.)

Vitamin B_1 Deficiency—Diagnosis and Treatment of. The most definite signs and symptoms of vitamin B_1 deficiency are anorexia, fatigue and a neurological and circulatory syndrome. Peripheral neuritis involving a single nerve, not bilateral and not involving first and predominantly the lower extremities, is probably not due to vitamin B_1 deficiency alone. Deficiency should be suspected in the indigent, in persons with eccentric dietary habits, alcohol addicts and patients with diseases which increase metabolism or decrease intestinal absorption. The treatment includes rest, diet, vitamin B_1 and correction of factors responsible for the deficiency wherever this is possible. The diet should be supplemented by 50,000 I. U. of vitamin A, 400 to 500 mg. of vitamin C and a rich source of the vitamin B complex. Thiamin chloride should be administered parenterally in large doses—amounts up to 1000 mg. in the first 24 hours in severe cases—and these should be continued until saturation is obtained. This can be detected by a distinct odor which resembles burnt rubber in the urine.—N. JOLLIFFE. *Bull. N. Y. Acad. Med.*, 15 (1939), 469; through *Abbott Abstracts Service*, (1940), No. 588. (F. J. S.)

Vitamin B_1—Influence of, upon the Thyroid Body. In the work of experimental medicine made upon guinea pigs, the author studied the influence of Vitamin B_1 upon the thyroid body. He concluded that vitamin B_1 does not possess an antagonistic action upon thyroxine. The microscopic examination of fragments of the thyroid body tends to show augmentation of the activity of this gland. Treatment by strong doses of vitamin B_1 in states of hyperactivity of the thyroid is not indicated. In these conditions he requests a compensation with a deficiency of vitamin B_1. The larger doses often contribute to maintaining a hyper-functioning thyroid. Vitamin B_1 does not exert any influence upon the hyperactivity of the thyroid body of guinea pigs provoked by the hormone arising from the anterior lobe of the pituitary.—B. GIEDOSZ. *Polska Gazeta Lekarska*, 17 (July, 1938); through *Presse méd.*, 37 (1939), 95. (W. H. H.)

Vitamin C—Increased Need for, Measured in Fever. To determine the amount of vitamin C used up during the course of fevers, the concentration of ascorbic acid in the blood was measured during febrile episodes, and the amount of pure ascorbic acid which had to be given during this period to prevent a fall in the blood level was estimated. Fifteen patients were studied during a total of 58 days of fever, and the vitamin C requirements were compared with those of 72 fever-free days in the same patients. It was found that approximately 100 mg. more of vitamin C were required daily in the presence of fever than in its absence. If no supplementary ascorbic acid was given during febrile periods, a fall in vitamin C excretion took place; in order to prevent this fall, approximately 300 mg. of ascorbic acid had to be given daily to each patient. The calculations were complicated by the fact that the amount of ascorbic acid which was metabolized was dependent partially on the amount of the supplement which was given.—FALKE. *Klin. Wochschr.*, 18 (1939), 818; through *Abbott Abstract Service*, (1940), No. 586. (F. J. S.)

Vitamin K—Effect of, on Experimental Hemorrhagic Diathesis. Impressive data have accumulated, here and abroad, concerning the effect of vitamin K on hemorrhagic diathesis occurring accidentally during the course of obstructive jaundice or other disorders leading to decreased prothrombin production, but this is the first case in which such a diathesis was produced deliberately for experimental purposes. The patient had a total biliary fistula and was put on a low fat, vitamin K-deficient diet. At the end of two weeks, slight bleeding from the gums was noticed. A week later, bleeding was taking place from the tongue and the vagina. This condition was allowed to continue for 12 days, and then a concentrate of vitamin K was fed for 4 days without any bile supplement. This produced no apparent remission of bleeding. Three hundred cc. of the subject's own bile fed for 5 days likewise failed to influence the hemorrhage, but when the vitamin K and bile were fed together in the same doses, bleeding ceased in 5 days.—C. ZUCKERMAN, B. KOGUT, M. JACOBI and J. Y. COHEN. *Am. J. Digestive Diseases Nutrition*, 6 (1939), 332; through *Abbott Abstract Service*, (1940), No. 612. (F. J. S.)

Whooping Cough—Magnesium Sulfate in. Daily intramuscular injections of a 10% solution of magnesium sulfate, 0.25 to 1.1 cc. per Kg. body weight, were given to forty patients with whooping cough. Fifteen to twenty injections were given for symptomatic relief. Thirty cases showed improvement, with no untoward symptoms. It has an antispasmodic and sedative effect. This gave better results than shown by 107 patients on the usual treatment of antipyrine, belladonna, sodium bicarbonate, etc. A modification to a 50% solution of magnesium sulfate with doses of 0.2 cc. per Kg. body weight makes less volume to inject.—E. SOTO PRADERA. *Bol. Soc. Cubana Pediatria*, 10 (1938), 173; through *J. Am. Med. Assoc.*, 111 (1938), 2123. (G. S. G.)

Yellow Fever—International Commission for. The Commission was instituted in conjunction with International Public Hygiene and Aerial Navigation. The spread of endemic diseases by air transport has increased extensively and this is especially true of the selvatic type of yellow fever discovered in South America. Immunization is instituted where eradication is impossible. The attenuated pantropic virus has been found as useful in immunization as immune serum.—OFFICIAL REPORT.

Bol. Ofic. Sanit. Panamericana, 17 (1938), 610. (G. S. G.)

Yellow Fever—Yesterday, To-day and To-morrow. Yellow fever will not be completely eradicated in the near future. The supposition that man is the only host and that stegomyia is the only vector assumes that the pest may be eradicated as has been done in certain regions. Recent discoveries alter this premise. Its origin, whether in Africa or America, is undetermined and it is known to exist continuously on both continents. Observations on man and mosquitoes were confirmed in Cuba in 1900. Investigation opened by Noguchi in Africa implicated other hosts and possibly other vectors. Since 1927 rapid developments have come; monkeys and rats appear as intermediary hosts, and the protective use of immune serum has proved practicable. Immunity is also produced by the virus attentuated in the living tissue of rats. African and American fevers are considered the same; but a new variation, selvatic yellow fever of the Brazilian jungles, has appeared differing in its intermediary hosts and in other vectors in addition to mosquitoes. It is less virulent than the urban type but it may infect and produce immunity to the urban type in man. Protective inoculation is still too new to evaluate its duration.—BOLIVAR J. LLOYD. *Bol. ofic. Sanit. Panamericana*, 17 (1938), 591. (G. S. G.)

Zinc Insulin—Advantages of, in the Treatment of Diabetes Mellitus. Since insulin and protamine zinc insulin do not answer the needs of all diabetic patients the authors tested the somewhat neglected crystalline zinc insulin for any advantages it might possess over these two drugs. The zinc insulin chosen for this study assayed 25 units per mg. and was tested by using the rate of fall of fasting blood sugar levels as a criterion. The 14 patients used in the study were selected from a large diabetic clinic and had been shown to be refractive to regular insulin and protamine zinc insulin therapy. The dosage, the number of injections required and other details of the study were outlined with 9 of the cases being analyzed by means of charts. All 14 patients quickly responded to zinc insulin, becoming aglycosuric at once and remaining so for the periods of observation ranging from 2 to 10 months. However, the authors concluded that the ideal insulin adaptable to all cases has not yet been developed.—ROBERT C. LOWE, LANG F. HOLLAND and J. O. WEILBAECHER, JR. *Southern Med. J.*, 32 (1939), 1054–1056. (W. T. S.)

NEW REMEDIES

SYNTHETICS

Carbarsone (Burroughs Wellcome and Co., London and Sydney) is *p*-carbamidophenylarsonic acid. It is used in cases of chronic intestinal amoebrasis. The dose is one tabloid *per os* two times a day for ten days, repeated, if desired, after a rest period of 7–10 days. It is supplied in bottles of 20 × 0.25-Gm. tabloids.—ANON. *Australasian J. Pharm.*, 21 (1940), 162. (A. C. DeD)

Cholecysmon (Kon. Pharm. Fabrieken Brocades Stheeman en Pharmacia) contains standardized gall-bladder hormone.—*Pharm. Weekblad*, 76 (1939), 417. (E. H. W.)

Cortate (Schering Corporation, Bloomfield, N. J.) is the acetate of synthetic adrenal cortical hormone (desoxycorticosterone acetate $C_{23}H_{32}O_4$) and it is more efficacious than the most potent cortical extracts in treating Addison's disease. Investigations are in progress on the use of Cortate in other more common types of adrenal insufficiency, such as the asthenias accompanying convalescence from such infectious diseases as pneumonia, diphtheria, typhoid fever and influenza. Recent reports indicate that it may prove of value in the treatment of shock. It is injected intramuscularly; in Addison's disease, where the symptoms are not acute, 5 mg. should be given daily; when the condition is critical, doses of 10 to 15 mg. should be instituted. Cortate is supplied in boxes of 3 and 6 ampuls (5 mg.) 1 cc. size; and in vials of 10 cc., each cc. containing 5 mg.—*Amer. Professional Pharmacist*, 6 (1940), 47. (F. J. S.)

Cyclopal Sodium (The Upjohn Company, Kalamazoo, Mich.) consists of capsules of sodium cyclopentenylallylbarbiturate, a short acting hypnotic of relatively low toxicity. It induces deep and refreshing sleep in about 30 minutes and its duration is from 4 to 6 hours, free from unpleasant hangover effects. In hypnotic doses it has no appreciable effect on the heart rate, blood pressure or rate of respiration, it is rapidly destroyed in the body and it does not appear in the urine. For hypnosis and sedation for general medical use, preoperative sedation to allay anxiety and apprehension, obstetrical analgesia and amnesia. The dosage is: for adults (for hypnosis), one $2^1/_4$-grain capsule, (for sedation), one or two $^3/_4$-grain capsules; for children (for hypnosis), one or two $^3/_4$-grain capsules according to body weight. Cyclopal Sodium is supplied in bottles of 25, 100 and 500 capsules ($^3/_4$-grain or $2^1/_4$-grain capsules).—*Amer. Professional Pharmacist*, 6 (1940), 45. (F. J. S.)

Dormovit (Chemische Fabriek Dr. Joachin Wiernuk & Co., Berlin) is isopropyl-furfuryl-barbituric acid. It is soluble in cold water and very soluble in hot water. It is also easily soluble in methyl alcohol, ethyl alcohol, acetone and glacial acetic acid and very solule in chloroform and benzol. Dormovit melts at 174–175° and may be sublimed.—*Pharm. Weekblad*, 76 (1939), 418. (E. H. W.)

Glutamic Acid Hydrochloride Capsules (E. R. Squibb & Sons, New York). Each 5-grain glutamic acid hydrochloride capsule is equivalent to 10 minims of Diluted Hydrochloric Acid, U. S. P. XI. They are used for the treatment of achlorhydria (absence of hydrochloric acid in the gastric secretions) and hypochlorhydria (insufficient hydrochloric acid in the gastric secretions). Glutamic acid hydrochloride capsules have three advantages over the administration of the dilute hydrochloric acid: 1. More convenient. 2. Tasteless. 3. Cannot injure the teeth. The usual dose is six capsules daily, one at the beginning and one after each meal. Glutamic acid hydrochloride capsules are supplied in bottles of 100 and 500.—*Amer. Professional Pharmacist*, 5 (1939), 335. (F. J. S.)

Karwendol is a product obtained from the empyreumatic materials from bituminous rocks in the Karwendel mountains of the Tyrol. They are obtained by dry distillation. It is a sulforbituminate which like ichthyol and similar products may also be taken internally.—*Pharm. Weekblad*, 76 (1939), 418. (E. H. W.)

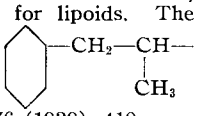
Keradorm Tabletten contain equal amounts of magnesium diethyl barbituric acid and bromisovalerianylurea. They are used to produce sleep.—*Pharm. Weekblad*, 76 (1939), 418. (E. H. W.)

Klotogen (Abbott Laboratories, North Chicago, Ill.) is a concentrate rich in vitamin K and is supplied in capsules containing 1000 units and oil solution, each cc. of which contains 1250 units (by the modified Almquist-Stokstod method). It is necessary for the formation of prothrombin, a process which probably takes place largely in the liver. It is administered orally or by means of a duodenal tube; it is important to administer bile salts with this material to facilitate its absorption from the intestine. It is indicated for use in those conditions in which the blood prothrombin is lowered,

due to vitamin K deficiency. Klotogen is supplied in boxes of 25 capsules, or bottles of 50 cc. oil solution.—*Drug. Circ.*, 83 (1939), No. 5, 32. (E. V. S.)

Magnesium Trisilicate (Hydrated) (Burroughs Wellcome & Co., Inc., New York) contains in each compressed product $7^1/_2$ grains (0.486 Gm.) of synthetic hydrated magnesium trisilicate, a white, tasteless substance (empirical formula: $2MgO.3SiO_2.nH_2O$). It is used to control pain and other symptoms (especially at night) in the treatment of peptic ulcer; and it permits healing by removing acids and proteolytic enzymes from the site of ulceration. The dose is from three to nine products, given prior to meals and before retiring. Magnesium Trisilicate (Hydrated) is supplied in bottles of 100 and 500 products.—*Amer. Professional Pharmacist*, 5 (1939), 272. (F. J. S.)

Nipectin (Eli Lilly & Co., Indianapolis, Ind.) is pectin combined with 0.15% nickel. It is more soluble than plain pectin, its bactericidal properties are greatly enhanced, and it is non-toxic. It is used orally in the treatment of diarrhea and dysentery; and may be administered in such foods as cereal, soup, mashed potatoes, milk or cocoa. The dose for children and adults has ranged from one to four tablespoonfuls given three times daily to as often as every three hours. Nipectin (Nickel-Pectin Compound) is supplied in packages containing four avoirdupois ounces.—*Amer. Professional Pharmacist*, 5 (1939), 335. (F. J. S.)

Pervitine (Tremmler-Werke, Berlin) is optically active *l*-phenyl-2-methylamino propane, a compound related to ephedrine. With larger doses an increase in blood pressure often occurs, characterized by a slow and continuous rise. It is therefore used in hypotonicity but contra-indicated in hypertension, chronic agrypnia, in heart affections and in persons of advanced age. Pervitine melts at 173°. The hydrochloric acid salt is soluble in water, chloroform and other solvents for lipoids. The structural formula is as follows:  NH—CH.—*Pharm. Weekblad*, 76 (1939), 419. (E. H. W.)

Phenobarb Theocalcin (Bilhuber-Knoll Corp., Orange, N. J.) consists of phenobarbital $^1/_4$ grain with theocalcin (theobromine-calcium salicylate) $7^1/_2$ grains. It is a sedative, antispasmodic, diuretic and myocardial stimulant; and it is indicated in spastic cardiovascular conditions; in the symptomatic treatment of the neuro-circulatory disorders of advancing age, including those of the menopause when the antispasmodic effect of phenobarbital is desirable in addition to the circulatory effects of theocalcin. The dosage is 1 or 2 tablets three times a day after meals and an additional dose may be taken at bedtime to help prevent the onset of symptoms during the night. Phenobarb Theocalcin is supplied in $7^3/_4$-grain tablets in tubes of 20 tablets and in bottles of 100 tablets.—*Amer. Professional Pharmacist*, 6 (1930), 112. (F. J. S.)

Phytoferrol (The British Drug Houses, Ltd., London) is vitamin E. It is used as a prevention of abortion, sterility, toxemia during pregnancy. The dose prescribed by physician. It is marketed in capsules, each containing the equivalent of 3 mg. of synthetic di-α-tocopherol.—ANON. *Australasian J. Pharm.*, 21 (1940), 162. (A. C. DeD)

Pranone (Schering Corporation, Bloomfield, N. J.) is orally effective progestin (anhydrohydroxyprogesterone, $C_{21}H_{28}O_2$) in tablet form. It is indicated in premenstrual tension, functional dysmenorrhea, functional menorrhagia or metrorrhagia, habitual and threatened abortion when these conditions are due to corpus luteum hormone deficiency. Pranone tablets are best taken before meals and the dosage must be adjusted to the individual requirements of each case; and they are supplied in boxes of 12 tablets (5 or 10 mg.).—*Amer. Professional Pharmacist*, 6 (1940), 45. (F. J. S.)

Pyelectan (Glaxo Laboratories Ltd., Greenford, Middlesex) is an organic iodine compound. It is given as intravenous injection prior to X-ray examination of the renal pelvis. It is marketed in single 20-cc. ampuls and in packs of 5 ampuls of 20 cc.—ANON. *Australasian J. Pharm.*, 21 (1940), 162. (A. C. DeD.)

Solution Ironyl (Iron Adenylate Solution) (E. R. Squibb & Sons, New York) is a sterile solution presenting iron, mainly in the ferrous form, combined with adenylic acid, a derivative of nucleic acid and a normal constituent of the blood which plays a part in both carbohydrate and muscle metabolism. The rare chemical adenylic acid has been shown to have distinct advantages in the treatment of secondary anemia. It stimulates a neutrophilic response (white blood cells stainable by neutral dyes) without developing a preliminary leukopenia (deficiency of white blood cells). A stable, relatively nontoxic and readily soluble iron compound, it is administered by intramuscular injection, one ampul daily. Ironyl is supplied in 1-cc. ampuls which contain $^1/_2$ grain of iron adenylate, packed in boxes of 10.—*Amer. Professional Pharmacist*, 5 (1939), 333. (F. J. S.)

Sulfanilamide with Sodium Bicarbonate (Sharp & Dohme, Philadelphia, Pa.) consists of sulfanilamide with sodium bicarbonate, 5 grains of each. It is indicated in the treatment of scarlet fever, erysipelas, puerperal metritis, pneumonia Types I, II and III, infected abortion, septic sore throat, gonorrhea and meningococcic meningitis. Dosage, as directed by the physician. Sulfanilamide with Sodium Bicarbonate is supplied as compressed tablets of sulfanilamide and sodium bicarbonate, 5 grains each, in bottles of 100, 500 and 1000.—*Amer. Professional Pharmacist*, 5 (1939), 335. (F. J. S.)

SPECIALTIES

Agiolax (Dr. Madaus & Co., Radebeul-Dresden) consists of a mixture of flaxseed and wheat bran. It is recommended in the treatment of chronic constipation.—*Pharm. Zentralhalle*, 80 (1939), 297. (N. L.)

Aldin (Endo Products, Inc., New York) contains in each tablet diallylbarbituric acid $^1/_2$ grain and acetophenetidin $2^1/_2$ grains. It is indicated for the relief of pain and discomfort, especially when associated with nervousness; and its use is suggested in the following: acute infectious diseases, arthritis, migraine (of undetermined etiology), headache, dysmenorrhea, neuralgia, neuritis, traumatic pain and malignant disease, where it may be judiciously used in place of narcotics. It provides a marked sedative-analgesic effect with moderate dosage. The average dose is one or two tablets every three or four hours as necessary; two to four tablets may be given on retiring. The drug is preferably given on an empty stomach and should always be followed by a glass of water. Five tablets is the maximum recommended single dose; not more than 12 tablets should be given in a 24-hour period. Aldin is supplied in bottles of 100, 500 and 1000 tablets.—*Amer. Professional Pharmacist*, 5 (1939), 514. (F. J. S.)

Anertan Oil Liniment (C. F. Boehringer & Sohne, G.m.b.H., Mannheim-Waldhoh) is a solution of anertan (testosterone propionate) in a vegetable oil base to which has been added a small quantity of

perfume. Each cc. of solution contains 5 mg. of testosterone propionate. The preparation is intended for use as a liniment and possesses the same action as injections of testosterone propionate.—*Pharm. Zentralhalle*, 80 (1939), 298. (N. L.)

Antitularemic Serum (Sharp & Dohme, Philadelphia, Pa.) is processed hyperimmune equine serum of such potency that when restored to 15 cc. it will represent the equivalent in potency of 30 cc. of the original serum. A dried serum under vacuum with a residual moisture content of less than 1%. It is indicated in the treatment of humans infected with the *Pasteurella tularensis* to which the name tularemia, rabbit fever or deer fly fever has been given. Restored "Lyovac" Antitularemic Serum is preferably administered intravenously in doses of 15 cc. to 150 cc., depending upon the severity of the infection. Rapidly Lyophilized Antitularemic Serum (Lyovac) is supplied in a "Vacule" flame-sealed ampul-vial to yield 15 cc. of the restored double-concentrated serum, together with an ampul of 15 cc. of distilled water, and a 1 cc. ampul of Normal Equine Serum (diluted 1:10) as test and desensitizing material. Each package is marketed with a five-year expiration date.—*Amer. Professional Pharmacist*, 5 (1939), 587. (F. J. S.)

Bee Venom Solution ("Lyovac" Mulford) (Sharp & Dohme, Phila., Pa.) is a purified preparation representing the whole venom of the honey bee (*Apis mellifera*) and each cc. contains the bee venom represented in 10 bee stings. It is used in the treatment of all forms of acute and chronic arthritis. Clinical reports indicate it to be most effective in extra-articular manifestations such as muscular rheumatism, sciatica, lumbago, neuritis, iritis. It is often of great benefit in the early stages of chronic arthritis but cannot be expected to remove the deformity associated with the more advanced cases, and is of no value in specific joint diseases such as gonorrheal arthritis, syphilis and tuberculosis. The bee venom solution should be given intradermally by gradually increasing the dosage and the number of injections. "Lyovac" bee venom solution is supplied in one ampul-vial to yield 1 cc. of the bee venom solution when restored to original volume, and one ampul containing 1 cc. of distilled water.—*Amer. Professional Pharmacist*, 5 (1939), 393. (F. J. S.)

Biobon Tablets (Dr. Reinhold Zöckler, Pharmazeutische Zentrale "Hansa," Bremen) contain a mixture of milk sugar, grape sugar and lecithin, each tablet containing 0.0015 Gm. of lecithin. The tablets are marketed in packages of 198 tablets and are recommended as a blood tonic.—*Pharm. Zentralhalle*, 80 (1939), 298. (N. L.)

Bluevita (Lever Brothers & Unilever) obtainable in capsules and in drops contains vitamins A and D. A biological study of the liver oils of various fish resulted in this concentrated product of natural origin. Bluevita contains 25,000 International vitamin A units per Gm. and 100 International vitamin D units per Gm. It is used in place of cod liver oil in rickets, etc.—*Pharm. Weekblad*, 76 (1939), 417. (E. H. W.)

Collotone (The Crookes Laboratories, London) is a combination of colloidal mineralizing agents, a small amount of iron, activated by traces of copper and manganese, vitamin B and nux vomica. It is a two-day tonic, a pleasantly flavored mild hematonic for general use. It is supplied in 4, 8, 16 and 80 ounce bottles.—ANON. *Australasian J. Pharm.*, 21 (1940), 162. (A. C. DeD.)

Degalol Tablets (Riedel-de Haen, Inc., New York) contain in each $1^1/_2$ gr. deoxycholic acid, a bile acid present in ox and human bile. It forms choleic acids with fatty acids, thereby promoting absorption of fats and fat-soluble vitamins A, D and K. It is indicated in impaired fat digestion and in hemorrhagic diathesis in jaundice (in order to assure absorption of vitamin K). The dose is one or two tablets three times daily after meals. Degalol is available in bottles of 100 tablets.—*Drug. Circ.*, 83 (1939), No. 5, 32. (E. V. S.)

Deriphylline-Strophanthin (Chem. Fabriek Bad Homburg) is a glucose solution containing theophylline and strophanthin. Each 2 cc. ampul contains 1 cc. deriphylline (0.2 Gm. theophylline) and 0.25 mg. *k*-strophanthin dissolved in a 5% glucose solution.—*Pharm. Weekblad*, 76 (1939), 418. (E. H. W.)

Epto (Kaoloid Co., Inc., Chicago) is a carefully compounded anhydrous dusting powder of desiccated sodium thiosulfate enhanced by the synergistic action of thymol in an acceptable and deodorizing base. It is indicated in the treatment and prevention of fungus infections of the skin; pruritus ani, and vulvæ epidermophytosis. It is supplied in jars of 2 ounces.—*Drug. Circ.*, 83 (1939), No. 5, 32. (E. V. S.)

Exvomit (Sächsisches Serumwerk A.-G., Dresden) contains a cerous salt with valerian in the form of drops.—*Pharm. Zentralhalle*, 80 (1939), 299. (N. L.)

Feronex (The Paul Plessner Co., Detroit, Mich.) contains in each soft gelatin capsule 0.389 Gm. (6 grains) of ferrous carbonate in the form of freshly precipitated mass, vitamin B_1 (crystalline thiamin hydrochloride) 50 International units, and vitamin B_2 (G) (riboflavin) 20 Sherman-Bourquin units. Feronex offers adequate, readily assimilable and well-tolerated doses of ferrous iron, adequate dosage of the required vitamins to enable the maximum required daily intake to be administered conveniently. It is a hematinic for use in all conditions of iron deficiency, and as a tonic in general weakness, undernutrition and similar disorders. The dose is one to three capsules three times a day and it is supplied in boxes of 84 capsules and in bottles of 500 capsules.—*Amer. Professional Pharmacist*, 5 (1939), 651. (F. J. S.)

Foille (Anglo-French Drug Co. Ltd., London) is an analgesic antiseptic emulsion, containing iodine, phenol, oxyquinoline and benzocaine. It is used in the treatment of burns. It is applied by painting it on the burned surface. It is supplied in bottles of 4 and 16 fluidounces.—ANON. *Australasian J. Pharm.*, 21 (1940), 162. (A. C. DeD.)

Glycana with Vitamin B_1 (Schieffelin & Co., New York) is an appetite stimulant and tonic containing the glycerophosphates of strychnine, calcium and sodium in a palatable wine base. It contains 2000 U. S. P. XI units of thiamin chloride (vitamin B_1) per ounce. It is indicated in the treatment of vitamin B_1 deficiency symptoms. Its strychnine glycerophosphate component has a tonic effect upon the nervous system, of importance in affections resulting from pronounced types of avitaminosis. It provides the necessary additional supply of vitamin as a tolerated tonic during pregnancy and lactation. Glycana with Vitamin B_1 is supplied in 8-ounce and gallon bottles.—*Amer. Professional Pharmacist*, 5 (1939), 650. (F. J. S.)

Iberin Ferrous (Abbott Laboratories, Inc., Chicago, Ill.) contains in each capsule anhydrous ferrous sulfate 2 grains (0.13 Gm.), liver concentrate 7 grains (0.455 Gm.), vitamin B_1 (thiamin chloride 0.3 mg.) 100 International units, vitamin G (riboflavin) approximately 35 Sherman units, with other factors of the vitamin B complex. Iberin Ferrous Capsules are designed for the treatment of secondary anemia. The daily initial dose is adults 7 to 9, children 3 to 4 capsules; in severe cases larger doses may be required as prescribed by the physician.

Iberin Ferrous is supplied in bottles of 100 and 500 capsules.—*Amer. Professional Pharmacist*, 5 (1939), 453. (F. J. S.)

Influenza-Mengvaccin (Grippe Mischvaccine) (Behring Werke) is a trituration of 400 million dead influenza bacilli, 80 million streptococci and 200 million pneumococci per cc.—*Pharm. Weekblad*, 76 (1939), 418. (E. H. W.)

Iodocitrane (George J. Wallau, Inc., New York) are pills containing iodine equivalent to 8 drops of tincture iodine plus sodium citrate. They are useful for arterial or venous deficiencies, as in arterial hypertension. The dose is four to six pills daily, with water, before meals; for children, one to three pills daily, with liquid, before meals, or crushed and mixed with food. Iodocitrane is supplied in boxes of 80.—*Drug Topics*, 55, No. 30, (1939), 16. (E. V. S.)

I. V. S.-B. D. H. (The British Drug Houses Ltd., London) is an epidemic influenza virus suspension. It is used for producing immunity against epidemic influenza. The dose is 1 cc. subcutaneously. It is supplied in boxes of 1 x 1 cc. ampuls.—ANON. *Australasian J. Pharm.*, 21 (1940), 162. (A. C. DeD.)

Neopectum (K.-G. W. Schwarzhaupt, Chem. Fabrik, Köln) consists chiefly of camphor, thymol, potassium guaiacol sulfonate and licorice syrup. It is recommended in the treatment of bronchitis.—*Pharm. Zentralhalle*, 80 (1939), 313. (N. L.)

Peru Tablets (Nymphosan A.-G., München) consist chiefly of balsam of Peru, calcium glycerophosphate, calcium phosphate, lactose, sodium bromide, sodium benzoate and ferric oxide. These are recommended in the treatment of asthma, bronchitis, grippe and coughs.—*Pharm. Zentralhalle*, 80 (1939), 313. (N. L.)

Polytaxin (Winthrop Chem. Co., Inc., New York) is a multiple vitamin combination and each capsule contains 10,000 U. S. P. (International) units of vitamin A; 150 International units (0.45 mg.) of crystalline vitamin B_1 hydrochloride (thiamin chloride); 20 Bourquin-Sherman units (50 gammas) of crystalline vitamin B_2 (G) (riboflavin); 500 International units (25 mg.) of crystalline vitamin C (ascorbic acid); and 1000 U. S. P. (International) units of crystalline vitamin D_2. It is used chiefly for prophylaxis against multiple vitamin deficiency, but also may be employed in the treatment of avitaminosis. A valuable dietary supplement for growing children, pregnant and nursing women and patients on restricted diets. The prophylactic dose is one capsule daily; the therapeutic dose, as required by the degree of vitamin deficiency. Polytaxin is supplied in boxes of 25 and 100 capsules.—*Amer. Professional Pharmacist*, 5 (1939), 514. (F. J. S.)

Strasco Vitamin Tablets Special (R. J. Strasenburgh Co., Rochester, N. Y.) contain an especially large amount of stable vitamin A (15,000 U. S. P. XI units) in its natural ester form, with adequate amounts of other vitamins (600 U. S. P. XI units of vitamin D (activated ergosterol), 100 U. S. P. XI units of vitamin B_1 (thiamin hydrochloride), 20 gammas of riboflavin) flavored with oil of clove and free from active regurgitation. The tablets are used for the prevention of the common cold and in vitamin A deficiencies. The dose is one tablet daily, as a winter infection prophylactic. Strasco Vitamin Tablets Special are supplied in bottles of 100, 500 and 1000 tablets.—*Amer. Professional Pharmacist*, 5 (1939), 653. (F. J. S.)

Thydron Syrup (Wm. S. Merrell Co., Cincinnati, O.) contains in each fluidounce ferrous sulfate, U. S. P., 16 grains, vitamin B_1 (thiamin hydrochloride) 300 International units, and *n*-butyl *p*-hydroxybenzoate 0.02% (as a preservative) in a palatable syrup base. It is used as a hematonic in the treatment of secondary anemias, especially those due to malnutrition or infection; and hypochromic anemia. Also, as a tonic in debilitated conditions and during convalescence and anorexia. The dose is one tablespoonful in a quarter-glass of water twice a day (this constitutes the daily recommended dose of ferrous sulfate and supplies the daily minimum requirement of vitamin B_1). Thydron Syrup is supplied in pints and gallons.—*Amer. Professional Pharmacist*, 5 (1939), 586. (F. J. S.)

Thymaquil (Pharmaz. Labor. Dr. Beyer, Berlin, Wilmersdorf) consists of the percolate obtained from thyme, quillaja, ephedrine and lobelia and recommended in the treatment of catarrh and bronchial asthma. The preparation contains 0.15% alkaloids.—*Pharm. Zentralhalle*, 80 (1939), 391. (N. L.)

Tussedat Pastiles (Sagitta-Werk, G. m. b. H., München) consist of balsam of tolu, extract of malt, papaverine, psicaine, ethylmorphine, anesthesin, alkaloids of ipecac root, ammonium chloride and a formaldehyde derivative. It is recommended in the treatment of catarrh.—*Pharm. Zentralhalle*, 80 (1939), 391. (N. L.)

Tussimor Balsam (Dehnhaide Apotheke, Hamburg) consists chiefly of oils of thyme, eucalyptus and turpentine. It is recommended in the treatment of coughs and colds.—*Pharm. Zentralhalle*, 80 (1939), 391. (N. L.)

Vitamin B Complex Syrup and Elixir (Abbott Laboratories, North Chicago, Ill.). The elixir is a pleasantly-flavored liquid containing 17% of alcohol and supplies the following in each tablespoonful: thiamine hydrochloride (vitamin B_1) 500 U. S. P. XI (International units), riboflavin (vitamin B_2-G) 240 Sherman-Bourquin units (600 gammas, or 0.6 mg.), nicotinic acid approximately 6 mg., and vitamin B_6 and other factors of the B complex found in liver, in amounts represented by approximately 20 Gm. ($^2/_3$ ounce) of fresh liver. The syrup is an agreeable liquid containing no alcohol, and supplying the following in each 5 cc. (average teaspoonful): thiamin hydrochloride (vitamin B_1) 500 U. S. P. XI (International units), riboflavin 240 Sherman-Bourquin units (600 gammas, or 0.6 mg.), nicotinic acid approximately 6 mg., and vitamin B_6 and other factors of the B complex found in brewer's yeast. Vitamin B Complex Syrup and Elixir are used to supply the main vitamin deficiency in the diets. The suggested daily doses are: elixir—adults, 1–2 tablespoonfuls; children, 2–3 teaspoonfuls; syrup—adults, 1 dessertspoonful; children, 1 teaspoonful; infants $^1/_4$–$^1/_2$ teaspoonful. The syrup is supplied in 3- and 12-oz. bottles; the elixir in 12-oz. and gallon bottles.—*Amer. Professional Pharmacist*, 6 (1940), 113. (F. J. S.)

Vutox (Chemische Fabriek, Amsterdam) is a liquid containing eucalyptol and menthol and is sold in dropping bottles. It is used in the prevention of colds, especially catarrh of the nose and throat. A few drops are placed in the nose or the diluted preparation may be gargled.—*Pharm. Weekblad*, 76 (1939), 420. (E. H. W.)

BACTERIOLOGY

Anaphylaxis in Guinea Pigs—Influence of Ascorbic Acid on. Sixteen guinea pigs were injected with adequate doses of ascorbic acid before sensitization with horse serum and for twenty days thereafter. The shocking dose was then applied by intravenous injection and by the Schultz-Dale technic after hysterectomy of some of the animals. All but two of the animals developed typical anaphylaxis or showed contraction of the uterine horn

Experiments on passive anaphylaxis in guinea pigs using rabbit anti-human serum together with ascorbic acid also indicated that ascorbic acid did not influence the anaphylactic reaction.—S. RAFFEL and R. R. MADISON. *J. Infectious Diseases*, 63 (1938), 71. (T. C. G.)

Antiseptics—Bactericidal Properties of Commercial. Phenylmercuric nitrate, Merthiolate, Metaphen, Mercurochrome, tincture of iodine, phenol, Hexylresorcinol and acriflavine were studied under controlled conditions of p_H with respect to their bactericidal properties against *Staphylococcus aureus* and *Escherichia coli*. Metaphen and Merthiolate could not be adjusted and acriflavine gave negative results at the concentrations tested. All the others showed increased potency with an increase in the hydrogen-ion concentration of the menstruum. Phenylmercuric nitrate, for example, is effective in a dilution of 1 part in 10,000 at a p_H of 7; at a p_H of 3 its potency against *Staphylococcus aureus* is increased tenfold. At a p_H of 4 phenol showed a 25% increase in effectiveness. The results indicate that, except for interfering factors such as increased insolubility or instability, these diversified antiseptics show a definite increase in effectiveness with an increase in the hydrogen-ion concentration. The results indicate that the "hydrogen-ion effect" increases progressively up to a maximum for benzoic acid, the phenyl alkanoic acids, phenylmercuric nitrate, Merthiolate, tincture of iodine, Hexylresorcinol, phenol, closely related compounds and some inorganic salts.—W. A. BITTENBENDER, E. F. DEGERING and P. A. TETRAULT. *Ind. Eng. Chem.*, 31 (1939), 742–744. (E. G. V.)

Antiseptics—Urinary, Local. Local antiseptics are used to destroy infecting organisms and to stimulate resistance in the tissues. Local antiseptics fall into groups of mercurials, silver salts, dye therapy and chemotherapy. There are also the old reliables as potassium permanganate, boric acid, phenol, cresol and picric acid. They are used as irrigations, instillations or injections. Acriflavine, one injection daily in moderate concentration, is good; mercurochrome, followed by mild silver protein, once daily is also useful; gentian violet is good and non-toxic, as are also potassium permanganate and zinc permanganate; and boric acid is an excellent cleansing agent. Silver nitrate and proteins are good antiseptics but irritant, except the mild proteins. Antiseptics strong enough to kill bacteria may injure tissues, hence they should be used cautiously. Personal reactions should also be studied; and self-medication in the form of hand injections should be discouraged.—HENRY W. E. WALTHER. *J. Am. Med. Assoc.*, 111 (1938), 1465. (G. S. G.)

Antitoxins and the Like—Treatment of. Solutions of toxins, antitoxins, etc., and the proteins with which they are associated, are digested with a proteolytic enzyme (pepsin, at p_H not more than 4) until the greater part (about 70%) of the proteins have been destroyed or rendered non-coagulable by heat, and are then treated with a finely divided alkaline-earth phosphate (calcium phosphate) to absorb lipins, enzymes and other impurities. The initial solution may be heated prior to digestion to precipitate fibrin, and after digestion the coagulable proteins may be precipitated together with the toxins, etc., with a neutral salt (ammonium sulfate, sodium sulfate, sodium chloride), after previous concentration by ultrafiltration if desired, the precipitate being redissolved in water to a concentrated solution which may be dialyzed and then diluted and treated with phosphate. The solution after treatment with phosphate may be concentrated by ultrafiltration. Specific claim is made to the purification of diphtheria antitoxin.—LEDERLE LABS., INC. Brit. pat. 493,101; through *J. Soc. Chem. Ind.*, 57 (1938), 1503. (E. G. V.)

Avian Tubercle Bacilli in Dressed Poultry. The spleens of 125 apparently healthy fowl including hens, ducks, turkeys, etc., were obtained in the open market and cultured for tubercle bacilli. Positive results were obtained from one spring chicken, two adult hens and one domesticated duck.—W. H. FELDMAN. *J. Infectious Diseases*, 63 (1938), 332. (T. C. G.)

Azosulfone Derivatives—Curative Action of Some, in Experimental Infections in Mice. Sodium-4-nitrodiphenylsulfone-4′-azo-2-naphthol-3,6-disulfonate (Body 94); sodium-4-nitrodiphenylsulfone-4′-azo-1-naphthol-7-acetylamino-3,6-disulfonate (Body 95); sodium-4-nitrodiphenylsulfone-4′-azo-1-naphthol-8-acetylamino-3,6-disulfonate (Body 190) were prepared by diazotization of 4-nitro-4′-amino-diphenylsulfone and coupling with the corresponding naphtholsulfonic acids. Mice tolerated 100 mg. per 20 Gm. *per os* of 94 and 95 and only 50 mg. per Gm. of 190. All showed curative action of the first order against *S. hemolyticus*. The 94 and 95 showed distinct curative action against gonococcus, intense therapeutic activity against *B. Friedländer* and high antipneumococcic activity with Type 2 and less against Types 1 and 3.—CONSTANTIN LEVADITE, ANDRE GIRARD and ARON VAISMAN. *Compt. rend.*, 208 (1939), 1609. (G. W. H.)

Bacillary Dysentery—Use of Prophylactic Serums and Vaccines in. Antisera prepared by injecting *B. dysenteriæ* Flexner were used to passively immunize mice. The serum protected 90% of the mice from 10 M. L. D.'s of the organism if injected simultaneously or from one to five days before the infective dose was given. Active immunization of mice with a phenolized vaccine protected 80% of the mice from 10 M. L. D.'s of the organism.—J. FELSEN and A. G. OSOFSKY. *J. Infectious Diseases*, 63 (1938), 298. (T. C. G.)

Bacteriophage—Opsonic Action in Presence of Blood. Bacteriophage as a therapeutic agent has been largely disregarded after it was found that blood, serum, urine, etc., rapidly destroyed its lytic activity *in vitro*. However, there is definite evidence to indicate that intravenous injections of the specific bacteriophage favorably influence the outcome of experimental staphylococcus and coli infections. Subsequent work has shown that bacteriophage has an opsonic influence *in vivo* and *in vitro;* and an attempt is made to confirm these results by the authors of this paper. Staphylococci were mixed with human leucocytes, specific bacteriophage and serum. For controls, saline was substituted for bacteriophage. After incubating these mixtures for varying intervals, the suspensions were stained and the number of organisms within 100 leucocytes counted. Using the control count as the denominator, an opsonic index was calculated in each experiment. In several experiments bacteriophage without serum produced an index of 1.0 and bacteriophage with serum produced an index of 2 to 3, indicating that the presence of serum actually assisted in the process of phagocytosis. Bacteriophage up to certain dilutions was more effective than concentrated bacteriophage, indicating an optimal concentration for opsonic action. Maximum opsonic activity occurs almost immediately and lessens after 45 minutes' exposure. The opsonic activity of bacteriophage is apparently independent of the lytic power, since dilution rapidly diminishes its opsonic power to the vanishing point while the titer of the particles may still remain fairly high (10^{-3} or 10^{-4}).—W. J. MACNEAL, M. A. MCCRAE and R. A. COLMERS. *J. Infectious Diseases*, 63 (1938), 25. (T. C. G.)

Chemotherapy in Virus Diseases. Appropriate experimental animals were infected with the viruses of rabbit myxomatosis, rabbit fibroma, herpetic encephalitis, choriomeningitis and St. Louis encephalitis. After injecting these viruses the animals were given prontylin, prontosil or sodium sulfanilyl sulfanilate and the degree of protection determined by comparison with the mortality rate of the controls. In none of these infections did any of the sulfonamide compounds appear to give any significant protection.—E. B. MCKINLEY, J. S. MECK and E. G. ACREE. *J. Infectious Diseases*, 64 (1939), 36. (T. C. G.)

Chlorine "Test" in the Chlorination of Water. Chlorine added to water in moderate amounts combines with the dissolved organic matter; at the limiting dose where there is no free chlorine left in the water (called the chlorine "test") the bacteria, protected by the cell wall, are not killed. A slightly higher dose destroys unsporulated bacteria of the Coli type. It is shown experimentally that the proper amount of chlorine to be added to river water corresponds to about the chlorine "test" only over a rather narrow temperature range. At low temperature the chlorine "test," which is small, can correspond to only half the amount of chlorine required to sterilize the water; conversely, at high temperature the "test" is excessive, and the amount of chlorine required for sterilization may be only half the "test" value. These results are confirmed in water-treatment practice.—A. GUILLERD and F. VILLEMAINE. *Compt. Rend. 18me Congr. Chim. Ind., Nancy* (Sept.-Oct. 1938), 98–104. (A. P.-C.)

Chlorophyll Derivatives and Related Compounds —Effect of, on the Growth of M. Tuberculosis. Chlorin-e and chlorophyllin concentrations of 0.025% and 0.05% in glycerol broth and Sauton's media inhibited the growth of H-37 and avian tubercle bacilli. Copper chlorin-e, deuteroporphyrin, copper deuteroporphyrin and pyrroporphyrin sulfonic acid-sodium salt showed no growth-retarding effects in the same concentrations. Evidence is presented to suggest that the H-37 tuberculo-protein of the living bacillus is capable of binding copper chlorin-e. The absorption spectra suggest that a chemical union between protein and pigment is formed.—SYLVESTER DALY, GEORGE HELLER and ERICH SCHNEIDER. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 74. (A. E. M.)

Complement—Factors Influencing the Production of, in Guinea Pigs. Male guinea pigs weighing at least 600 Gm. and from five to seven months old are the most desirable source of complement. Diet or temperature of the animal quarters did not appear to effect the complement content of the animals. Females are not as desirable a source of complement, especially if pregnant.—J. E. FABER, JR., and L. A. BLACK. *J. Lab. Clin. Med.*, 23 (1937), 496. (T. C. G.)

Disinfecting Composition—Water-Soluble, Supplying Available Chlorine. A dry powder, stable on storage and forming a clear solution with water, comprises crystallized sodium carbonate, crystallized disodium phosphate and sodium hypochlorite.—MAX Y. SEATON, Assignor to WESTVACO CHLORINE PRODUCTS CORP. U. S. pat. 2,145,015, Jan. 24, 1939. (A. P.-C.)

Filtration Unit—Sterilizable. A sterilizable filtration unit is described and illustrated. An all-glass Seitz filter fits into the neck of a spherical receiver and is retained by a short piece of rubber tubing acting as a bung, which is renewed each time the filter is used. The air filter is in one piece with the receiver to avoid the introduction of drilled rubber bungs, which cannot be satisfactorily "autoclaved" in position. A rubber connection leads to a bell-cover and filling tube. The unit is employed in a positive pressure system in which the pressure is supplied by a gas cylinder, while a simple safety valve allows for adjusting and maintaining a constant pressure for several hours without attention. The apparatus may be assembled, wrapped in parchment paper or cellophane, sterilized in the autoclave and stored until required for use.—F. A. HUDSON. *Pharm. J.*, 143 (1939), 50. (W. B. B.)

Gelatin—Preservatives for Preparations Containing. Using two types of gelatin, namely Pharmagel A and Pharmagel B, the effectiveness of chemical preservatives was determined in 1% solutions. These solutions with a definite concentration of each preservative were inoculated, respectively, with a suspension of the various resistant bacteria and fungi found in the air. Free access of air was allowed into these solutions during the four-month test period and macroscopic readings and subcultures for growth were made at intervals of approximately one month. A table with the chemicals used and the concentrations found effective are recorded.—L. GERSHENFELD and D. PERLSTEIN. *Am. J. Pharm.*, 111 (1939), 277. (R. R. F.)

Guinea-Pig Complement—Comparison of Methods for the Preservation of. A number of different methods for preserving guinea-pig complement to be used in complement-fixation tests were compared to determine the best method for keeping complement at a maximum titer. Strontium chloride and sodium chloride with boric acid were of no value in preserving the complement at either room or refrigerator temperature. Ten per cent sodium acetate with boric acid or 10% sodium chloride with boric acid satisfactorily preserved complement at room temperature for three weeks. At refrigerator temperature a satisfactory complement titer was maintained for more than nine weeks with 12% sodium acetate, 10% sodium acetate with boric acid, a 17%, 25% or saturated solution of sodium chloride or 4% sodium fluoride. When carbon dioxide replaced oxygen in a closed container containing complement stored in the refrigerator, a satisfactory titer was maintained for three weeks. Preservation by freezing and dehydration of salted or unsalted complement for 22 hours, followed by storage in the refrigerator, gave the best results, maintaining the original titer for four months, the duration of the test.—J. E. FABER and L. A. BLACK. *J. Lab. Clin. Med.*, 23 (1938), 961. (T. C. G.)

Hemophilus Pertussis—Protective Value of Immune Rabbit Serum and Its Globulin Fraction against Experimental Murine Infection with. Immune rabbit serum, injected intra-abdominally into mice, protects them against infection by intranasal inoculation with *Hemophilus pertussis*. By precipitation in 50% saturated sodium sulfate, a globulin fraction was prepared which has essentially the same protective properties and agglutinating titer as the original serum, but only one-third of its protein content.—HENRY W. SCHERP, WILLIAM L. BRADFORD and MARY WOLD. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 172. (A. E. M.)

H. Pertussis Vaccines—Washing of. The author attempted to determine if the discrepancies reported by various workers in the prophylactic value of *H. pertussis* vaccines were due to the preparation of the vaccine. Since the principal difference in the preparation of the vaccines used by various workers was the amount of washing the organisms received, an attempt was made to evaluate this factor. *H. pertussis* suspensions were prepared and divided into lots, some of which were unwashed, others washed once and others washed repeatedly in distilled water. A vaccine was prepared from a portion of each of these lots by adding 0.5% phenol and storing until the suspensions were sterile. The in-

jections of the living organisms into guinea pigs showed that washing removes the toxicity of the organisms so that repeatedly washed organisms were entirely avirulent. Rabbits were immunized with the various vaccines and their agglutinin content determined. Even repeated washing of the organisms did not appear to affect their antigenicity since they produced equally as high titer as the unwashed organisms.—J. A. TOOMEY and W. S. TAKACS. *J. Infectious Diseases*, 64 (1939), 89. (T. C. G.)

Immunity in Malaria—Studies in. Experimental investigations of the effects of treatment under different conditions on the acquisition of immunity have been described. The parasitological factors which probably influence the development of immunity have been discussed. It is suggested that the degree to, and the rate at which immunity is developed, depend upon the amount of antigenic stimulation (parasitic intensity) and upon the duration of its action. This view makes it possible to explain the divergent opinions expressed about the effects of early treatment upon the development of immunity. The relationship of these results to some principles in the treatment of malaria is discussed.—J. A. SINTON. *J. Malaria Inst., India*, 2 (1939), 191. (A. C. DeD.)

Katadyne Methods—Old and New. A discussion with 14 references. ESCHENBRENNER. *Scientia Pharm.*, 10 (1939), 109–111. (H. M. B.)

Lactic Acid—Action of, upon Acid-Resistant Bacillus. The author has studied the validity of the action of 5 to 20% solutions of lactic acid upon pathogenic acid-resistant bacillus and saprophytes, tubercular and paratubercular. It has been stated that these baccilli resist a solution of 15% lactic acid for a period of 60 minutes. Solutions of this acid in 5, 10 or 15% take the place of sulfuric acid for the isolation of the acid-resistant bacilli.—TH. VOICULESCU. *Soc. de Biol.*, June 3, 1939; through *Presse Medicale*, 46 (1939), 925. (W. H. H.)

Lead Salts—Antiluetic Action of. Basic lead carbonate and lead acetate were given to rabbits injected with *Sp. pallida*. The intravenous injection of 0.1 cc. of 1% lead acetate per Kg. body weight three times a week cured scrotal chancres in 3 out of 6 rabbits in 5–7 weeks (3 died after a few injections). The subcutaneous injection of 1.0 cc. per Kg. three times a week cured scrotal chancres in 5 out of 6 rabbits in 5–7 weeks (1 died after 4 injections). Basic lead carbonate was ineffective in syphilitic rabbits, and neither salt affected animals injected with trypanosomes. Lead acetate was less effective in syphilitic rabbits than were proprietary bismuth preparations but it was more effective than mercury.—M. KUMASAWA. *Fukuoka Acta Med.*, 31 (1938), 177; through *Squibb Abstr. Bull.*, 12 (1939), A-1537. (F. J. S.)

Lymphocytic Choriomeningitis. The virus of lymphocytic choriomeningitis has been isolated from the cerebrospinal fluid and nasopharyngeal washings of a patient with clinical signs and symptoms of acute anterior poliomyelitis with paralysis still present fifteen weeks after the onset. The virus was still present in the nasopharynx eight to twelve weeks after the onset though not demonstrable in the cerebrospinal fluid at the eighth week. The findings emphasize the need for more intensive investigation of material from neurological cases.—F. O. MACCALLUM and G. M. FINDLAY. *Lancet*, 236 (1939), 1370. (W. H. H.)

Malaria Parasite (Plasmodium Falciparum)—Studies on the Biology of the. The incubation period of an Indian strain of *Plasmodium falciparum* in the human host was found to vary from 12 to 14 days when the infection was caused by mosquito bite. Tiny rings first appeared in the peripheral blood before the initial rise of temperature. Crescents were observed 7 to 13 days after the first appearance of the rings. Crescents were found in the peripheral blood for forty days, even after atebrin or quinine treatment. For the first four days, crescents were not infective to *Anopheles stephensi;* from the 5th day to the 26th day they were highly infective to mosquitoes; and from the 27th day to the 40th day they were again non-infective to mosquitoes. A host who has recovered from the initial infection is not immune against further infection with the same strain of malarial parasite.—B. C. BASU. *J. Malaria Inst., India*, 2 (1939), 155. (A. C. DeD.)

Meningococcus Antitoxin. The author reviews the present status of the development and use of meningococcus antitoxin—to which he himself has made several important contributions. The meningococcus produces a soluble exotoxin in its early stages of development, but with the later autolysis of the organisms, endotoxin predominates in the filtrate. The endotoxin is non-specific in character while the exotoxin produces definite symptoms of meningitis in experimentally infected animals. The exotoxin is specifically neutralized by the homologous antitoxin and sera from recovered cases of meningococcus meningitis. In monkeys experimentally infected with *N. intracellularis* the specific antitoxin protected 80% from death while 100% of the unprotected controls died. Experimental work indicates that the principal symptoms and cause of death in meningococcus meningitis are due to the liberation of the soluble exotoxin formed by the organism. It appears that the bacteriolytic action of antibacterial meningococcus serum is less effective in the treatment of the disease than the neutralization of the toxin with the specific antitoxin. Clinical studies have shown that antitoxin will lower the case fatality rate from 25 to 50%.—N. S. FERRY. *J. Lab. Clin. Med.*, 23 (1937), 252. (T. C. G.)

Nasal Jellies and Ophthalmic Solutions. The authors state that an ideal preservative or antiseptic for these preparations should have the following characteristics:—(1) It must be effective against all types of microörganisms causing decomposition. (2) It must be soluble in the concentration used. (3) It must not injure or cause objectionable staining of the tissues of the individual using the product. (4) It must not alter or change the character of the preparation. (5) The cost of the preservative should not cause a marked increase in the price of the preparation. Lists of chemicals which show bacteriostatic or bactericidal efficiency for the intended purpose, are given.—L. GERSHENFELD and D. TOMKIN. *Am. J. Pharm.*, 111 (1939), 385. (R. R. F.)

Ointment Bases—Efficiency of Bactericidal Agents in Different. The tests made indicate that bactericidal agents used in the newer water-miscible ointment bases produced greater bacteriostatic action as revealed by the production of inhibition zones than in the older type of bases when tested by the F. D. A. Agar Plate and Agar Cup Plate techniques. The authors recommend that the U. S. P. or N. F. arrange to include such formulas in their next revision and further recommend that the Pharmacopœial Revision Committee arrange for a thorough study of these water-soluble ointment bases as they appear to be more satisfactory vehicles for bactericidal agents than other ointment bases.—L. GERSHENFELD and R. E. BRILLHART. *Am. J. Pharm.*, 111 (1939), 430. (R. R. F.)

Pertussis—Passive Immunity in Experimental Animals. Finding that direct immunization of mice to *H. pertussis* had some disadvantages, the authors have tested the possibility of using sera to

passively protect these animals against this infection. The method used for inoculating mice and the criteria for determining the protective power of sera are described. Methods were described for demonstration of antibody protecting mice against infection with *H. pertussis*. This antibody has been shown to be present in the serum of some adult contacts of whooping cough, of children convalescent from whooping cough and of children immunized with *H. pertussis*. It is not found in pooled serum of healthy adults, or in the serum of children who have not had whooping cough and who have not been immunized. Sera from immunized rabbits was likewise protective. No correlation was found between phase 1 agglutinin titer and the protective potency of sera.—E. A. NORTH, E. V. KEOGH, G. ANDERSON and STANLEY WILLIAMS. *Australian J. Exptl. Biol. Med. Sci.*, 17 (1939), 275–284. (W. T. S.)

Phagocytic Activity of Leucocytes—Action of Prontosil Soluble and Sulfanilamide on. Hemolytic and green-producing streptococci mixed with prontosil soluble and citrated human blood were incubated 25 minutes, spread on slides and stained with Wright's stain. The number of cocci phagocyted in 50 leucocytes and the per cent of leucocytes taking part in the phagocytosis were determined. An optimum concentration of 1:10,000 of prontosil soluble was found with an increasing loss of phagocytosis with either greater or less concentrations. By treating the leucocytes and bacteria separately with prontosil soluble it was established that the drug stimulates the leucocytes to increased activity, but does not have any opsoninizing effect on the bacteria. Streptococci grown in media containing 10% prontosil soluble tend to dissociate into *R* forms which are more easily phagocyted than the *S* forms. This suggests a possible explanation for the curative effect of the sulfonamide drugs. *In vivo* experiments with mice indicate that both prontosil soluble and sulfanilamide stimulated the phagocytic powers of leucocytes.—R. TUNNICLIFF. *J. Infectious Diseases*, 64 (1939), 59. (T. C. G.)

Phenolic Ointments—Antiseptic Value of. Results obtained in the examination of 175 ointments show, among other things, that ointments of phenolic germicides in ordinary fatty bases are likely to have little, if any, antiseptic value unless very high in germicide content. It would appear that the antiseptic value of an ointment cannot be foretold by the antiseptic value of the constituents. Suggestions for the formulation of a promising ointment base to be used with phenolic germicides are made. Before any phenolic ointment is claimed to be antiseptic it should be aged sufficiently to indicate that the antiseptic power will not disappear in time. Prolonged fusion of ointments soon reduces the antiseptic value and is a likely substitute for determining the effect of prolonged storage on the antiseptic qualities of an ointment.—W. C. CLARK. *Am. J. Pharm.*, 111 (1939), 228. (R. R. F.)

Plant Drugs—Antibacterial Action of. Of 92 different drugs, the infusions of which were examined with respect to their bactericidal power according to the agar selection method, there were 41 which were active. Of the drugs whose chief active principles are alkaloids, black tea showed the best activity; of those containing glucosides, woodruff (*Asperula odorata*) possessed the highest bactericidal activity, as did rhatany root (containing tannins) and coltsfoot (containing mucilaginous material). The strongest bactericidal drug infusion was one obtained with rhatany root. Compared with disinfectants in general, the bactericidal power of drug infusions must be regarded as very weak.—H. KLIEWE and B. DATZ. *Pharm. Zentralhalle*, 79 (1938), 521–526; through *Chimie & Industrie*, 41 (1939), 526. (A. P.-C.)

Pneumococci—Viability in Dried Sputum. Sputum containing Type I, II, III or VIII pneumococci was dried on the inside of sterile, cotton-plugged testtubes and exposed to diffuse sunlight at room temperature for varying periods. At various intervals culture media were introduced into the testtubes to dissolve the sputum which was then inoculated into mice. Under these conditions pneumococci remained viable from four to eight weeks. When the dried sputum was stored in the ice box viable organisms were found after four to six months' storage.—E. G. STILLMAN. *J. Infectious Diseases*, 63 (1938), 340. (T. C. G.)

Pneumococcus Typing—Preservation of Sputum for. If an equal amount of 1% formalin (40% formaldehyde) is added to sputum from a case of pneumococcus pneumonia, the capsules of the organisms will give the quellung reaction after at least four months' storage at room temperature. Satisfactory results have been obtained with Types II, V, VIII and XIV, but not with Type III. This method of preservation is valuable for teaching purposes when suitable sputum is not available at the desired time.—A. H. HARRIS and F. M. VARLEY. *J. Lab. Clin. Med.*, 23 (1937), 164. (T. C. G.)

Poliomyelitis—Penetration of Antiserum into the Central Nervous System of Monkeys Infected with. Practically none of hemolysin administered into the cerebrospinal fluid in monkeys infected with poliomyelitis actually reaches the central nervous system. The antibodies introduced left the cerebrospinal fluid within the experiment time of 6 to 12 hours and were demonstrable in high titer in the circulating blood.—J. EMERSON KEMPF and MALCOLM H. SOULE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 136. (A. E. M.)

Polysaccharide Synthesis by the Bacilli. An investigation of the synthesis of the polysaccharide, laevan, by the bacilli in the culture media containing 10% of sucrose, and a study of the significance of laevan formation in bacteriological classification, and its value as a characterizing test in the identification of the species. It has been found that the source of nitrogen in the medium is not of great importance, as, although the highest yield of laevan is obtained with peptone, the polysaccharide is freely produced in sucrose media containing simple amino acids or ammonium succinate and in sucrose-Difco-bacto nutrient broth. *B. mesentericus*, *B. subtilis*, *B. methagerium*, *B. polymyxa* and *B. ruminatus* readily synthesize laevan, but no indication of polysaccharide formation has been obtained with *B. aminovorans*, *B. cereus*, *B. macerans* or with bacilli associated with foul brood of bees, or the urea decomposing group of bacilli. Furthermore, *B. mycoides* only rarely exhibits synthetic activity. The results suggest that the laevan-formation test may be of practical value, on account of its simplicity, in determinative bacteriology for the identification of species, as in the case of sugar-fermentation tests and the diastase reaction.—E. A. COOPER. *J. Soc. Chem. Ind.*, 58 (1939), 229–231. (E. G. V.)

Potassium Tellurite in Diphtheria Diagnosis. The technic of this suggested clinical test for diphtheria is simple. A negative result is of value in that it shows with great accuracy (100% in this series, 92% in that of Dr. Manzullo) that the disease is not diphtheria. It is unlikely that any case of diphtheria would be missed through reliance being placed on the test, if the technic were not at fault. Such a high percentage of false positive results may be obtained that no definite diagnosis of diphtheria

should be made on a positive result. It is possible theoretically, and in view of the discrepancy between these results and those of Manzullo, that the proportion of positive results will vary from place to place and from time to time. This test can in no way take the place of the clinical and bacteriological methods of diagnosis already in use.—E. TOMLIN. *Brit. Med. J.*, 4094 (1939), 1273. (W. H. H.)

Prontosil Soluble, Sulfanilamide and Disulfanilamide—Effect of, on Sporulating Anaerobes. Cultures of sporulating anaerobes commonly associated with gaseous gangrene, *Cl. welchii, sporogenes, tetani, tertium lentoputrescens, bifermentans, novyi, septicum* and *histolyticum*, were inoculated into media containing prontosil soluble, sulfanilamide or disulfanilamide in dilutions from 1:125 to 1:8000. After suitable incubation the degree of turbidity in the culture tubes, when compared with the control tubes, indicated the degree of bacteriostasis produced by these drugs. All of the drugs had an inhibitory effect on all of the organisms except *Cl. welchii, sporogenes* and *bifermentans*. Since these compounds did not appear to exhibit much inhibitory influence on *Cl. welchii*, yet clinical reports state that they are effective in treatment of these infections, it is suggested that the drug may undergo some *in vivo* change which is not produced in the test-tube.—R. S. SPRAY. *J. Lab. Clin. Med.*, 23 (1937), 609. (T. C. G.)

Rideal-Walker Test—Observations on. The difficulties found in obtaining reproducible results by the Rideal-Walker test for the evaluation of antiseptics, using the British Standards Institution's specified technic, arise from the survival of a few cells of a bacterial population when exposed to the action of the antiseptic being tested. The numbers of the surviving cells present in the inoculated solutions of the antiseptics become too small to ensure that at least one cell is transferred to the growth tubes with the very small proportion of the whole inoculated antiseptic solution taken. After an exposure of the test organism for eighteen minutes in phenol solution, the surviving organisms are so few that it is almost impossible to detect their presence in the growth tubes except by the transfer of much larger quantities of inoculum than required by the test. No better results were obtained using *p*-chloro-*m*-cresol as control. Although the Chick-Martin test, in which the test cells are exposed to antiseptic for thirty minutes, yields more consistent results than the Rideal-Walker test with ten-minute exposure of test cells, neither of the tests should be interpreted as expressing that a given coefficient value implied that an antiseptic utilized on the basis of this value will completely destroy the test organism during the time interval stipulated by the test. To obtain complete destruction of *Bacterium typhosum* in phenol solutions exposure of the test organism for one hour is necessary.—A. C. THAYSEN. *J. Hygiene*, 38 (1938), 558; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 315. (S. W. G.)

Scarlet Fever—New Serum in. A new scarlet fever antitoxin (Lederle Laboratories) has been tested as a means of passive prophylaxis in the wards of a children's hospital. Secondary cases were practically abolished during the year in which it was used. In prophylactic doses it gave rise to serum reactions in less than two per cent of cases.—D. B. BRADSHAW. *Lancet*, 237 (1939), 6. (W. H. H.)

"Skin-Sterilizing" Agents—Experimental Comparison of Certain. A modification of the Birkhaus method using rabbits was employed in this study. In terms of the production of relative sterility (as compared to 70% alcohol) the chemicals studied can be listed as follows: 0.1% mercresin produced 50.1% sterility; 0.1% propyl-mercuric chloride 49.3%; 0.1% phenyl-mercuric nitrate 40.2%; 0.1% pyridyl-mercuric chloride 39.7%; 7.0% iodine 33.6%; 3.5% iodine 33.4%; 0.1% merthiolate 32.6%; 0.1% mercuric chloride 32.5%; 0.5% metaphen 29.4%; 2.0% mercurochrome 24.1%; 3.0% picric acid 18.0%; and 0.1% mercury oxycyanide 3.2%.—A. D. BASS. *J. Pharmacol.*, 66 (1939), 279. (H. B. H.)

Sodium Bicarbonate Solution—Sterilization of, for Intravenous Use. A stock five per cent solution is prepared with chemically pure sodium bicarbonate in freshly distilled water. Phenolsulfonphthalein (0.25 cc. of a 0.6% solution per liter) is added as an indicator and the solution filtered through a Berkefeld N filter. One hundred cubic centimeter portions are dispensed into 125-cc. pyrex bottles and carbon dioxide gas from a small cylinder is bubbled into the solution until the color is a yellowish peach. A vaccine stopper is placed in the top of the bottle and held in place by means of a specially constructed clamp. The solution is then autoclaved and after cooling shaken to redissolve the carbon dioxide. For use, the contents may be aspirated through the stopper with a sterile needle, or the cap may be removed and the contents poured into a container for intravenous drip therapy.—F. E. HOLMES and G. E. CULLEN. *J. Lab. Clin. Med.*, 23 (1937), 761. (T. C. G.)

Staphylococcus Antitoxin—Effect of, on Rabbits Intravenously Inoculated with Broth Cultures of Staphylococci. Rabbits were injected with varying amounts of staphylococcus antitoxin at various intervals before and after receiving intravenous inoculations of virulent staphylococci. In general the antitoxin prolonged the life of the animals but did not reduce the mortality rate as compared with the controls. There was a positive correlation between the extension of life and the amount of antitoxin injected. The fact that many animals died within 24 hours after inoculation and before abscesses developed, seems to indicate that death results from the *in vivo* production of toxin by the organisms.—R. H. RIGDON. *J. Lab. Clin. Med.*, 23 (1937), 159. (T. C. G.)

Staphylococcus Food Poisoning—Present Status of. The writer reviews the work of various investigators who have attempted to devise an *in vitro* test for distinguishing food poisoning staphylococci from those which do not produce an enterotoxin. Since strains from a variety of sources (air, water, soil, milk, etc.) may produce an enterotoxin and strains definitely implicated in food poisoning outbreaks may lose their ability to secrete the enterotoxin after transfer on artificial media, the writer emphasizes that those who attempt to devise a differential medium should not rely upon the previous history of the strains, but should run concomitant animal tests to ascertain the ability of the strains being tested to produce an enterotoxin. Previous work in this field should be interpreted in the light of the above consideration. If a strain of staphylococcus is isolated from food implicated in a food poisoning outbreak and shown to produce an enterotoxin by suitable laboratory manipulation, this is not incontrovertible evidence that these organisms caused the outbreak since the necessary conditions of p_H, temperature and carbon dioxide tension may not have been present in the contaminated food.—T. C. GRUBB. *J. Lab. Clin. Med.*, 23 (1938), 1150. (T. C. G.)

Sterilization by Means of Carbon Disulfide and Chloroform. The authors cite several experiments covering attempts to sterilize materials (which will not stand sterilization with heat) by means of air and carbon disulfide and chloroform. They conclude that sterilization by this means is very difficult

and if the method is used, rigorous controls must be carried out.—T. Y. KINGMA BOLTJES and MEJ. H. VAN ELDEN. *Pharm. Weekblad*, 76 (1939), 445. (E. H. W.)

Sugar—Effect of Radiant Energy on Thermophilic Organisms in. Data are presented to show that the spores of a thermophilic canned food spoilage organism, *B. stearothermophilus* Donk, are killed in dry white sugar by radiant energy rays, most of which are in the region of 2537 A., and that enhanced lethal action is obtained by turbulence of the sugar during irradiation. An average of 47.8% of the spores were killed by irradiating eight successive strikes of sugar with twenty-four lamps installed in a sugar granulator. No immediate or delayed physical or chemical changes were noted in the irradiated sugar. The lethal effect of the energy rays occurred during irradiation, and residual lethal power was restained by the sugar. There was no increase in the spore counts of irradiated samples during storage. The results indicate the possibility of the sterilization of white sugar and other such ingredients of foods by irradiation.—H. H. HALL and J. C. KEANE. *Ind. Eng. Chem.*, 31 (1939), 1168–1170. (E. G. V.)

Sulfanilamide and Sulfapyridine—Effect of, on Experimental Infection with Listerella and Erysipelothrix in Mice. Sulfanilamide and sulfapyridine gave good results in mice infected with fatal doses of *Listerella monocytogenes*. Both substances were of no value in *Erysipelothrix* infections; they rather hastened the death of the animals.—J. R. PORTER and WILLIAM M. HALE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 47. (A. E. M.)

Sulfanilamide—Bacteriostatic Action of, in Vitro. A fraction capable of antagonizing the bacteriostatic action of sulfanilamide and M. & B. 693 *in vitro* has been isolated from a broth culture of a group C hemolytic streptococcus. The fraction can be extracted from the bacterial cells by means of dilute NH_4OH but not with water or dilute HCl. The fraction is active in low concentrations and is resistant to heat, dilute acids and alkalies. It appears to be non-specific in its action. Preliminary chemical analysis indicates that the active fraction is free from protein and consists of a mixture of substances of relatively low molecular weight, including free amino acids. An apparently similar fraction has also been isolated from a culture of a group A hemolytic streptococcus. Possible ways in which this substance may produce its antibacteriostatic effect are discussed.—T. C. STAMP. *Lancet*, 237 (1939), 10. (W. H. H.)

Sulfanilamide—Effect of, on Pneumococcal Infections in Mice. Mice infected with Type I, II, III or VII pneumococci were injected subcutaneously with from 50 to 1000 mg. per Kg. of body weight of sulfanilamide immediately after infection and at various intervals thereafter. With the larger doses of sulfanilamide there was a definite prolongation of life as compared with the controls. However, out of 209 mice treated with varying amounts of the drug only three survived the infection, indicating a comparatively small degree of protection.—J. M. RUEGESEGGER and M. HAMBURGER. *J. Infectious Diseases*, 64 (1939), 18. (T. C. G.)

Sulfanilamide in Experimental Brucellosis. *Br. suis, abortus* and *melitensis* were added to broth cultures containing various amounts of sulfanilamide varying from 1:1000 to 1:1,000,000 and samples from these cultures were removed and plated at 24-, 48- and 72-hour intervals. Sulfanilamide in the 1:1000 dilutions showed marked bactericidal and bacteriostatic action on all organisms after ten minutes' contact. In the higher dilutions there was a slight but definite inhibition of growth when compared with the control tubes not containing any sulfanilamide. The three Brucella organisms were inoculated into a small series of guinea pigs which were subsequently given 100 mg. of sulfanilamide *per os* daily. Autopsy of these animals revealed that the drug had prevented a generalized infection as well as producing cures in 50% to 100% of the animals therapeutically treated.—B. CHINN. *J. Infectious Diseases*, 64 (1939), 78. (T. C. G.)

Sulfanilamide in Experimental Tuberculosis. Sulfanilamide was ineffective in infections of guinea pigs with bovine tuberculosis bacilli, disregarding whether treatment was started before or concomitantly with the infection.—M. MAXIM STEINBACH and BEATRICE M. DILLON. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 613. (A. E. M.)

Sulfanilamide Therapy—Effect of, on Bovine Mastitis. Five cows with chronic mastitis caused by either streptococci or staphylococci were treated with 5 to 10 Gm. of sulfanilamide per 100 pounds of body weight per day. During treatment the number of bacteria and leucocytes in the milk was greatly reduced; but when treatment was discontinued, the counts returned to their number before treatment. Thus sulfanilamide appeared to be of little value in this study.—W. G. HOGE, W. V. HALVERSEN and V. A. CHERRINGTON. *J. Infectious Diseases*, 64 (1939), 27. (T. C. G.)

Sulfapyridine—Observations on the Mode of Action of, on Pneumococcus. Sulfapyridine did not affect the capsule of pneumococcus either *in vivo* or *in vitro;* it did not stimulate phagocytosis. The presence of 10 mg. of sulfapyridine per 100 cc. in broth cultures has only a slight bacteriostatic effect. *In vitro* as well as *in vivo* the bacteristatic and bactericidal effect developed after an initial growth of the bacteria. Complete bactericidal action was not demonstrated. Sulfapyridine may owe its action to its bacteristatic effect which permits antibodies to be formed by the organism or the bacteria to be disposed of by phagocytosis at the normal rate.—ROGER D. REID. *Proc. Soc. Exptl. Biol. Med.*, 41 (1939), 437. (A. E. M.)

Sulfapyridine, Sodium Sulfapyridine and Sulfanilamide—Protective Effect of, in Pneumococcus Infection Types I, II and III. Sulfapyridine administered orally to rabbits is slightly less toxic than sulfanilamide. Sodium sulfapyridine given intravenously is considerably more toxic than sodium sulfanilamide. While the protective effect of sulfapyridine in pneumococcal bacteremia Types I, II and III is small, 20% to 30% of mice surviving on the 4th day and less than 10% on the 7th day, it is somewhat higher than that afforded by sulfanilamide, which results in an average survival of 2 to 3 days. The protective effect of sodium sulfapyridine is of the same order as that of sulfapyridine.—GEORGE W. RAIZISS, M. SEVERAC, J. C. MOETSCH and L. W. CLEMENCE. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 12. (A. E. M.)

Sulfonamide Drugs. The authors find that certain drugs of the sulfonamide group have no chemical action *in vitro* on specific capsular polysaccharides from Types I and II pneumococcus. The tentative theory is advanced that sulfonamide drugs are active *in vitro* since they can render unavailable, to the invading bacteria, highly essential "accessory growth factors" which are responsible for capsule formation; however, when they are deprived of their protective mechanism, the organisms fall prey to the phagocytic action of the body and the infection is aborted.—M. STACEY and E. SCHLÜCHTERER. *Nature*, 143 (1939), 724; through *Brit. Med. J.*, 4095 (1939), 50B. (W. H. H.)

Tellurite—Immediate, Test in Diphtheria. Two hundred cases of pharyngeal infection with exudate have been examined by the immediate tellurite test. Correspondence with bacteriological diagnosis was

obtained in 67.5%, and with clinical diagnosis in 77% of cases. Definite blackening of the membrane occurred in a high proportion (84.3%) of cases of diphtheria. Similar blackening occurred in a proportion (46.8%) of faucial lesions due to other organisms. No blackening occurred in a small number of cases of diphtheria, often of a severe type. With careful application, therefore, a negative finding affords presumptive evidence against diphtheria, but a positive finding does not establish the diagnosis. Though the test possesses a certain value, in view of the anomalous results in some cases of non-diphtheritic infections and severe diphtheria it cannot replace clinical diagnosis, either alone or supplemented by cultural methods.—J. B. L. TOMBLESON and R. M. CAMPBELL. *Brit. Med. J.*, 4094 (1939), 1275. (W. H. H.)

Treponema Pallida—Staining of, by Means of a Low Surface Tension Stain. *T. pallidum* in smears from chancre fluid may be easily stained by applying a stain with a low surface tension. A 1% solution of gentian violet is prepared by adding 1 Gm. of the dry powder to 100 cc. of hexylresorcinol. After filtering, the stain is applied to the air-dried smear for thirty minutes; and the smear then washed in water, dried and examined. The organisms are stained a light purple on a faintly purple background.—R. D. HAIRE. *J. Lab. Clin. Med.*, 23 (1938), 1215. (T. C. G.)

Trichinosis in Cleveland. By means of the Baerman-digestion method and the compression microscopic technic, diaphragms and skeletal muscle of 100 persons coming to autopsy in Cleveland were examined. Evidence of trichinosis was found in 36%, whereas if only the Baerman method alone had been used, only 20% would have been found positive.—C. H. EVANS. *J. Infectious Diseases*, 63 (1938), 337. (T. C. G.)

Tubercular Infection—Anachoric Function of the. The anachoric function of the vaccine nodule on the bacillus of tuberculosis in calves is indirectly demonstrated by the loss of lowering of the specific protection after extirpation, and directly by the development of the greater resistance after grafting of the nodule in non-vaccinated calves.—A. ASCOLI. *Biochim. terap. sper.*, 25 (1938), 494. (A. C. DeD.)

Typhoid Bacilli—Selective Media for Isolation of. A comparative study was made of ten solid media (Endo's, E. M. B., MacConkey, Wilson and Blair, etc.) used for isolation, and five liquid media (Bile, Selenite F, Muller's, etc.) used for enrichment in the diagnosis of typhoid fever from stool specimens. Artificial mixtures of *E. coli* and *E. typhi* in a ratio of 1000 to 1 were used to test the relative efficiency of the various solid media in supressing the growth of *E. coli* and favoring the growth of the typhoid bacillus. As a result of these studies it was found that the best combination of media was Leifson's selenite F for enrichment and Wilson and Blair's bismuth sulfite medium for streaking from the enrichment medium. The black colonies of *E. typhi* surrounded by a smoky halo which develop on Wilson and Blair's medium are easily identified and isolated.—A. A. HAJNA and C. A. PERRY. *J. Lab. Clin. Med.*, 23 (1938), 1185. (T. C. G.)

Typhoid-Cholera Vaccine Inoculation—Agglutinin Response Following. Persons who have received a course of typhoid-cholera vaccine inoculation develop some immunity and it has been reported that a majority show increased specific agglutinins against organisms of typhoid and cholera. The aim of this study was to find out when the positive agglutination will appear, time of maximum agglutinin response and its duration. The investigation was carried out on 116 volunteers by the method described and the results were tabulated. The percentage of typhoid agglutinin response was 61.3% while that of cholera was 18.5%. The maximum agglutination titer was reached at the end of the first week after completion of a course of vaccine inoculation. Recent inoculations render the Widal test for typhoid unreliable because high H and O agglutinin response may appear in the sera of inoculated persons.—S. B. WANG. *Chinese Med. J.*, 56 (1939), 145–152. (W. T. S.)

Urinary Infections in Infancy and Childhood. Urinary infections are diagnosed by fever, urinalysis and cultures. A ketogenic diet, mandelic acid or sulfanilamide may clear up urinary infections even with urinary stasis. An excretory program should be made to establish the presence or absence of stasis. Focal infection in the urethra or bladder may be responsible. Foci in the ureters and kidneys are only remedied by surgical intervention. The type of infection, renal function, the presence or absence of stasis should be known before the antiseptic is chosen. Mandelic acid and sulfanilamide are superior to any others. Sulfanilamide meets the greatest number of conditions successfully; mandelic acid succeeds when the necessary acidity and concentration of the drug can be obtained. After the infection is cleared, urinary stasis, if present, should be eliminated. If the infection recurs, all possible foci of infection should be investigated and cleared.—HENRY F. HELMHOLTZ. *J. Am. Med. Assoc.*, 111 (1938), 1719. (G. S. G.)

BOTANY

Chlorophyll. A review.—A. STOLL and E. WEIDEMANN. *Fortschr. Chem. org. Naturestoffe*, 1 (1938), 159–254; through *Chem. Abstr.*, 33 (1939), 3339. (E. G. V.)

Digitalis Purpurea L.—Bifurcated Inflorescence of. Only two previous references to forking of the inflorescence axis in the genus *Digitalis* could be traced and both of these relate to hybrids of which one parent was *D. lutea*. Having found the same abnormality in a plant of the *D. purpurea* the author has shown a picture and given a detailed description of this plant along with the conditions under which it was grown. The nature and the cause of the factors which are responsible for this bifurcation are discussed in detail.—COMYNS J. A. BERKELEY. *Ann. Botany*, 3 (1939), 699–717. (W. T. S.)

Gonadotropic Extracts from Green Leaves. From extracts of the dried leaves of immature grasses a fraction was obtained which produced ovulation when injected into rabbits. The chemical properties of this fraction and its instability at low temperatures simulate the properties of the gonadotropic material in anterior pituitary extracts.—M. H. FRIEDMAN and G. S. FRIEDMAN. *Am. J. Physiol.*, 125 (1939), 486–490; through *Chem. Abstr.*, 33 (1939), 3405. (E. G. V.)

Insecticides Containing Mineral Oil. The patent relates generally to insecticides suitable for use on vegetation and which comprise a continuous phase of mineral oil containing a dispersed aqueous phase such as one containing a multivalent metal soap such as aluminum stearate.—WM. B. PARKER, Assignor to CALIFORNIA SPRAY-CHEMICAL CORP. U. S. pat. 2,144,808, Jan. 24, 1939. (A. P.-C.)

Manganese—Estimation of, in Plants. Crum showed that manganese can be converted into manganate by boiling with lead dioxide and nitric acid. It is found that the colorimetric method for determining manganese by this reaction is more accurate and more sensitive in the examination of grasses, cereal and cotton plants than are the bismuthate or persulfate methods. Bibliography included.—A. V. V. IYENGAR. *Indian J. Agr. Sci.*, 8 (1938), 819–828; through *Chem. Abstr.*, 33 (1939), 3717. (E. G. V.)

Nitrogen Fixation in Soil Not Wholly a Bacterial Process. Fixation of nitrogen may not be wholly associated with bacterial activity as has hitherto been believed but can also take place under completely sterile conditions even with silica, zinc oxide, aluminum oxide, ferric oxide, etc., when they are mixed with energy materials such as glucose and others. The energy available from the oxidation is probably responsible for such fixation in the complete absence of microörganisms, and the reaction in light is much greater than in the dark.—N. R. DHAR and E. V. SESHACHARYULU. *J. Indian Chem. Soc.*, 16 (1939), 557. (F. J. S.)

Oil Seeds—Effect of High Temperatures on Vitality of. Heating seeds of *Brassica nigra* for 20 minutes at 100° causes delayed germination and a marked reduction in the rate of growth (especially during the first month) and certain morphological changes, but fewer truly dwarf plants are produced than in the case of *Sinapis alba*. It is suggested that the heat treatment inactivates the lipase of the seed, thus preventing the utilization of the fat reserves and checking growth, since the effects of the heating are analogous to those observed when part of the seed reserves is cut away before sowing. The seeds harvested from dwarf plants of *S. alba* grown from heated seed contained normal embryos but under-developed cotyledons; they all germinated within a week (that is, normally), but all except one plantlet died later. The surviving plant was undersized (not dwarf), and its inferior growth is attributed only to the lack of food reserve in the seed (small cotyledons) and not to any inherited tendency to dwarfism.—R. DAVID. *Bull. mat. grasses*, 22 (1938), 183–193; through *J. Soc. Chem. Ind.*, 58 (1939), 70. (E. G. V.)

Yeasts—Genetic Behavior of. Artificial Crossing of Yeasts under the Microscope. The mode of fertilization of yeasts is described and the formation of the zygote, which in one type, the *Zygosaccharomycetes*, becomes a spore sac and undergoes reduction division to haploid vegetative cells, and in another type, the *Saccharomycetes*, the zygote gives spore sacs melted together and directly gives a diploid vegetative stage. Here the zygote gives no direct spores but vegetates into yeast cells, which under proper conditions, *e. g.*, placing on a gypsum block, yield spore sacs with spores, then undergo reduction division. Thus the *Zygosaccharomycetes* are haploid, the saccharomycetes are diploid in their vegetative stage. Yeasts often give parthenogenetic spores. Methods of microdissection and manipulation of yeasts are described. The spore sac, with spores of 2–3 microns in diameter, can be opened and spores separated. Microphotographs of this technic are shown. Separated spores are grown on gelatin media and show characteristic colony forms. A strain of *Saccharomyces cerevisiæ* worked with showed an interesting phenomenon. On separating four spores from the spore sac they gave four different types of colonies which are pictured. Thus the classical law that a pure culture will be obtained from a single cell does not hold true. From a one-cell culture a whole group of different types could be separated. It was also found possible to bring different types of spores side by side by micromanipulation and cross them. Hybrid colonies from a smooth colony yeast and a rough colony yeast are depicted. Hybrids were obtained from *Zygosaccharomyces priorianus* and *Saccharomyces cerevisiæ*. It was concluded that there is no limit to the number of new yeast types which can be produced. This is of interest for obtaining yeasts with special properties as regards their ability to form special organic chemicals for commercial production.—O. WINGE. *Dansk Tids. Farm.*, 13 (1939), 189. (C. S. L.)

CHEMISTRY

GENERAL AND PHYSICAL

Air Drying of Solids. A review of recent investigations, with special reference to the effects of grain size, diffusion resistance and capillary properties of the material.—O. KRISCHER. *Chem. Fabr.*, 12 (1939), 23–25; through *J. Soc. Chem. Ind.*, 58 (1939), 561. (E. G. V.)

Catalytic Activity—Relation between, and Size of Particle. A mathematical treatment based on reasonable assumptions, indicates that below a certain grain size the activity of a porous catalyst is proportional to the amount present. If the grain size is increased much above this value, the activity will depend on the total external surface of the grains.—E. W. THIELE. *Ind. Eng. Chem.*, 31 (1939), 916–920. (E. G. V.)

Colorimetry—Present Status of. In reviewing the present status of colorimetry attention is directed especially to the importance of colorimetric methods of measurement as revealed in current periodicals and two comprehensive treatises; the variety of applications already made, together with the general limitations of such measurements; and a classification of the kinds of methods available for making colorimetric measurements, including suggestions for a consistent usage of terms.—M. G. MELLON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 80–85. (E. G. V.)

Electrodialysis—Constructing Apparatus for. The apparatus is constructed of stock fittings of Pyrex, joined together with standard metal joints. It is useful for purifying various hydrophilic colloids.—J. Russel and R. E. STAUFFER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 459. (E. G. V.)

Honey—Physico-Chemical Properties of. The thixotropy of honey is measured with the falling-sphere viscosimeter, the shearing force involved being calculated by means of the equation of Passinski and Rabinovitsch. The use of this equation renders this instrument as reliable for the study of anomalous systems as are the capillary-tube and rotating-cylinder instruments, the data obtained with the falling-sphere and rotating-cylinder instruments yielding a common apparent viscosity-shear force curve when plotted. In some honeys apparent fluidity increases with shearing force.—J. C. WILLIAMS. *Iowa State Coll. J. Sci.*, 13 (1938), 100–103; through *J. Soc. Chem. Ind.*, 58 (1939), 546. (E. G. V.)

Hydrogen Electrode Outfit—Simple. A simple electrode outfit is described.—W. H. HALL. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 158. (E. G. V.)

Hydrogen Ion Concentration—Determination of. The theory and methods of measuring p_H by means of indicators and electrometrically are explained.—R. S. MEDLOCK. *J. Proc. Inst. Sewage Purif.*, 1 (1938), 71–94; through *J. Soc. Chem. Ind.*, 58 (1939), 556. (E. G. V.)

***p*-Nitrophenol (Metastable), Phenacetin and Tribenzylamine—Space Group Determination of the Crystals of.** The results of space group determination of the crystals of *p*-nitrophenol (metastable), phenacetin and tribenzylamine are described. Dimensions of the unit cells of the three crystals have been accurately determined by taking X-ray rotation photographs. All three crystals belong to the space group C_{2h}^5 with $\sqcap m$ Bravis lattice. The molecules in the unit cell are asymmetric in each case.—MATA PRASAD, JAGDISH SHANKER and PRABHAKAR N. BALJEKAR. *J. Indian Chem. Soc.*, 16 (1939), 357. (F. J. S.)

Procaine Base—Surface Tension of Aqueous Solutions of Various Salts of. All solutions contained the equivalent of 0.866% of procain base.

Solutions of the hydrochloride, benzoate, *p*-aminobenzoate, *p*-aminophenylacetate, isobutyrate, tartrate and citrate had surface tensions the same or slightly lower than that of water. Solutions of the phenylacetate, α- and β-phenylpropionates, cinnamate, phenylbutyrate and pheylbutylacetate had somewhat lower surface tensions and also greater anesthetic powers.—J. RÉGNIER and R. DAVID. *Compt. rend. soc. biol.*, 127 (1938), 1223–1225; through *Chimie & Industrie*, 41 (1939), 315. (A. P.-C.)

Pycnometer—Graduated. Standard commercial graduated tubes are sealed to both ends of a U-tube of 20- to 25-cc. capacity. In use when the liquid contained in the pycnometer has reached the temperature of the bath no volume adjustment is required.—G. R. ROBERTSON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 464. (E. G. V.)

Silicic Acid—Colloidal, Electrochemical Properties of. I. Interaction with Bases. The interaction of silicic acid sols with dilute and concentrated bases has been studied. A comparison of the free and total acidities (at the first inflexion point) of the sols and those of their ultrafiltrates shows that the sols behave as strong acids. Titration curves with different dilute bases (NaOH, $Ba(OH)_2$, $Ca(OH)_2$) show inflexion points (first inflexion point) indicating full neutralization of an acid between p_H 4.5 and 5.6 (with NaOH between p_H 5.17 and 5.4; with $Ba(OH)_2$ between p_H 4.87 and 5.6 and with $Ca(OH)_2$ between p_H 4.5 and 5.5). A comparison of the slopes of the titration curves shows that the intensities with which different bases react with the sol are in the order $Ca(OH)_2 > Ba(OH)_2 > NaOH$ but the amount of acid neutralized by these bases at each of the inflexion points is the same. The potentiometric titration curves of the sol with concentrated solutions of NaOH show second inflexion points between p_H 11.0 and 11.70. The lower the silica content of the sol, the lower is the p_H at which the second inflexion occurs. The total acidity, expressed in normality per liter, calculated from the second inflexion point, shows fair agreement with the silica content of the sol expressed in Gm. mols. per liter. The evidence shows that the salt $NaHSiO_3$ is formed at the second inflexion point. The ultrafiltrates of different sols contain different amounts of dissolved silicic acid. The buffer capacity curves show only one maximum near about the point of half neutralization. This maximum value is considerably greater than that of an acid in true solution.—B. CHATTERJEE. *J. Indian Chem. Soc.*, 16 (1939), 589. (F. J. S.)

Silicic Acid—Colloidal, Electrochemical Properties of. II. Interaction with Neutral Salts. The capacities of different cations to liberate acid from colloidal silicic acid are in the order $Ba^{++} > Ca^{++} > Na^{+} > Li^{+}$, *i. e.*, in agreement with the lyotrope series. The total amount of acid liberated by $BaCl_2$, $Ba(CH_3COO)_2$, $CaCl_2$ and $Ca(CH_3COO)_2$ is considerably greater than that neutralized at the first inflexion point in the titration curve of silicic acid sol with a dilute base. At low concentrations, alkali metal cations only effect an osmotic displacement of the mobile H^+ ions. The results have been discussed in the light of the theory of electrical double layer and secondary adsorption of ions.—B. CHATTERJEE. *J. Indian Chem. Soc.*, 16 (1939), 607. (F. J. S.)

Starch—Proposed Viscosimetric Method for the Characterization of Soluble. Measurements of the viscosity of starches in aqueous solutions containing calcium thiocyanate give a satisfactory index of the extent of modification of a given starch.—W. A. RICHARDSON. *Chemistry & Industry*, 58 (1939), 464–465. (E. G. V.)

Stearic Acid Hydrosol—Electrochemical Properties of. I. For reproducible p_H measurements, coating the platinum electrode with a thin black deposit and then washing with water in a current of hydrogen has been found satisfactory. Electrometric titration of the sols with $Ba(OH)_2$ and $Ca(OH)_2$ shows that they should be regarded as a two-phase system. The salt formed by the interaction forms a separate phase. The NaOH titration curves resemble, to some extent, those of weak acid with a strong base. The maximum buffer indices, however, do not correspond to half neutralization but are shifted toward the right corresponding to the addition of larger amounts of alkali. The p_H remains constant between 6.5 and 7.0 in the $Ba(OH)_2$ titrations and between 9 and 9.5 in the NaOH titrations. The total acidity as observed from the inflexion points in the curves agrees fairly well with the stoichiometric concentration of the acid. Titration in the presence of neutral salts gives the same total acidity as that of the pure sol. Ultrafiltrates of the sol and salt mixtures give only a fraction of the total acidity of the sol.—S. MUKHERJEE and N. P. DATTA. *J. Indian Chem. Soc.*, 16 (1939), 563. (F. J. S.)

Stearic Acid Hydrosol—Electrochemical Properties of. II. The solubility of stearic acid at 35° and at 50° is 1.17×10^{-5} *N* and 5.77×10^{-5} *N*, respectively. The dissociation constant of the acid has been found to be 1.7×10^{-6} at 35° and 2.6×10^{-6} at 50°. The p_H of the sol at 50° has been found to be less than that at 35° but the total acidity, as is to be expected in the case in which the whole acid reacts, remains the same at 50°. The hydrogen ion activity of the sol increases on the addition of neutral salts. The solubility of barium and calcium stearates at 35° has been found to be 9.02×10^{-6} *N* and 6.15×10^{-6} *N* and at 50° 2.21×10^{-5} *N* and 2.33×10^{-5} *N*, respectively.—N. P. DATTA. *J. Indian Chem. Soc.*, 16 (1939), 573. (F. J. S.)

Viscosity "Flow Time" Test. Tragacanths differ so much in jelly-producing power that percentage indications do not insure proper consistency. There is need for specifications as to standard tragacanth or other gel-producing colloid and the consistency aimed at. It has been shown that viscosity of tragacanth mucilage cannot be shown by a single figure; conditions under which it is determined must be specified. The method described measures the "time elapsing until the jelly has come to rest at a certain level and measuring the angle this level assumes with the vertical and the time within which the level was assumed." This is called "Flow Time." Apparatus and procedure are described.—BERNARD FANTUS and H. A. DYNIEWICZ. *Jour. A. Ph. A.*, 28 (1939), 299. (Z. M. C.)

INORGANIC CHEMISTRY

Carbon Monoxide—Methods for Detection and Determination of. Methods in general use for the detection and determination of carbon monoxide in mine, industrial or other atmospheres are discussed, brief discriptions being given of the principles and technic of operation of each method. They include the pyrotannic acid method (available over a range of concentration 0.01–0.2%), the "hoolamite" or activated iodine pentoxide detector (semi-quant., 0.1–1.0%), the palladium chloride ampoule-type detector (semi-quant., 2–10 parts in 10,000), the normal iodine pentoxide method (0.0005–1.0%), gas-volumetric and thermal-conductivity methods and the methods involving measurement of the heat liberated in the combustion of the carbon monoxide. An account is included of the Bureau of Mines continuous carbon monoxide recorder, sensitivity 1 part of carbon monoxide in 1,000,000 parts of air,

developed primarily for determining the carbon monoxide content of the atmosphere in vehicular tunnels contaminated with automobile exhaust gases. —L. B. BERGER and H. H. SCHRENK. *U. S. Bur. Mines, Tech. Paper 582* (1938); through *J. Soc. Chem. Ind.*, 58 (1939), 36. (E. G. V.)

Halogens—Microchemical Method for the Identification of, in Organic Compounds. A microchemical procedure is described for detecting chloride, bromide and iodide, separately or in admixture. The procedure uses common reagents, and may be applied either to the solution obtained after the microfusion test for elements in organic compounds or to ordinary inorganic mixtures.—DAVID W. WILSON and CECIL L. WILSON. *J. Chem. Soc.*, (1939), 1956–1958. (W. T. S.)

Hydrogen Peroxide—Decomposition of, by Potassium Ferrocyanide. I. When a solution of $K_4Fe(CN)_6$ is illuminated by bright sunlight, a photochemical equilibrium is set up with the production of potassium aquopentacyanoferrite up to a maximum concentration. This equilibrium has been found to be reversible in the dark. The potassium aquopentacyanoferrite so produced is responsible for the phenomenon of after-effect observed in the decomposition of H_2O_2 by illuminated $K_4Fe(CN)_6$ solution. The aquo-salt is more reactive in the presence of excess of $K_4Fe(CN)_6$ than without it. The greater the time of exposure of $K_4Fe(CN)_6$-H_2O_2 mixture the greater is the velocity of decomposition of H_2O_2, whereas a solution of $K_4Fe(CN)_6$ illuminated to sunlight prior to its mixing with H_2O_2 in the dark, decomposes H_2O_2 with the same velocity irrespective of the duration of exposure. Based on these observations a mechanism of this reaction has been outlined.—BIJAN BIHARI LAL. *J. Indian Chem. Soc.*, 16 (1939), 321. (F. J. S.)

Inorganic Compounds—Preliminary Survey of, Containing Oxygen for Use in Vincents Infection. A discussion of: (*a*) manganese dioxide + hydrogen peroxide, (*b*) potassium permanganate + hydrogen peroxide + sulfuric acid, (*c*) potassium permanganate + hydrogen peroxide, (*d*) potassium permanganate + sodium hydroxide and (*e*) potassium dichromate + hydrogen peroxide.—P. S. HALEY. *J. Am. Dental Assoc.*, 26 (1939), 612–614; through *Chem. Abstr.*, 33 (1939), 3886. (F. J. S.)

Inorganic Materials—Fluorescent Analysis of. Though fluorescence as a means of analysis is still in its early stage of development, indications are that many applications will be forthcoming and that it will take its place in general inorganic analysis. The spark or arc discharge between metallic electrodes, such as iron, tungsten and molybdenum, provides an intense source of the exciting ray; next to this the quartz mercury lamp is most favored. Another source is the argon bulb though its intensity is low. In reporting results, the type of lamp, filter and distance of operation should be noted, and the fluorescent color should always be described in terms of Angstrom units. The sample may be in the solid, liquid or gascous condition. Quartz containers are best for transmitting the ultraviolet light. Fluorescence tests have been worked out for aluminum, beryllium, zinc, arsenic, tin, bismuth, manganese, cadmium, and columbium, boric acid and sulfurous acid.—C. E. WHITE. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 63–66. (E. G. V.)

Iodide of Sulfur—Investigation of. I. Sulfur monoiodide, the existence of which has been denied up to now, is claimed to be formed in a carbon tetrachloride solution when sulfur chloride is treated with potassium iodide. The dilute solution of sulfur monoiodide is yellow in color, stable at low temperatures but rapidly decomposes under the influence of light and heat to give sulfur and iodine. Sulfur iodide in carbon tetrachloride solution reacts with potassium hydroxide in an analogous manner to sulfur chloride. **II.** A study was made of the decomposition velocity of sulfur monoiodide at various temperatures. Data obtained by analytical and spectroscopic methods showed that decomposition occurred four times as rapid at 30° C. as at 0° C.—M. R. ASWATHANAVAYANA RAO. *Proc. Roy. Soc.* (London), B., 127 (1939), S 92. (W. T. S.)

Lithium—Sensitivity of the Carbonate Test for. Though the carbonate reaction for lithium is too insensitive at room temperature to be of much practical use, the increase in sensitivity when the test is performed at 100° C. is such that the reaction becomes as sensitive and useful as some other qualitative reactions. About 3 mg. is the least amount that can be detected, but by the application of micro-chemical technic a few tenths of a mg. can be detected. The other alkalis do not interfere with the tests. Ammonium salts prevent precipitation and must be removed. Nearly all other interfering cations may be conveniently removed by precipitation as carbonates in cold solution, the test then being applied to the filtrate after concentrating it to the proper volume. The carbonate test for lithium is the most nearly specific of the known precipitation reactions for lithium, though it is not nearly so sensitive as tests based upon precipitation as aluminate, arsenate, fluoride, phosphate, stearate or triple uranyl acetate. In spite of its comparatively low sensitivity it may be useful for establishing the presence of lithium as an essential constituent of an unknown material when a satisfactory decision as to the approximate amount present cannot be obtained by the usual flame or spectroscopic tests.—E. R. CALEY and A. L. BAKER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 101–102. (E. G. V.)

Manganous Sulfide—Color and Magnetic Properties of. In this work the magnetic susceptibilities of the green and the pink varieties of manganous sulfide have been measured on a Gouy's balance. It is shown that the cubic B_3 type and the hexagonal B_4 type modifications of the pink sulfide have more or less the same susceptibility value whereas the green modification gives a much higher x-value. The cause of these differences is discussed. Measurement of susceptibilities of the different preparations of MnS at different temperatures indicates that the Curie-Weiss law is applicable in their case.—S. S. BHATNAGAR, BRAHM PRAKASH and JARNAIL SINGH. *J. Indian Chem. Soc.*, 16 (1939), 313. (F. J. S.)

Metals—Isolation and Determination of Traces of. Up to this time the dithizonates of the metals silver, mercury, copper, lead, zinc and cadmium have received the most analytical attention. The metals bismuth, tin, thallium, cobalt, nickel and the noble metals gold, platinum and palladium have been considered from the standpoint of interferences in the determination of other metals, but in investigations designed to develop methods for their dithizone determinations have not been carried very far. Ferrous iron, manganese, thallic thallium and indium react with dithizone under certain conditions, but their dithizonates are of limited stability and probably of no analytical significance. The field for further investigation is still wide open. Improvements and developments in the dithizone system for the isolation and determination of traces of metals may be expected through (1) hydrogen ion concentration equilibrium studies, (2) a greater knowledge of competitive complex formations which will facilitate separations and (3) photometric transmission measurements of the dithizonate colors which utilize to a greater extent the differences in their spectral behavior.—H. G. WICHMANN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 66–72. (E. G. V.)

Paraperiodic Acid—Action of Hydrogen Sulfide on an Aqueous Solution of. The action of hydrogen

sulfide on paraperiodic acid may be represented by the following two partial equations: $6H_5IO_6 + 15H_2S = 3I_2 + 2H_2SO_4 + 13S + 28H_2O$, and $3I_2 + 3H_2S = 6HI + 3S$. The final equation is $6H_5IO_6 + 18H_2S = 6HI + 2H_2SO_4 + 16S + 28H_2O$ or $3H_5IO_6 + 9H_2S = 3HI + H_2SO_4 + 8S + 14H_2O$. The reaction starts according to the second equation after the first has been completed, *i. e.*, after the whole of paraperiodic acid has been reduced to iodine.—R. K. BAHL and SURJIT SINGH. *J. Indian Chem. Soc.*, 16 (1939), 339. (F. J. S.)

ORGANIC

Alkaloids

Aconite—Oxidation Products of Some of the Alkaloids of. The alkaloids of aconite, namely aconitine, mesaconitine and oxonitine, were reacted with HNO_3 the result being the formation of an oxidation product (I) $C_{31}H_{33}O_{13}N_3$; the corresponding diacetyl compounds were obtained from the oxidation products. The author also states that the oxidation products are identical chemically. Other investigators who worked on oxidation products from aconite submitted a formula for them; however the author claims that all these formulas are not correct. The product I is a carbonic acid and it contains an acetyl and benzoyl group. In saponifying the compound in I an acid was obtained (II) which was named nitronitrosoaconinic acid. The NO- group is attached in I at the N-atom; this N is replaced by acetylation with a $COCH_3$ group. For the oxidation product in I the author suggests the name nitronitrosoaconitinic acid with the following line formula: $(C_{15}H_{14}).(OCH_3)_3.(OH).(OCOCH_3).(OCOC_6H_5).(N\text{-}NO).(NO_2).(COOH)$. The compound oxonitine was acetylated with acetylchloride and the result was the formation of a triacetyl derivative which contained 3OH groups, similar to aconitine and mesaconitine.—H. SUGINOME. *Chem. Zentr.*, 109 (1938), 1981. (G. B.)

Alkaloidal Determination of Fluidextract of Cinchona. The alkaloidal content is determined as follows: Shake 4 Gm. of the fluidextract in a container (capacity 75 cc.) with a mixture of 10 Gm. chloroform and 30 Gm. ether and add 2.5 Gm. potassium hydroxide. Shake again for 10 minutes, add 0.5 Gm. tragacanth, and again shake for several minutes and pour the clear solution through a small cotton plug into a small flask. To 30 Gm. of the filtrate (≈ 3 Gm. of fluidextract) add 10 cc. alcohol and distil the mixture until the odor of chloroform and ether has disappeared. Dissolve the residue in 10 cc. alcohol with gentle heat and dilute with 10 cc. water and titrate with 0.1*N* hydrochloric acid using 2 drops of methyl red solution.—HANS WOJAHN. *Deut. Apoth. Ztg.*, 54 (1939), 783–784. (H. M. B.)

Alkaloidal Poisons in the Presence of Preservatives—Study of the Stability of. Reference is made to some previous work on the stability of alkaloids. The object of the present study was to determine the destructive power, on certain poisons, of substances used to preserve bodies which might contain a poison. It was thought desirable to determine stability of poisons in contact with decomposing tissue. Salts of morphine, codeine, narcotine, pilocarpine, sparteine and veratrine were the poisons used; cavity fluid, 95% alcohol, 4% formaldehyde, 1% mercuric chloride and 1% arsenic trioxide were the preservatives selected. Stomachs from freshly killed sheep were the carriers of the alkaloids. One table shows amount of alkaloidal salt, volume and kind of preservative, amount of stomach, storage conditions for 13 specimens. Other tables show results of analysis at approximately 3-month intervals of each alkaloid with preservative alone and with animal tissue. Other tables show the best preservative for each salt with and without animal tissue, in terms of per cent of alkaloid remaining at the end of two years.—CHARLES O. WILSON and L. W. RISING. *Jour. A. Ph. A.*, 28 (1939), 278. (Z. M. C.)

Alkaloidal Poisons—Semimicrocolorimetric Determination of. The method is based on the fact that solutions of Reinecke's salt are colored, and comparison of the color of the solution before and after precipitation of the alkaloid gives a measure of the amount of reagent (consequently of alkaloid) precipitated. The technic of the test as carried out on a semimicro scale is described. With alkaloids that are precipitated quantitatively with Reinecke's salt, the accuracy is of the order of 6% to 8%.—DUQUÉNOIS. *Ann. fals.*, 32 (1939), 95–97. (A. P.-C.)

Alkaloids and Their Reagents. In order to make effective use of crystal tests for alkaloids, it is necessary to use a large number of reagents, at least 100. The author proposes a plan for using the reagents systematically, classifying them and facilitating their identification, by making use of phosphomolybdic acid. A table is given showing the order of reagents in respect to precipitating power; the order of the alkaloids and their division into strong and weak bases; and the relations between reagents and alkaloids observed in testing dilute solutions containing one "phosphomolybdic acid unit" of alkaloid.—CHARLES C. FULTON. *Am. J. Pharm.*, 111 (1939), 184. (R. R. F.)

Alkaloids—Microchemical Reactions for, with a New Lead Iodide Reagent. A new reagent has been prepared depending upon the property of lead iodide to yield precipitates with certain alkaloids. Crystalline precipitates were obtained with the following: alypine, arecoline, betaine, quinidine, cocaine, cotarnine, eumydrine, homatropine, novatropine, novocaine, pantocaine, pelletierine, physostigmine, sparteine and stovaine. These are fully described and sketches for each crystalline precipitate are given. A list of alkaloids giving amorphous precipitates and an alkaloid giving no precipitates are also given. It is hoped that the reaction for cocaine, which is very sensitive, will prove valuable in differentiating it from other ecgonine derivatives.—G. H. WAGENAAR. *Pharm. Weekblad*, 76 (1939), 276. (E. H. W.)

Alkaloids of Cinchona Cuprea—Contribution to the Chemistry of the. Hydrocupreine (one of the alkaloids of *Cinchona cuprea*) can be obtained by removing one methyl group from hydroquinine. This alkaloid yields two iodomethylates: the α-form consists of colorless crystals that melt at 262° C.; the β-form is an orange-colored liquid.—F. KONEK. *Mat. Természettud. Értesitö Magyar Tudományos Akad. III Osztályának Folyóirata*, 56 (1937), 570–581; through *Chimie & Industrie*, 41 (1939), 952. (A. P.-C.)

Alkaloids of Senecio Platyphyllus. Two new alkaloids were isolated from *Senecio platyphyllus:* platyphylline, $C_{18}H_{27}O_5N$, and seniciphylline, $C_{18}H_{23}O_5N$. On hydrolysis, the former is decomposed into an aminoglycol, $C_8H_{15}O_2N$, platynecine, and platynecic acid, $C_{10}H_{14}O_4$. Thionyl chloride converts platynecine into a dichloride which, on reduction, yields a saturated base, $C_8H_{15}N$, which is identical with heliotridane. The relatively easy transition from platyphylline to heliotridane shows the existence of close structural relationships between the alkaloids of *Senecio* and those of *Boraginaceae.*—R. A. KONOVALOVA and A. P. OREKHOV. *J. Obchtch. Khim.*, 8 (1938), 273–287; through *Chimie & Industrie*, 41 (1939), 521. (A. P.-C.)

Alkaloids—Study of the Mechanism of the Reaction of Mayer's Reagent with. An exhaustive study was made with the following results: (1) An excess

of potassium iodide greatly reduces the sensitivity of the test for alkaloids. Some alkaloidal iodomercurates are much more soluble than others in an excess of potassium iodide. A method for preparing a more sensitive reagent has been devised. (2) A means of measuring turbidity has been utilized in the determination of alkaloidal iodomercurates. (3) A reagent comparable to Valser's reagent in sensitivity toward alkaloids was prepared by using 3.25 Gm. potassium iodide, 1.358 Gm. mercuric chloride and 5 cc. water and is called Fostvedt-Rogers reagent. (4) Mercuric iodide is not precipitated from this reagent when it is diluted to 20 times its volume whereas Valser's reagent does yield a precipitate when diluted to more than 3 times its volume. (5) A potassium mercuric iodide solution was prepared which was on the average twice as sensitive as Valser's reagent but was unstable both on dilution and aging. (6) Valser's reagent could not be improved in its sensitivity reaction to alkaloids by use of a concentrated solution or by the addition of more mercuric iodide. (7) Age affects Mayer's reagent and a decrease in sensitivity was noted which could be overcome by increasing the amount of reagent used. (8) The exact composition of potassium iodide solutions is not definitely established.—GERALD FOSTVEDT and CHARLES H. ROGERS. *Pharm. Arch.*, 8 (1937), 3–24. (H. M. B.)

Apoatropine—Little-Known Alkaloid of Belladonna. This alkaloid was said to be five times more active than atropine. It acts directly on the smooth muscle fibers and not through the intermediary of the nerve endings, as do atropine and hyoscine. It has no effect on the pupils or the salivary glands and is well tolerated in man in doses of 20 mg. a day. Its effect is favorable in cases of chronic encephalitis.—H. KREITMAIR and O. WOLFES. *Klin. Wochschr.*, 17 (1938), 1547; through *Chinese Med. J.*, 56 (1939), 192. (W. T. S.)

Belladonna and Stramonium—Rapid Colorimetric Method for, Including Their Preparations. The method described is based upon a quantitative application of Vitali's well-known color reaction for solanaceous alkaloids. The work was undertaken with the object of evolving a rapid method for extracting the alkaloids from small quantities of belladonna and stramonium and expeditiously completing the alkaloidal assay by means of a quantitative color test. The authors modified Vitali's test in order to render it quantitative, and it is shown that, provided the alkaloid is first dissolved in dilute acetic acid, the intensity of the color produced by the test is a function of the quantity of alkaloid present. Employing the Lovibond tintometer, the color test has been utilized for the development of a rapid alkaloidal assay of belladonna leaf, belladonna root, stramonium leaf and their galenical preparations. Essentially, the method consists of the chloroformic extraction of a small quantity of the drug (or the preparation previously absorbed on sawdust), agitation of the percolate with dilute acetic acid solution and determination of the alkaloidal concentration in the separated acid aqueous layer by means of the color test. An alkaloidal assay can be completed within an hour, or less, and the results compare favorably with those outlined by the official methods.—N. L. ALLPORT and E. S. WILSON. *Pharm. J.*, 143 (1939), 100. (W. B. B.)

Cinchona Alkaloids—Modified. VI. Niquidine.—E. M. GIBBS and T. A. HENRY. *J. Chem. Soc.* (1939), 240–246; through *Chem. Abstr.*, 33 (1939), 3385. (E. G. V.)

Cinchona Alkaloids. Syntheses in the Series of the Cinchona Alkaloids.—P. RABE and K. KINDLER. *Ber.*, 72B (1939), 263–264; through *Chem. Abstr.*, 33 (1939), 3385. (E. G. V.)

Cocaine—Microchemical Reactions of. Reactions of cocaine with a 5% solution of $K_2Cr_2O_7$ acidified with HCl, with chlorauric acid, with chloroplatinic acid and with $KPbI_3$ are little sensitive or too little specific and are much inferior to the reaction for cocaine with $KMnO_4$.—M. D. SHAIKOVA. *Farmatsiya i Farmakol.*, (1938), No. 5, 9–12; through *Chem. Abstr.*, 34 (1940), 1129. (F. J. S.)

Corydalis Ophiocarpa—Alkaloids Isolated from. The present paper is concerned with the alkaloids of one of the species of *Corydalis* and is the nineteenth in a series of papers in which are reported studies to determine whether taxonomic relationship among plants is correlated by alkaloidal content. Nine alkaloids have been isolated from *C. ophiocarpa* one of which, ophiocarpine, $C_{20}H_{21}O_5N$, is definitely new. This alkaloid is a hydroxycanadine with the hydroxyl group probably located at position 13. A second alkaloid, which may be new, was found but not characterized. Berberine and two of its tetrahydroderivatives were likewise found to be present. The presence of *l*-adlumine, which has been found in at least two other plants, was established. In addition 3 other alkaloids all of which contain the 10-membered ring, characteristic of the first, were isolated. On a chemical basis, the presence of these 9 alkaloids would classify *C. ophiocarpa* between *C. aruea* and *C. sempervirens*.—RICHARD H. F. MANSKE. *Can. J. Research*, B17 (1939), 51–57. (W. T. S.)

Corydalis Species—Examination of the Alkaloids from. In continuing his studies on the alkaloids of Fumariaceous plants to determine whether taxonomic relationship of plants is correlated by alkaloidal content M. reports the following: Chemical examination of *C. micrantha* and *C. crystallina* has shown that their relation is not as close to *C. aurea* as taxonomic classification would suggest. *C. micrantha* was found to contain protopine, *l*-tetrahydro-palmatine, capaurine, capauridine, scoulerine and three unidentified phenolic alkaloids tentatively designated as F41, F42 and F43. *C. crystallina* yielded only a small amount of total bases from which protopine, bicuculline and capnoidine were isolated.—RICHARD H. F. MANSKE. *Can. J. Research*, B17 (1939), 57–60. (W. T. S.)

Erechtites Hieracifolia—Isolation of Alkaloids from. The geni *Senecio* and *Erechtites* Raf. are closely related taxonomically. Since it is known that species of *Senecio* contain alkaloids it seemed worth while to examine a species of the *Erechtites* to determine whether or not this relationship is borne out by alkaloidal content. *E. hieracifolia* (L.) Raf., frequently called the fireweed, was found to contain a small proportion of alkaloids, two of which were isolated in a state of purity. The name hieracifoline has been proposed for the chief of these. Its similarity to the *Senecio* alkaloids is indicated by the formula $C_{18}H_{25}O_5N$ and the nature of the products which this alkaloid yielded on alkaline hydrolysis.—RICHARD H. F. MANSKE. *Can. J. Research*, A and B17 (1939), 8–10. (W. T. S.)

Ergot Alkaloids—Effects of Molecular Combinations of, on Diuresis. Sensibamine is the equimolecular compound of the isomers *l*-ergotamine and *d*-ergotaminine. In dogs ergotamine decreases fasting urine secretion while ergotaminine increases it. Both check the diuresis provoked by ingestion of sodium chloride or urea. Sensibamine increases urine flow whether fasting or after administration of sodium chloride or urea. Ergoclavine is the equimolecular compound of the isomers *l*-ergosine and *d*-erogsinine. Either ergosine or ergosinine increases aqueous diuresis while ergoclavine decreases it.—E. ZUNZ and OLGA VESSELOVSKY. *Compt. rend. soc. biol.*, 128 (1938), 1163–1165, 1165–1167; through *Chimie & Industrie*, 41 (1939), 526. (A. P.-C.)

Homeopathic Pharmacy—Application of Chromatographic Analysis in. Chromatographic analysis can be used for the identification of homeopathic preparations of hydrastis, *Berberis vulgaris*, *Berberis aquifolium*, colombo and chelidonium. The alkaloids of these drugs are only slightly adsorbed on alumina and can easily be extracted with 90% alcohol. On passing over alumina, the salts of alkaloids (except those of quaternary bases) are decomposed with liberation of the free bases.—H. NEUGEBAUER and K. BRUNNER. *Pharm. Zentralhalle*, 79 (1938), 161–168; through *Chimie & Industrie*, 41 (1939), 519. (A. P.-C.)

Hordenine Reineckate. The salt of reinecke $[Cr(NH_3)_2(CNS)_4]NH_4.H_2O$ may be applied to the determination of hordenine when the alkaloid is present in a concentration of about 0.1 Gm. per 100 cc. of solution. Hordenine reineckate is formed on the addition of an excess of a saturated solution of the reagent to a solution containing a soluble hordenine salt and having a p_H of 4 to 4.5. The precipitated compound is formed from one molecule of each of the reacting substances and contains 5 molecules of water of hydration. After drying at 40° in a vacuum over phosphorus pentoxide, the compound is a rose-colored powder, slightly soluble in water and melting at 176–178°. The alkaloid may be recovered by treating the compound with silver sulfate in acetic acid solution. The insoluble silver reineckate is removed by filtration, the filtrate is alkalinized with ammonium carbonate and the hordenine is extracted with ether.—P. GONNARD. *Bull. soc. chim. biol.* (April 1939); through *J. pharm. Belg.*, 21 (1939), 695. (S. W. G.)

Lobelia and Its Preparations—Alkaloidal Assay of. The author examined four different methods for the assay of lobelia and found them all partially or entirely unsatisfactory. The method finally adopted, which is as follows, gave satisfactory results and could be carried out rapidly: Ten Gm. of the powdered drug were mixed with 50 cc. of ether-alcohol (4:1) and shaken for a few minutes, 2 cc. of dilute solution of ammonia were added, the mixture shaken, allowed to stand for half an hour and percolation with the ether-alcohol mixture was continued until the alkaloids were completely extracted. The percolate was transferred to a separator and shaken with successive quantities of 2% sulfuric acid until the washings ceased to give any precipitate with Mayer's reagent. The mixed acid liquid was washed with 15 cc. of ether and the ether washed with 10 cc. of $N/10$ sulfuric acid which was added to the first acid liquid. This liquid was made alkaline with dilute solution of ammonia and extracted with chloroform until all the alkaloids were removed. The chloroform was distilled off until the volume was reduced to about 2 cc., 5 cc. of absolute alcohol were added and the mixture evaporated to dryness at a low temperature. Two further quantities of absolute alcohol were added, followed by evaporation to dryness, and the residue finally dried at 80° C. To the residue were added 10 cc. of $N/50$ sulfuric acid, and the mixture was allowed to stand for several hours in order to ensure complete solution of the alkaloids. The excess acid was titrated with $N/50$ sodium hydroxide, using methyl red or cochineal as indicator. The number of cc. of $N/50$ acid required to neutralize the alkaloids, multiplied by 0.00674, gave the weight of alkaloid, calculated as lobeline, in the quantity of drug taken. A slightly modified method is employed for the assay of tincture of lobelia. A table is given which shows the results of some tincture assays by the titration method as compared to the silico-tungstic acid precipitation method and the silver nitrate titration of the hydrochlorides. In the acid titration method, the importance of the rapid dehydration of the alkaloids by treatment with absolute alcohol is strongly emphasized.—H. A. CAULKIN. *Pharm. J.*, 143 (1939), 132. (W. B. B.)

Morphine—Determination of, in Opium by the Italian Pharmacopœia V. Increased time of contact up to 24 hours of the macerated opium with water leads to an increased precipitation of morphine. A decrease sets in after 24 hours. With 5- and 10-hour macerations the optimum yield is obtained with 18 and 12 hours' contact, respectively.—CAMILLA FASANO. *Boll. chim. farm.*, 77 (1938), 460–463; through *Chimie & Industrie*, 41 (1939), 952. (A. P.-C.)

Morphine—Determination of, in Poppy Heads. A given weight of the powdered heads is extracted with methanol and hydrochloric acid; an aliquot of the filtrate is evaporated to dryness, the residue is taken up in a mixture of chloroform and isopropyl alcohol in presence of ammonia; the solution is dried and evaporated to dryness in presence of hydrochloric acid; the residue is then treated as for the assay of opium (purification with lime, solution in methanol and final titration in presence of methyl orange correcting for the solubility of morphine in the mother liquor).—J. DETRIE and JEANNE LELIÈVRE. *Compt. Rend. 18me Congr. Chim. Ind., Nancy* (Sept.–Oct. 1938), 95–97. (A. P.-C.)

Morphine in Opium—Determination of. A method is proposed for determining morphine in opium based on the precipitation of the alkaloid with saturated solution of borax. The method, which is a modification of the Stuber and Klyatschkyna method, was largely experimented in parallel with the method of the Official Pharmacopœia V, French Pharmacopœia and the Tedesca Pharmacopœia.—A. ANGELETTI. *Ann. chim. farm.* (1938) 37. (A. C. DeD.)

Narcotine—Microcrystalline Oxalate and Phthalate of. Only a very few soluble salts of narcotine are known and they are difficult to isolate on account of their dissociation in aqueous solution. The oxalate is obtained by dissolving equimolecular quantities of *l*-narcotine and the bihydrate of oxalic acid in acetone and rubbing the sides of the container with a stirring rod whereupon the liquid becomes increasingly turbid and a large crystallization follows. It is filtered off, washed with acetone, air- and then desiccator-dried. It is colorless, microcrystalline, m. p. 174°, soluble in water to about 5%, giving a dextrogyrate solution, more soluble in chloroform. In 4% aqueous solution it has a rotatory power of $[\alpha]_D^{20}$ +39.5; 4% in 80% alcohol 76.1. The phthalate is formed similarly from hot 95% alcohol by cooling and shaking. It is colorless, in small twin prisms m. p. 160°, soluble in 1000 parts of water, more soluble in alcohol and chloroform. The aqueous solution is dextrogyrate in 4% chloroform solution $[\alpha]_D^{20}$ +115.—YVES VOLMAR, PIERRE DUQUENOIS and MOSES ELLERT. *Compt. rend.*, 208 (1939), 2000. (G. W. H.)

***l*-Nicotine—Occurrence of, in Asclepias Syriaca L.** The roots of *A. syriaca*, a milkweed of widespread distribution, were found to contain 0.001% of an oily base characterized as *l*-nicotine by a mixed melting point of its picrate and picrolonate with the corresponding salts prepared from an authentic sample. This strengthens the claims of other workers who have reported the isolation of *l*-nicotine from plants unrelated to the *Nicotina* species.—LEO MARION. *Can. J. Research, A and B*, 17 (1939), 21–22. (W. T. S.)

Opium—Assay of Ninety-Year-Old Sample. The sample in question was found to contain 9.72% anhydrous morphine and the author's conclusions are that the morphine content of opium does not

alter greatly under ordinary methods of storage.—HORATIO C. WOOD and ARTHUR OSOL. *Am. J. Pharm.*, 111 (1939), 380. (R. R. F.)

Poppy Alkaloid—New. The alkaloid is narcotoline, $C_{21}H_{21}O_7N$, a narcotine in which hydroxyl is substituted in place of methoxyl. It is a natural primary constituent of poppy, occurring in the dried capsules (0.05%) and also in the growing plant. It possesses no specific pharmacological action.—F. WREDE. *Forschungen u. Fortschr.*, 14 (1938), 173–174; through *Chimie & Industrie*, 41 (1939) 950. (A. P.-C.)

Quinine Iodobismuthate—Amorphous, Preparation of. The following modification of the François and Séguin procedure gives a quinine iodobismuthate, $C_{22}H_{24}N_2O_2.(BiI_3)_2.2HI$, which is more uniform in color and composition: suspend 200 Gm. of basic bismuth carbonate in 2600 cc. of boiling water and gradually add concentrated hydrochloric acid to complete solution (about 500 to 550 cc.), let cool and add 1 Kg. of potassium iodide; dissolve separately 155.5 Gm. of quinine monohydrochloride in 4 liters of boiling water, add a few cc. (about 10) of hydrochloric acid to facilitate solution and 250 Gm. of potassium iodide, and pour the solution with stirring into potassium iodobismuthate solution; let stand 2 hours, decant the clear supernatant liquid through a filter on a Büchner funnel, complete filtration under vacuum, wash the precipitate on the filter twice with 2% potassium iodide solution and with 1 liter of distilled water, and dry in the air or in the oven below 40° C.—A. MONFORT DE CASTILHO. *Boll. chim.-farm.*, 77 (1938), 149–152; through *Chimie & Industrie*, 41 (1939), 518 519. (A. P.-C.)

Senecio Alkaloids—Study of the Structure of. Senecionine is the main alkaloid of *Senecio integerrimus*, but a small amount of a new alkaloid, integerrimine ($C_{18}H_{25}O_5N$), was also found. *S. longilobus* contains longilobine ($C_{18}H_{23}O_5N$) and *S. ridellii* contains ridelliine ($C_{18}H_{23}O_6N$), both alkaloids being new. In addition to the main alkaloid of *S. spartioides*, which was identified as seneciphylline, a minor base, spartioidine ($C_{18}H_{23}O_5N$), apparently new, was obtained. Hydrolysis of the new alkaloids that were available in sufficient quantity for this purpose yielded, in all cases, retronecine and a new necic acid. Assuming that senicic acid is a derivative of isoprene, data are presented which enable the authors to propose a formula for this acid. It has been shown that chemical examination of senecio species may be used as an aid to botanical classification.—RICHARD H. G. MANOKE. *Can. J. Research*, Sec. B, 17 (1939), 1–7. (W. T. S.)

Strychnine and Brucine. IX. A description of the preparation of monobromo-isostrychnine. Suspend 5 Gm. of isostrychnine in an excess of water and add 35 cc. of 3.2% hydrobromic acid solution; shake till the isostrychnine dissolves as the hydrobromide, add bromine water drop by drop until the precipitate which forms at the start dissolves only slowly (about 95 cc. of bromine water are required); let stand 12 hours, filter and make alkaline with ammonia; wash by decantation the base which separates out, filter, dry over calcium chloride and crystallize from chloroform. The colorless crystals obtained melt at 140° C., are soluble in hot chloroform, alcohol and ether, and have a composition corresponding to the formula $C_{21}H_{21}O_2N_2Br.CHCl_3$. Chloroform is not removed by heating; it is displaced by dilute acids, more particularly hydrobromic which gives a hydrobromide that crystallizes with 1 molecule of water. The authors also prepared the benzoyl derivative of monobromo-isostrychnine, $C_6H_5COOC_{20}H_{29}ON_2Br$, and the perbromide, $C_{23}H_{28}O_3N_2Br_4$. Monobromo-isostrychnine exerts a paralyzing action on frogs. The lethal dose is 0.033 Gm. per Kg.; on rabbits it produces convulsive effects (lethal dose 0.053 Gm. per Kg.).—R. CIUSA and V. AMORUSO. *Gazz. chim. ital.*, 67 (1937), 723–727; through *Chimie & Industrie*, 41 (1939), 111. (A. P.-C.)

Essential Oils and Related Products

Bergamot Oil Crop of 1938–1939. Tables are given summarizing (1) the physical and chemical characteristics, (2) optical rotation compared to 1937–1938 and (3) linolyl acetate percentages compared to those of the preceding four years.—L. BONACCOVSI. *Am. Perfumer*, 39 (1939), No. 3, 32–33. (G. W. F.)

Camphor Basil—Essential Oil in Leaves of the. Essential oil was determined by the method of Ginzberg (*cf. C. A.*, 27, 372), in leaves cut every 2 hours. The surface area of the leaves was 17,800 sq. m. per hectare. All essential oil can be obtained in 5–6 days. The loss of essential oil per hectare of the plantation can reach 13 liters/day, depending on the meteorological conditions. The plants do not use the essential oil for their growth. Light is not directly involved in the formation of the essential oil, but serves as a source of energy for the formation of the primary products of photosynthesis; oil formation is a secondary process.—M. V. TSAREV. *Farmatsiya i Farmakol.*, (1938), No. 3, 27–33; through *Chem. Abstr.*, 34 (1940), 1129. (F. J. S.)

East Africa and Its Aromatic Plants. The oils of *Aframomum mala* K. Schum (leaves, seeds and rind), *A. amaniense* Loes. (leaves and seeds), *Cinchona* species, coleus, *Conopharyngia Holstii* Stapf, *Cymbopogon afronardus*, *Eucalyptus citriodora* Hook, geranium, *Pelargonium radula*, a Xanthoxylon species, *Brachylaena Hutchinsii*, *Hoslundia opposita*, *Pelargonium capitatum*, *Ocimum menthæfolium* Hochst. and its other species, *Ocotea usambarensis* Engl. and Mawah, are discussed including their chemical and physical constants.—ALFONS M. BURGER. *Riechstoff Ind. Kosmetik*, 14 (1939), 153–158. (H. M. B.)

Essential Oil of Matai—Constituents of. The essential oil of the New Zealand conifer *Podocarpus spicatus* has veen investigated and has been shown to contain α- and β-pinene, limonene, cadinene, an unidentified sesquiterpene hydrocarbon, a sesquiterpene ketone, sesquiterpene alcohols, a solid diterpene and a liquid diterpene. A comparison of these two latter substances with α- and β-podocarprenes from the essential oil of *P. macrophylla* is made. A comparison of the esscntial oil constituents of several *Podocarpus* species is also given. In connection with the molecular structure of the solid diterpene it has been shown that (*a*) the molecule contains two unsaturated linkings, probably of different types; (*b*) that there is a single methylene side-chain in the molecule; (*c*) that on ozonolysis a keto-acid is produced in addition to formaldehyde.—J. M. BUTLER and J. T. Holloway. *J. Soc. Chem. Ind.*, 58 (1939), 223–225. (E. G. V.)

Essential Oil of Trachyspermum Copticum L. A sample of the essential oil of *Trachyspermum copticum* L. contained approximatcly cymene 50%, dipentene and α-terpinene 25%, thymol 24% and carvacrol 1%. Thus the oil is of high quality because the thymol contains very little carvacrol and cymene can be transformed into thymol by oxidation.—N. I. LIBIZOV. *Farmatsiya i Farmakol.*, (1938), No. 4, 33–36; through *Chem. Abstr.*, 34 (1940), 1129. (F. J. S.)

Essential Oils—Diene Value as a Constant for. The determination by means of maleic anhydride of the purity of a sample of terpene containing conjugated double bonds in the molecule is possible only when diene addition proceeds completely in an un-

ambiguous manner. The determination of the proportion of the dienoid constituents in essential oils is further complicated by the fact that non-conjugated terpenes and alcohols may enter into combination with maleic anhydride. At the same time, after further investigation, the diene value, when considered as a purely empirical constant for essential oils obtained by the application of a standard method, may prove of value in the detection of diluents foreign to particular oils.—T. F. WEST. *Perfumery Essent. Oil Record*, 31 (1940), 20.
(A. C. DeD.)

Essential Oils, Synthetic Perfumes, Etc. An oil designated "genuine cinnamon bark oil" examined in 1937 was crude cinnamic aldehyde containing chlorine. Cinnamic bark oil from Ceylon, having a fine odor, had density at 15° 1.0031, specific rotation − 0° 28′, index of refraction at 20° 1.5676, aldehyde (sodium bisulfite method) 52% and phenols 40%; it was soluble in not less than 2 volumes of 70% ethyl alcohol. The high eugenol content and abnormal constants indicated distillation from a mixture of bark, twigs and leaves. A citronella oil from Ceylon had density at 15° 0.8738, specific rotation + 2° 45′, index of refraction at 20° 1.46599, acid value 0.4, ester value 7.5 (after acetylation 123.2 equivalent to 37.3% of total geraniol); it was soluble to a cloudy solution in 10 volumes of 90% ethyl alcohol. An account is given of the modifications in cultivation of the plants and technical treatment since 1912, considered with the effect of variable climatic and soil conditions which have reduced the quality and introduced variability in commercial Java citronella oils. Oils steam distilled from commercial "galbanum" resins in yields from 9.5% to 24% had density at 15° 0.8767–0.9162, specific rotation +3° 54′ to +16° 2′, index of refraction 1.48035–1.48712, acid value 0.3–1.1, ester value 8.4–26.1 (after acetylation 21.4–82.1); the oils were soluble in 0.5–5.5 volumes of 90% ethyl alcohol. It is suggested that the fresher condition of the resins explains the variation from the previously accepted figures for the oil. An oil of *Lavandula dentata* from England had density at 15° 0.9434, specific rotation +1° 14′, index of refraction 1.46717, acid value 1.1, ester value 7.5; it was soluble in not less than 0.5 volumes of 80% ethyl alcohol with opalescence. The low ester content and dextrorotation were abnormal and the oil (odor strongly resembling that of cineol) had no commercial value. The spurious nature of cheap quality marjoram oils on the market is shown in two samples having density at 15° 0.9344, 0.9139; specific rotation −6° 18′, +14° 48′; index of refraction at 20° 1.46737, 1.47485; acid value 1.9, 1.5; ester value 13.1, 28 (after acetylation 67.2, 121.3); the oils were soluble in 0.7 and 0.9 volumes of 80% ethyl alcohol, respectively. A peppermint oil produced in India had density at 15° 0.923, specific rotation +4° 31′, index of refraction at 20° 1.46717, acid value 0.4, ester value 21.5 (after acetylation 110.1), ester-menthol 6%, total menthol 33.4%, menthone 32%; the oil was cloudily soluble in 10 volumes of 70% ethyl alcohol and in not less than 1.8 volumes of 80% ethyl alcohol. In spite of the abnormal constants, probably due to effect of climate, soil or maturity of the plants, the odor was superior to that of Japanese crude peppermint oils. An African sandalwood oil (botanical origin unknown), resembling the Osyris oils distilled from E. African sandalwood, had density at 15° 0.9637, specific rotation −45°56′, index of refraction at 20° 1.50762, acid value 0.7, ester value 7.5 (after acetylation 203.5 equivalent to 95.2% of $C_{15}H_{26}O$); it was soluble in not less than 4 volumes of 70% ethyl alcohol. Oils distilled from the wood of *Amyris balsamifera*, L., showed variation according to the thickness of the billets delivered. Oils from thick billets had density at 15° 0.9593–0.9675, specific rotation +18°17′ to +39° 46′, index of refraction at 20° 1.50689–1.50937, acid value 0.4–1.5, ester value 0.9–5.6 (after acetylation 105.5–149.3), and were soluble in 1.2–18 volumes of 80% ethyl alcohol, while oils from thin billets had density at 15° 0.9459–0.9612, specific rotation +0°59′ to +29°19′, index of refraction 1.50289–1.50937, acid value 0.4–1.9, ester value 2.8–3.7 (after acetylation 81.2–133.5), and were soluble in 1.3–25 volumes of 80% ethyl alcohol. An Australian larch turpentine oil, having pleasant odor and containing α-pinene, had density at 15° 0.8607, specific rotation −13°7′, index of refraction at 20° 1.46688, acid value 0.0, ester value 0.9; 70% boiled between 158 and 162°; it was soluble in not less than 7 volumes of 90% ethyl alcohol.—SCHIMMEL & CO. A.-G. *Ann. Rept.* (1938), 18, 19, 21–24, 51, 58, 69–70, 81, 95, 97, 103; through *J. Soc. Chem. Ind.*, 58 (1939), 103. (E. G. V.)

Eucalyptus Australiana—Essential Oils of, and Its Physiological Forms. *E. Australiana* growing in Victoria includes a number of varieties whose essential oils differ in chemical composition from those of *E. Australiana* growing in New South Wales. The occurrence of piperitone in quantity in a tree of this group is recorded for the first time. The oil of *E. Australiana* growing at Alexandra, about 100 miles from Melbourne, had a similar composition of that from the same species distilled in New South Wales. A comparison of the oil of *E. amygdalina* obtained in Tasmania showed marked agreement with the oil from one of the Victorian varieties of *E. Australiana*. A thorough botanical investigation is being made of the Victorian trees.—A. R. PENFOLD and F. R. MORRISON. *J. Proc. Roy. Soc. N. S. W.*, 71 (1938), 357; through *Quart J. Pharm. Pharmacol.*, 12 (1939), 279. (S. W. G.)

Oil of Cumaru (Torresia Cearensis). Oil of cumaru extracted in a soxhlet with carbon tetrachloride produced large amounts of cumarin, an anhydride of cumaric acid. Physical constants were determined as well as the separation of saturated acids from unsaturated acids but no further chemical analysis was made. It was found to contain the following acids: stearic 6.2%, palmitic 5.4%, oleic 57.4% and linoleic 13.7%. Oil of cumaru offers identical results to oil of tonka in the treatment of tuberculosis. ANTENOR MACHADO and ANTENOR PEIXOTO. *Rev. quím. farm.*, 3 (1938), 12.
(G. S. G.)

Oil of Cymbopogon Densiflorus Stapf. Steam distillation of the flower heads yielded about 2% of yellowish, rather viscous oil, with an odor resembling that of oil of gingergrass and having the following characteristics: specific gravity at 15° C. 0.9304, optical rotation at 25° C. 59° 30′, refractive index at 20° C. 1.4683, acid value 2.10, ester value 8.42, ester value after acetylation 141.68, ester value after formylation 196.40, soluble in 1 volume of 75% alcohol with slight opalescence above 9 volumes, soluble in 0.5 volume of 80% alcohol without turbidity, aldehydes and ketones (by oximation) 1 Gm. of oil = 0.025 Gm. potassium hydroxide. The oil reduces ammoniacal silver nitrate.—ÉTABLISSEMENTS ANTOINE CHIRIS. *Rev. marques parfum. France*, 17 (1939), 81.
(A. P.-C.)

Oil of Lavender—French Presence of Ocimene in True. An oil of lavender having density at 15° 0.8842, specific rotation −7°36′, index of refraction at 20° 1.4625, acid value 0.4, ester value 111, esters (as linalyl acetate) 38.85%, soluble in 2.5 volumes of 70% ethyl alcohol, is shown to contain ocimene in the higher-boiling fractions. The ocimene fraction is readily oxidized to a viscous substance with high index of refraction and its presence probably

explains the change in lavender oils with age. The tests for genuine oils proposed by Ripert are criticized in the light of results for numerous authentic oils when (1) the weight of dry extract (non-volatile at 100°) was less than 3% in fresh but more than 3% in stored oils; (2) index of refraction for initial fractions was frequently less than 1.4700, decreasing in oxidized oils; (3) the ketone content of the first 5% of initial distillate was more than 8–9% and some genuine oils contain traces of camphor.—L. CRABALONA. *Recherches*, 2 (1938), 155–165; through *J. Soc. Chem. Ind.*, 58 (1939), 663. (E. G. V.)

Oil of Mountain Savory (Satureia Montana L.). Oils obtained by steam distillation (1) in 0.333% yield from fresh grass in full bloom, (2) in 0.1477% yield from dried grass, and (3) in 0.1% yield from 1000 Kg. of grass had the following characteristics, respectively: specific gravity at 15° C. 0.938, 0.914 0.9207; optical rotation −1° 50′, −2° 10′, −3° 40′; refractive index at 20° C. 1.5065, 1.4963, 1.4983; soluble in 1, 6, 1.4 volumes of 80% alcohol; phenols (determined by means of cold 5% sodium hydroxide solution) 56%, 25%, 33%; ester value of the non-phenolic fraction −, −, 11.22; acetyl value of the non-phenolic fraction −, −, 72.95; ester value of the non-phenolic fraction after cold formylation −, −, 84.17. Oil (3) had the following composition: phenols 30.4% (carvacrol, thymol, an unidentified phenol giving a dinitrobenzoate with melting point 93° C.), acid 0.43% (acetic unidentified solid acid with melting point 56° C.) ketones 0.3% (*l*-carvone, *l*-menthone), alcohols 25% (*l*-linaloöl, *l*-terpineol, *d*-borneol, dihydrocuminic alcohol), terpenes 33.7% *p*-cymene).—M. G. IGOLEN and D. SONTAG. *Rev. marques parfum. France*, 17 (1939), 109–111. (A. P.-C).

Orange Leaf Water—Oil Obtained from. Extraction with petroleum ether or benzene of the aqueous distillate obtained on direct-steam distillation of orange leaves and twigs yielded an oil in which the following were identified: 0.2% basic products (methyl anthranilate, quinoleine), 0.5% phenols (guaiacol, *p*-cresol, eugenol), 0.7% acids (isovalerianic, lauric, myristic, stearic, cinnamic), 1.7% aldehydes (benzoic, lauric), 75% alcohols (*l*- and *d*-linaloöl, *d*-α-terpineol, geraniol, citronellol, nerolidol, farnesol), 17% terpenes (dipentene, limonene).—MME. M. G. IGOLEN. *Rev. marques parfum. France*, 17 (1939), 55–57, 79–81. (A. P.-C.)

Phellandrenes—Occurrence of, in Some Essential Oils. Under suitable conditions β-phellendrene yields a nitrosyl chloride, $C_{10}H_{16}ONCl$, of which the solution in chloroform shows gradual downward mutarotation with decomposition to a red oil from which the semicarbazone of $\Delta^{1:5}$-dihydrocuminaldehyde has been isolated. The ease with which the compound passes into the oxime of $\Delta^{1:5}$-dihydrocuminaldehyde precludes the preparation of nitrolamines and indicates that the addition of nitrosyl chloride occurs to the exocyclic double linking. No crystalline material could be isolated from α-phellandrene on similar treatment, and its formation can, therefore, be utilized to indicate the presence of β-phellandrene in mixtures of the two isomerides which according to recent evidence frequently occur naturally. The occurrence of *d*-α-phellandrene in Ceylon cinnamon leaf oil and *d*-β-phellandrene in English archangelica and African ginger oil indicated by reactions with maleic anhydride and with nitrosyl chloride has been confirmed by classic methods.—T. F. WEST. *J. Soc. Chem. Ind.*, 58 (1939), 122–125. (E. G. V.)

Volatile Oil in Sage. Yields of oil, and specific gravity at 25° C., optical rotation at 25° C., refractive index at 20° C., acid number and ester of the oil, are given for 11 samples of Dalmatian and 11 samples of Greek sage. Oil from Dalmatian sage always had a positive rotation and that from Greek sage a negative rotation; this characteristic would be of value in distinguishing between the two varieties. The oil yield generally is greater from the Greek than from the Dalmatian sage. The variations in the acid and ester numbers were not considered significant. On allowing coarsely ground sage to stand 7 months in the laboratory in open pans, there was a significant loss in volatile oil, indicating that long exposure may cause loss of a material proportion of the oil.—J. F. CLEVENGER. *J. Assoc. Official Agr. Chem.*, 22 (1939), 683–684. (A. P.-C.)

Glycosides, Ferments and Carbohydrates

Agar Agar—Isolation of Derivatives of 3:6-Anhydro-*l*-Galactose from. Details are given of investigations (some of which were reported briefly in *Nature*, 142 (1938), 797, 1076) constituting independent proof of the work of Hands and Peat (*Ibid.*, page 797). The synthesis of 2:4-dimethyl 3:6-anhydro-*l*-methyl-*d*-galactoside is described and this compound and other derivatives of the parent sugar are known to be enantiomorphs of the corresponding derivatives prepared from methylated agar. It is concluded that the 3:6-anhydro-*l*-galactose units are preformed in agar.—I. A. FORBES and E. G. V. PERCIVAL. *J. Chem. Soc.*, (1939), 1844–1849. (W. T. S.)

Aspartic and Glutamic Acids—Decarboxylation of. The legume bacteria split quantitatively a carboxyl group from *l*-aspartic and *l*-glutamic acids (p_H 7) in the presence of toluene. These organisms do not decarboxylate any other amino acids. It appears, however, that the legume bacteria must contain two different amino acid decarboxylases, aspartic decarboxylase and glutamic decarboxylase, because plant material (dried beet powder, for example) decarboxylates glutamic but not aspartic acid.—A. I. VIRTANEN, P. RINTALA and T. LAINE. *Nature*, 142 (1938), 647; through *Chem. Abstr.*, 33 (1939), 2165. (E. G. V.)

Carbohydrate and Minerals in Their Importance for Metabolic Disturbances of Pregnancy.—H. ALBERS. *Klin. Wochschr.*, 17 (1938), 1792–1795; through *Chem. Abstr.*, 33 (1939), 2197. (E. G. V.)

Carbohydrates and Glucosides—Chemistry of. Emphasis is placed on the chemistry of complex polysaccharides.—E. F. ARMSTRONG. *Ann. Rev. Biochem.*, 7 (1938), 51–76; through *Chem. Abstr.*, 33 (1939), 3765. (E. G. V.)

Glucosides of Digitalis Lanata. II. The criterion for comparison of the cumulative action of the glucosides was the interval in which the minimum lethal dose remained independent of the rate of injection. The following gradation of this power, in decreasing order of magnitude, was obtained: digilanide C, total digilanide, digilanide A, digilanide B.—A. RABBENO. *Boll. soc. ital. biol. sper.*, 13 (1938), 169–171; through *Chimie & Industrie*, 41 (1939), 519. (A. P.-C.)

Glucosides—Thermal Decomposition of a Few. Acetyl derivatives of glucosides decompose on heating under reduced pressure, with rupture of the glucosidic bond. The resulting compounds are acetylated aglucon having free hydroxyl group and an unsaturated anhydro sugar. In this way, triacetylhydroxy-2-rhamnal, melting 74°, was obtained from quercitrin. In the case of phlorizin, the products of decomposition undergo farther transformations, resulting in derivatives of phloretin and β-pentaacetylglucose.—Z. JERZMANOWSKA and S. KLOSOWNA. *Roczniki Chem.*, 18 (1938), 234–243 (in German, 243–244); through *Chem. Abstr.*, 33 (1939), 3764. (E. G. V.)

Glycosides—Recent Tendencies in the Synthesis of. A review.—G. ZEMPLEN. *Fortschr. Chem. org. Naturestoffe*, 1 (1938), 1–23; through *Chem. Abstr.*, 33 (1939), 3339. (F. J. S.)

Honey—New Method for Testing, for Starch Syrup. The method is based on the dissimilarity of starch dextrin and honey behaviors toward glacial acid. Honey gives a clear solution in acetic acid. Separation of dextrin takes place, however, if the honey has been adulterated with any considerable quantity of starch syrup. The test is made with 4–5 Gm. of the honey sample and 1 cc. of acetic acid.—P. N. RAIKOV. *Z. anal. Chem.*, 116 (1939), 40–43; through *Chem. Abstr.*, 33 (1939), 3909. (E. G. V.)

Honeys—Examination of, of the Year 1937 for Diastase. The diastase numbers (Gm. of honey necessary to hydrolyze 1 Gm. starch (Zulkowsky) in 1% solution at 40° in 1 hour) of 298 genuine and 7 sugar-fed honeys were determined. Honey solution, 0.1–0.8 cc. of 10% solution made up to 0.8 cc. in 8 test-tubes, was heated at 40° for 1 hour with 1 cc. saturated toluene water and 0.2-cc. 1% starch solution, and after cooling it was tested with 0.2 cc. of 0.01*N* potassium iodide solution, only the light red and yellow colors being considered indications of complete hydrolysis. The test was worthless when applied to acid honeys because of the possible reaction of yeast and formation of additional diastase. The p_H of the honey samples was close to 5.2. The average diastase number for genuine honeys was 17 and 94.7% of these were between 15 and 20. Sugar-fed honeys, in general, showed higher values or lower diastase contents, and artificial honeys, no diastase. Diastase in honey seemed to be more heat-resistant than in water solution, the effect on the enzymes being first noted at 85°.—T. VON FELLENBERG and W. RUSIECKI. *Mitt. Lebensm. Hyg.*, 29 (1938), 307–311; through *Chem. Abstr.*, 33 (1939), 3477. (F. J. S.)

Pepsin—Action of Iodine and Hypoiodous Acid on. When iodine acts on pepsin the initial ratio of fall in Folin blue value to fall in peptic activity decreases with increasing p_H and temperature, reaching a very low figure at p_H 6 and 38° C. The same occurs with "diazopepsin," in which the reactive tyrosine groups have been reacted with HNO_2. When HOI acts on pepsin the initial ratio of fall in Folin blue value to HOI concentration is much lower than for tyrosine. The amount of HOI required to just change with Folin blue value destroys peptic activity. It was concluded that some groups other than tyrosine are responsible and reasons were given for excluding other amino acids.—J. ST. L. PHILPOT and P. A. SMALL. *Proc. Roy. Soc.* (London), B, 127 (1939), S 80. (W. T. S.)

Rice Starch—Molecular Constitution of. XXXII. Rice starch, in common with all other starches hitherto examined, contains a repeating unit composed of a straight chain of 24–30 glucose residues. Independently of the mode of preparation of the methyl derivative—whether the starch grain is methylated directly in air or in nitrogen, or whether the methyl derivative is prepared *via* the acetate—and irrespective of the molecular weight of the methylated starch, the percentage of end-group (tetramethyl glucose) obtained on hydrolysis remains unchanged. The observed proportion of end-group cannot therefore be explained by random hydrolysis of long main chains of similarly united residues, and it is concluded that viscous methyl starches are composed of a large number of repeating units joined together laterally, forming side chains. In support of this view, a viscous methyl starch containing some 80 repeating units (mol. wt. approximately 500,000) has been disaggregated by controlled hydrolysis into a non-viscous, essentially homogeneous methyl derivative, which, on further methylation to etherify the hydroxyl groups liberated during the disaggregation process, gives the fully methylated derivative. Osmotic pressure and ultracentrifuge measurements show that the latter has a molecular weight corresponding to about 3 repeating units (90 glucose residues) and on hydrolysis the methylated disaggregated derivative gives precisely the same amount of tetramethyl glucose as do the viscous derivatives, but the yield of dimethyl glucose is now very small. Consideration of the conditions of the disaggregation process leads to the conclusion that in the starch molecule, the repeating units, each consisting of a chain of 30 glucose residues, are linked to a non-terminal glucose residue of another unit by primary valences of the glycosidic type. The relationship between viscosity data and molecular weight in the methyl starch series is considered and an empirical method is suggested for the utilization of viscosity results in the determination of approximate molecular sizes.—E. L. HIRST and G. T. YOUNG. *J. Chem. Soc.*, (1939), 1417–1482. (W. T. S.)

Saponin—Presence of a, in Melilotus Albus and Its Identification. The saponin found in this plant belongs to "type 11," its hemolytic effect being exerted in acid medium (p_H 5.6). The saponins of spinach and fodder beets belong to the same type.—E. FUNCK. *Mikrochem.*, 24 (1938), 262–264; through *Chimie & Industrie*, 41 (1939), 954. (A. P.-C.)

Saponins—Comparative Study of the, of Radix Saponariæ Alba and of Horse Chestnuts. Physical, chemical and physiological experiments proved that the saponin of white soap root could perfectly be replaced in medicine by the saponin of horse chestnut. Though the hemolytic effect of the former is greater, it should be noted that this property depends to a considerable extent on the method of preparation and purity of the product.—M. ROBERG. *Pharm. Zentralhalle*, 79 (1938), 325–328, 347–354; through *Chimie & Industrie*, 41 (1939), 953. (A. P.-C.)

Sophoricoside—Presence of, in the Fruit of Sophora Japonica L. The preparation and properties of sophoricoside are described. By acid hydrolysis it yields 43.8% of glucose and 60.8% of genisteol. Sophoricoside hexaacetate, obtained from sophoricoside and acetic anhydride, crystallizes readily from alcohol and acetic acid and melts at 230° C. Sophoricoside is a β-glucoside of genisteol but has quite different properties from genitoside (genistin), another β-glucoside of genisteol found in soy-beans.—CHARAUX and J. RABATÉ. *Bull. soc. chim. biol.*, 20 (1938)454–458; through *Chimie & Industrie*, 41 (1939), 723. (A. P.-C.)

Sugars—Microdetermination of, in Plant Samples. An accurate determination of sugars in fresh samples equivalent to 50–100 mg. dry weight is possible. Rub the sample fine with 0.1 Gm. calcium carbonate in a glass mortar, and transfer to a test-tube with about 8 cc. of water. Heat for 5 minutes in boiling water, cool, after 30 minutes heat again, keep on ice until the next day, and repeat the heating as before. To the hot mixture add 4 cc. 96% ethyl alcohol, cool, filter into a 50-cc. volumetric flask and wash 3 times with 4 cc. of 10% ethyl alcohol, then make to mark. Determine the directly reducible sugars (*A*) in a 5-cc. aliquot of this extract by the Hagedorn-Jensen method. To a second 5-cc. aliquot add 1.2 cc. 20% sulfuric acid and heat at 70° for 5 minutes for inversion. Neutralize exactly with 10% sodium hydroxide solution and determine reducing sugars (*B*) as before. $(B - A) \times 0.95$ = sucrose. To a third 5-cc. portion add 5 cc. water, 2 cc. Sorensen's phosphate buffer, p_H 6.5, and 2 cc. of a filtered 0.2% suspension of fresh yeast. Maintain at 30° for 40–44 hours,

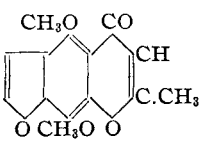
then determine reducing sugars (*C*). (*A* − *C*) = monosaccharides. Blank experiments must be run; the correction with the last determination is especially large. Thirteen references are given.—F. ALTEN and E. HILLE. *Bodenkunde u. Pflanzenernähr.*, 9–10 (1938), 696–707; through *Chem. Abstr.*, 33 (1939), 2070. (E. G. V.)

Trifolium Repens—New Constituents of. The authors make reference to the work of other investigators, who were able to isolate from *Trifolium repens* two quercitin glucosides: trifolin and isotrifolin. However, the authors were able to isolate a new quercitin glucoside, either isoquercitin or quercitin-3-glucoside. The isoquercitrin derivative, which was isolated from morus leaves, was identical with that obtained from trifolium flowers. Trifolin and isotrifolin are identical substances. Isoquercitin retains 4 molecules of water of crystallization soon after filtering; $^1/_2$ molecule of water of crystallization was lost after four hours' exposure and finally another $^1/_2$ molecule of water was lost after the crystals were exposed to the air for a period of 50 hours. However, the glucoside remained stable with 3 molecules of water of crystallization. At a temperature of 100–118° in vacuum and over P_2O_5, the remaining 3 molecules of water were removed; the dried crystals are hygroscopic and consequently form a hydrate by absorbing $^1/_2$ molecule of water. The behavior of the isoquercitin compound corresponds exactly with the compound obtained from the leaves of uva ursi. In conclusion the authors state that the reason the water molecules split off in the order named, is the temporary formation of the two glucosides trifolin and isotrifolin during the process of losing the molecules of water of crystallization.—S. HATTORI, M. HASEGAWA and K. HAYASHI. *Chem. Zentr.*, 109 (1938), 1980. (G. B.)

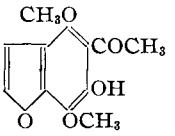
Other Plant Principles

Acorus Calamus—Studies on the Essential Oil from the Rhizome of. I. Isolation and Examination of Calamol. From the rhizome of *Acorus calamus* an oily substance, calamol ($C_{12}H_{18}O_3$) has been extracted. It was found to be an allyltrimethoxybenzene derivative and it yields a tetrabromo derivative. Calamol by the action of alkali isomerizes into *iso*calamol, both of the isomers yielding upon oxidation the same calamonic acid ($C_{10}H_{12}O_5$), a trimethoxybenzoic acid, isomeric with asaronic, trimethoxypyrogallic or trimethylgallic acids, but not identical with any of them.—MUHAMMAD QUDRAT-I-KHUDA, ASUTOSH MUKHERJEE and SUBASH KUMAR GHOSH. *J. Indian Chem. Soc.*, 16 (1939), 583. (F. J. S.)

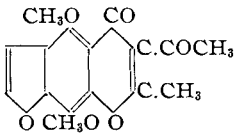
Ammi Visnaga—New Constituents of. The drug *Ammi visnaga* was extracted with ether in the usual manner. From the ether extract a new constituent was isolated which was named kellin ($C_{14}H_{12}O_5$). This constituent occurs in the plant to the extent of 0.4%; m. p. 154–155°. Kellin is probably similar in properties to the compound visamin which has the line formula $C_{11}H_{10}O_4$. In reacting kellin with an alkali it was split up to form kellinon, $C_{12}H_{12}O_5$, and an acetic acid compound which was later identified as acetanilide. It was also noted that during the splitting up of the molecule, two molecules of water were taken up instead of one. After a careful analysis of the compound kellin, the authors recommend the following structural formula for it:



For the compound kellinon the structural formula

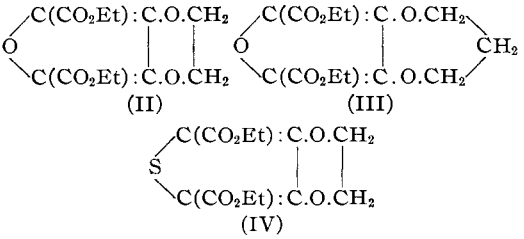


is also recommended. A partial synthesis in obtaining kellin from kellinon was succesfully accomplished with the result that it clarified the close relationship of these two compounds. When kellinon is heated with acetic-acid anhydrite and sodium acetate, a new compound is yielded which has the following structural formula:



The authors conclude that other investigators isolated some bitter constituents from the same plant, but that these constituents were never identified chemically.—E. SPATH and W. GRUBER. *Ber.*, 71 (1938), 106; through *Chem. Zentr.*, 109 (1938), 1987. (G. B.)

Cantharidin—Attempts toward the Synthesis of. II. In view of the previous unsuccessful attempt to synthesize a desoxycantharidin structure from cyclohexane compounds having the necessary *o*-substituents, attention was directed to methods involving the use of suitable furan compounds. Diethyldiglycolate (60 Gm.) was condensed with 46 Gm. ethyl oxalate in the presence of 16 Gm. sodium and 400 cc. anhydrous ethyl alcohol, giving 50% of diethyl-3,4-dihydroxyfuran-2,5-dicarboxylate (I). The disodium derivative (30 Gm.) of I was condensed with excess (300 Gm.) ethylene bromide giving, after removing the excess of ethylene bromide by steam distillation, 10 Gm. of alkali-insoluble, granular product, $C_{12}H_{14}O_7$, melting point 174–175°, from dilute alcohol, which gives no color with aqueous ferric chloride and forms no semicarbazone, and to which the structure II is assigned on the basis of the resistance of its dicarboxylic acid melting point 316°, to decarboxylation. Similar condensation of the disodium derivative of I with 1,3-dibromo-propane gave a very poor yield of III. Likewise, condensation of the disodium derivative (26 Gm.) of diethyl-3,4-dihydroxythiophene-2,5-dicarboxylate with excess ethylene bromide gave a very poor yield of the compound IV.



—P. C. GUHA and B. H. IYER. *J. Indian Inst. Sci.*, 21A (1938), 115–118; through *Chem. Abstr.*, 33 (1939), 2134. (E. G. V.)

Carotene—Determination of. A collaborative study was made of the Peterson-Hughes modification of the Guilbert method (technic described in detail in *J. Assoc. Official Agr. Chem.*, 22 (1939), 79) and of the Fraps method in which ether is used instead of petroleum ether for extraction of the carotenoids; with both methods the amount of

carotene in solution was determined spectrophotometrically, colorimetrically against a 0.1% potassium dichromate standard, and colorimetrically against a 0.036% potassium dichromate standard solution; a few determinations were also made by means of a photoelectric colorimeter. Results obtained with the spectrophotometer were highest and showed best agreement among the collaborators; results by the photoelectric colorimeter were in satisfactory agreement with those obtained with the spectrophotometer. The 0.1% dichromate standard seems preferable to the 0.036% standard; but for greater reliance it should be standardized by several chemists in comparison against β-carotene and the average value taken.—V. E. MUNSEY. *J. Assoc. Official Agr. Chem.*, 22 (1939), 664–673. (A. P.-C.)

Carotene—Oxidation of. Oxidation of carotene by oxygen is dependent on the presence of a catalyst of the type of oxidase. With radish-juice oxidases, optimum effect is obtained at p_H 5.2; with those of potato, the optimum p_H is 5.2 to 6.2. Ultraviolet light rapidly decomposes carotene in pure aqueous colloidal solutions and in petroleum ether extracts but in most cases does not affect it in vegetable juices.—V. A. KIRSANOVA. *Biokhimiya*, 3 (1938), 191–201; through *Chimie & Industrie*, 41 (1939), 984. (A. P.-C.)

Herba Rutæ—Coumarin-Like Constituent of. In an earlier article (*Pharm. Acta Helv.*, 13 (1938), 45) the author reported the isolation of an impure compound having a coumarin-like odor. For further investigation of this compound, 5 Kg. of Herba Rutæ were extracted and yielded 3 Gm. of colored crystals melting 125–140°. The compound was purified chromatographically by passing a benzene-petroleum ether solution of the crystals through aluminum oxide. Two zones were obtained: a small upper zone fluorescing blue and a large lower zone fluorescing yellow. The substance I from the upper zone after elutriation and crystallization melted 191–192° while that from the lower zone melted 115–140°. Substance I was not bergaptene but showed lactone properties. Elementary analysis gave $C_{14}H_{10}O_5$ as the probable formula for substance I. Sublimation of substance II at 0.05 to 0.1 mm. at 95–100° gave crystals melting 125–126°. The elementary analysis gave $C_{12}H_8O_4$ as the molecular formula of the substance.—H. MÜHLEMANN. *Pharm. Acta Helv.*, 13 (1938), 300. (M. F. W. D.)

Didymocarpus Pedicellata—Constituents of. IV. Isolation of Two New Coloring Substances and Their Relationship to Pedicin. A second isomer of pedicin, pseudo-*iso*pedicin, $C_{18}H_{18}O_6$, and a new coloring substance pedicidin, $C_{37}H_{36}O_{11}$, have been isolated from *D. pedicellata* and characterized. Pedicin can be converted into pseudo-*iso*pedicin by Kostanecki's method and *iso*pedicin was found to be transformed into pseudo-*iso*pedicin on long storage. The mutual relationship of the three isomers of pedicin has been discussed. Pedicidin is probably a condensation product of the simpler coloring substances.—SHARIFUDDIN WARSI and SALIMUZZAMAN SIDDIQUI. *J. Indian Chem. Soc.*, 16 (1939), 519. (F. J. S.)

"Do" Tree (Mansonia Altissima A. Chev.)—Existence of a Toxic Bitter Principle in Bark of the. The bark contains a very toxic, very bitter substance, not an alkaloid, which was not obtained in pure crystalline form. The method of extraction is described.—M. MASCRE and R. PARIS. *Compt. rend. soc. biol.*, 128 (1938), 1004–1006; through *Chimie & Industrie*, 41 (1939), 952. (A. P.-C.)

Erythrina Cristagalli—Active Principle of. *Erythrina cristagalli* is a plant which contains a curarizing principle. Hypaphorine (tryptophan betaine) has been isolated from the seeds of *Erythrina cristagalli*. The flavianate, m. p. 235°, can be used for its identification.—V. DEULOFEU, E. HUG and P. MAZZOCCO. *J. Chem. Soc.*, (1939), 1841–1842. (W. T. S.)

Flavoring Constituents of Commercial Flavors—Identification of. IX. Determination of β-Ionone when 1 to 10 Mg. Is Present. A detailed description is given of the technic of the previously described method (*J. Assoc. Official Agr. Chem.*, 22 (1939), 378) modified so as to be applicable to quantities of less than 10 mg. of β-ionone. The procedure gave good results, even in presence of interfering substances.—JOHN B. WILSON. *J. Assoc. Official Agr. Chem.*, 22 (1939), 690–693. (A. P.-C.)

Flavoring Constituents of Commercial Flavors—Identification of. VIII. Semimicrodetermination of the Amido Nitrogen Atom in Semicarbazones. A detailed description is given of the technic of an adaptation to semimicro scale of Veibel's method (*Bull. Soc. Chim. France*, 41 (1927), 1410). Results obtained on several semicarbazones were very close to theoretical and of the same order as obtained by the macro method.—JOHN B. WILSON. *J. Assoc. Official Agr. Chem.*, 22 (1939), 688–690. (A. P.-C.)

Phellandrene Nitrosites—Preparation and Properties of. The α- and the β-nitrosite of *d*-α-phellandrene from elemi oil have been prepared by the method of Read and his co-workers (*J. Chem. Soc.*, (1923), 1657). The properties and mutorotation effects of these compounds are described and a method for the transmutation of the β-nitrosite into the α-nitrosite is outlined.—P. A. BERRY, A. KILLEN MACBETH and T. B. SWANSON. *J. Chem. Soc.*, (1939), 1418–1421. (W. T. S.)

Phytin—New Method for the Separation and Estimation of. Dry defatted plant tissue is extracted with 10% trichloroacetic acid. The solution is treated with enough alkaline magnesia mixture to precipitate all the inorganic phosphate and phytin together. The precipitate is dissolved in 10% trichloroacetic acid solution and an equal volume of 25% calcium acetate solution is added. The calcium salt of phytin precipitates while the other phosphates remain in solution. The accuracy of the method is somewhat uncertain.—E. MICHEL-DURAND. *Bull. soc. chim. biol.*, 20 (1938), 413–422; through *Chimie & Industrie*, 41 (1939), 524. (A. P.-C.)

Pyrethrum Products, Derris and Cubé—Analysis of. A collaborative study was made of the determination of rotenone in derris and cubé powder by the chloroform extraction or crystallization method and by the Jones titration method. The former gave good results on both derris and cubé samples; several of the collaborators experienced difficulty with the second method, and it will be studied further. A collaborative study was made of the assay of pyrethrum powder and of pyrethrum extracts in mineral oil: for pyrethrin I by Seil's method (technic described in detail) and by the mercury-reduction method; for pyrethrin II by a method (technic described in detail) consisting essentially in rendering the residue from the steam distillation of the Seil method (or the aqueous residue from petroleum ether extraction of the mercury-reduction method) alkaline with sodium bicarbonate, extracting with chloroform (which is then discarded), acidifying with hydrochloric acid, saturating with sodium chloride, extracting with ether, evaporating the ether, dissolving the residue in neutral alcohol and water and titrating with fiftieth-normal sodium hydroxide solution in presence of phenolphthalein; 1 cc. of fiftieth-normal alkali = 0.00374 Gm. pyrethrin II. On pyrethrum

powder both methods gave results agreeing fairly closely, though some variations were too great. On the mineral oil extract, the mercury-reduction method gave more consistent results for pyrethrin I than the Seil method; results for pyrethrin II showed rather wide variation, probably due to incomplete removal of the esters in the preliminary steam distillation.—J. J. T. GRAHAM. *J. Assoc. Official Agr. Chem.*, 22 (1939) 572–578. (A. P.-C.)

Slippery Elm Bark Mucilage—Study Concerning the Constitution of. In connection with some work on pectic materials the mucilage of *Ulmus fulva* (slippery elm bark) has been shown to yield an aldobionic acid identical with that isolated from flax seed mucilage. Complete methylation of the aldobionic acid by the thallium process produced a derivative which on hydrolysis gave 2:3:4-trimethyl-*d*-galacturonic acid and 3:4-dimethyl-*l*-rhamnose in molecular properties. From this it was judged that the aldobionic acid was 2-*d*-galacturonide-*l*-rhamnose identical with that obtained from flax seed mucilage. It was not determined whether the galacturonido link is of the α- or β-type. Information concerning this and the nature of the ring structure of the rhamnose portion will be sought by the authors in a future study.—R. E. GILL, E. L. HIRST and J. K. N. JONES. *J. Chem. Soc.*, (1939), 1469–1471. (W. T. S.)

Theobroma Cacao Linné—Unsaponifiable Constituents of the Germ and Shell Fats from Seeds of. The examination of the unsaponifiable matter of cacao germ fat is described in greater detail. The unsaponifiable matter from the shell fat is somewhat similar, and has been separated by cold light petroleum into solid crude sterols (A) and a liquid portion (B); these have been further analyzed by the use of chromatographic methods. A indicates a small amount of aliphatic hydrocarbons, stigmasterol and a mixture of sitosterols (melting point 135.8–136.8°; acetate melting point 122–124°) consisting probably of α- and β-sitosterols. B contained 10% of ordinary phytosterols, a hydrocarbon fraction, melting point 63.5–63.8° (consisting, as in the case of the same product from the germ oil, probably of a mixture of hydrocarbons rather than a pure *n*-nonacosane), and a liquid hydrocarbon, boiling point 335°/760 mm., molecular weight 350 ($(C_7H_{12})_x$, where x is about 4; it is probably a mixture of high-molecular terpene hydrocarbons). α-Theosterol was not present, nor the solid unsaturated hydrocarbon such as was reported by Matthes and Rohdich in the cotyledon fat.—K. H. BAUER and L. SEBER. *Fette u. Seifen*, 46 (1939), 13–18; through *J. Soc. Chem. Ind.*, 58 (1939), 286. (E. G. V.)

Vegetable Gums and Mucilages—Oxido-Reducing Properties of. It is only very seldom that traces of *l*-ascorbic acid are found in vegetable gums and mucilages; the latter can therefore not be the origin of the formation of *l*-ascorbic acid. The investigations also showed that *l*-ascorbic acid in its reduced form exerts an inhibiting action on the oxidases and peroxidases which are found in small quantities, but irregularly, in vegetable gums and mucilages.—W. KAPUSCINSKI. *Acta Poloniæ Pharm.*, 2 (1938), 182–192; through *Chimie & Industrie*, 41 (1939), 1155. (A. P.-C.)

Verbenalin. A modified method for the isolation of verbenalin from *Verbena officinalis* L. is described. Verbenalin obtained by this method remains stable for several years. It melts at 183° C. and has an optical rotation of −180.6°. Hydrolysis with 9% sulfuric acid yielded glucose.—E. BURES and D. SUSTEROVA-RIHOVA. *Čas. Československ. Lékárnictva*, 18 (1938), 65–69; through *Chimie & Industrie*, 41 (1939), 524. (A. P.-C.)

Fixed Oils, Fats and Waxes

Almond Oil—Solubility of Various Medicaments in. Because of the importance of ointments in medication the author determined the solubility of various substances in fixed oil of almond. The physical and chemical constants of the almond oil used in the work are given and the methods of determining solubility are described. Solubilities determined were as follows: atropine, one part in 624 parts; atropine sulfate (water-free), insoluble; benzoic acid, one part in 27.2 parts; boric acid, insoluble; quinidine (water-free) one part in 399 parts; quinidine sulfate (water-free) insoluble; quinine, (water-free), one part in 454 parts; quinine hydrochloride, (water-free), insoluble; cocaine, one part in 23.3 parts; cocaine hydrochloride (water-free), insoluble; codeine (water-free), one part in 356 parts; codeine hydrochloride (water-free) insoluble; diacetylaminoazotoluol, one part in 10.4 parts; iodine, not more than one part in 9 parts; iodoform, one part in 23.4 parts; iodochloroxyquinolin, one part in 326 parts; iodoxyquinolinsulfonic acid, insoluble; camphor, one part in 2.7 parts; menthol, one part in 2.55 parts; mercuric iodide, insoluble (less than 0.01%); metadioxybenzol, one part in 16.5 parts; morphine and morphine sulfate (water-free), insoluble; naphthaline, one part in 6.2 parts; β-naphthol, one part in 13.3 parts; *para*-amidobenzoic acid ethyl ester, one part in 33.5 parts; *para*-oxybenzoic acid methyl ester, one part in 42.5 parts; phenol, one part in 1.45; phosphorus, one part in about 76 parts; salicylic acid, one part in 40.8 parts; thymol, one part in 1.4 parts; veratrine (water-free) one part in 128 parts and veratrine sulfate, insoluble.—S. W. VAN DANTZIG. *Pharm. Weekblad*, 76 (1939), 113. (E. H. W.)

Castor Oil. The use of castor oil in soaps is discussed. Completely hardened castor oil melts at 80–82° and contains about 80% of 12-oxystearic acid and may be used as a substitute for carnauba wax. Hardened castor oil with m. p. of 40° C. is a suitable basis for cosmetics. Hardened castor oil is stable to rancidity. The Varrentrapp reaction is discussed.—ILONA TAUSSKY. *Mfg. Perfumer*, through *Am. Perfumer*, 39 (1939), No. 3, 46. (G. W. F.)

Fats and Oils—Determination of the Polenske Value of. A collaborative study was made of the results obtained by using small pieces of pumice and powdered pumice, respectively, in the determination of Reichert-Meissl number and Polenske number. With powdered pumice the results were about 0.05% higher and slightly better agreement between individual analysts was obtained, but considerable trouble was experienced from "bumping."—R. S. MCKINNEY. *J. Assoc. Official Agr. Chem.*, 22 (1939), 618–622. (A. P.-C.)

Oil in Seeds (Soy Beans)—Refractometric Determination of. Coleman and Fellows' refractometric method (*U. S. Dept. Agr. Bull.*, 1471 (1927), 1–34) has been adapted to the determination of oil in soy beans, the standard solvent used being a mixture of halowax (α-chloronaphthalene) and α-bromonaphthalene adjusted to a refractive index at 25° C. of 1.63940. A conversion table is given for determining the per cent of soy bean oil (of refractive index 1.47302 at 25° C.) from the refractive index of the extract in the above solvent and also a table of corrections for oils have a refractive index above or below 1.47302. The technic to be followed is described in detail. The method gives results in close agreement with those obtained by petroleum ether extraction. It is intended to work on the development of a general refractometric method for determining the oil content of oil-bearing seeds and possibly other agricultural products.—LAWRENCE

ZELENY and M. H. NEUSTADT. *J. Assoc. Official Agr. Chem.*, 22 (1939), 610–618. (A. P.-C.)

Oils—Controlling the Odor or Flavor of. The author describes a process of refining an edible oil or fat to remove or modify an undesirable odor or flavor without effecting profound changes of the chemical characteristics. The process consists in subjecting the oil or fat to the action of enzymes originating in living micro-organisms while avoiding the stimulation of the production of metabolism products of such living micro-organisms. Thereby the organoleptic effect of substances in the oil or fat producing the undesirable odor or flavor are counteracted or modified while avoiding fermentation.—H. U. RENNER. British Patent Specification No. 513,514. *Perfumery Essent. Oil Record*, 31 (1940), 32. (A. C. DeD.)

Paraffins—Soft, Natural and Artificial. A simple test is proposed to distinguish between "natural" and "artificial" soft paraffins. The test consists of determining the deposition temperature, or critical solution temperature, of a solution of the soft paraffin in a mixture of glacial acetic acid and carbon tetrachloride. The volumes of crystalline deposit, if any, and of the upper oily layer which separates, are also determined. Freedom from adulteration with liquid paraffin and hard paraffin is indicated by: (1) A high critical solution temperature; (2) A low volume of crystalline deposit; and (3) A considerable volume of separated upper oily layer. The samples used in the tests were obtained from retail pharmacists, wholesale drug houses and merchants or manufacturers supplying the trade. The selected results for the tests are given in table form, eleven samples having been used for the tests. The following conclusions are reached regarding the characters which may be expected in the case of commercial samples: (1) Deposition temperature usually above 35° C.; (2) Crystalline deposit not more than 4 cc.; (3) Upper oily layer not less than 1 cc. Users desiring uniformity and good quality could demand a deposition temperature above 40° C., upper oily layer not less than 1.5 cc., and a crystalline deposit of not more than 3 cc. The test is more sensitive if double quantities are used, but this is not usually necessary.—H. BRINDLE. *Pharm. J.*, 143 (1939), 93. (W. B. B.)

Tunisian Olive Oils and Fitelson's Reaction for Teaseed Oil. Some pure olive oils from Northern Tunis give with Fitelson's test (*J. Assoc. Official Agr. Chem.*, 19 (1936), 493) a red coloration which may be almost as deep as that produced with olive oils containing up to 15% teaseed oil.—R. MARCILLE. *Ann. Fals.*, 32 (1939), 171–175. (A. P.-C.)

Vegetable Fats—Component Glycerides of. A review.—T. P. HILDITCH. *Fortschr. Chem. org. Naturestoffe*, 1 (1938), 24–52; through *Chem. Abstr.*, 33 (1939), 3339. (E. G. V.)

Vitamin A and D Potencies of Liver and Intestinal Oils of Halibut (Hippoglossus Hippoglossus). In northern British Columbia halibut, size seems to the most important factor determining the vitamin A content. Vitamin A varies inversely with the percentage of oil in the liver, whereas the vitamin D content appears to be unrelated to the size of the fish or to the vitamin A content. Oil from the heads and trimmings is low in both vitamins. Halibut with 5.03% viscera contain 1.21% liver and 2.15% intestines, which yield 17.1% and 3.6% of oil, respectively. Liver, liver oil, intestines and intestinal oil contain 4400, 35,000, 2300 and 80,000 blue units of vitamin A per Gm., respectively. Seasonal variations of these various yields, their vitamin A and D potencies and the I number of the oils are tabulated.—L. I. PUGSLEY. *J. Fisheries Research Board Can.*, 4 (1939), 396–404; through *Chem. Abstr.*, 34 (1940), 1127. (F. J. S.)

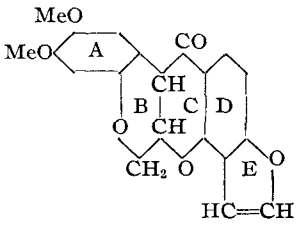
Unclassified

Aldehydes and Ketones—Analytical Oximation of. Carbonyl groups can be classified, according to their reactivities, into: (*a*) those which react immediately in the cold with hydroxylamine hydrochloride; (*b*) those which react in the cold, but come to an equilibrium; (*c*) those which react very slowly in the cold, but fairly rapidly at higher temperature; (*d*) those which are refractory to oximation. All these oximations can be carried out by means of the following reagent: dissolve 50 Gm. of hydroxylamine hydrochloride in 90 cc. of hot water, add 20 cc. of bromophenol blue and make to 1000 cc. with 90% alcohol. To prepare the indicator solution triturate 0.1 Gm. of bromophenol blue in a mortar with 3 cc. of twentieth-normal sodium hydroxide, and make to 25 cc. with water.—S. SABETAY. *Bull. Soc. Chim. France*, 5 (1938), 1419–1422; through *Chimie & Industrie*, 41 (1939), 882. (A. P.-C.)

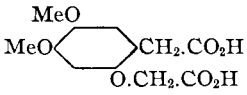
2-Aminopyridine—Alkyl Derivatives of, as Pharmacologically Active Compounds. A series of alkyl derivatives of 2-aminopyridine containing 10 to 14 carbon atoms in the chain has been prepared for pharmacological trial. The position assumed by the alkyl group depends upon the experimental conditions. In the presence of sodamide, 2-alkylaminopyridines (I) are formed almost exclusively, whereas alkylation in an inert solvent without sodamide gives rise to 1-substituted derivatives of the tautomeric pyridoneimine structure (II) together with a smaller proportion of form I. The 1-alkylpyridoneimines are strong, unstable bases, which form stable crystalline salts, but the 2-alkylaminopyridines are stable crystalline substances, which do not readily form salts with mineral acids. Proof of the structures assigned to the compounds is presented.—THOMAS M. SHARP. *J. Chem. Soc.*, (1939), 1855–1857. (W. T. S.)

Arsenic Chloride—Condensation of, with Dialkyl Aromatic Amines. Arsenic trichloride has been condensed with methylethylaniline, dimethylnaphthylamine, dimethyl-*m*-toluidine and dimethyl-*p*-toluidine and the corresponding dialkylaminophenylarsenious oxides have been obtained. In the case of the first three compounds along with the arsenious oxides, tertiary arsenic compounds have also been obtained.—PHULDEO SAHAY VARMA, K. S. VENKAT RAMAN and K. M. YASHODA. *J. Indian Chem. Soc.*, 16 (1939), 515. (F. J. S.)

Derris Elliptica Root—Structure of One of the Active Constituents of. By certain degradation experiments the author has now confirmed this formula



for elliptone, a lower homolog of isorotenone, isolated from *Derris elliptica* root. Rings A, B and C were shown to be identical with those of rotenone and isorotenone by this reaction. Dehydroelliptone with zinc and alkali yielded elliptic acid, oxidation of which gives derric acid.



Cleavage of *l*-elliptone with alcoholic alkali gave 4-hydroxycoumarone-5-carboxylic acid while isorotenone under the same treatment gave 4-hydroxy-2-isopropylcoumarone-5-carboxylic acid. This shows the nature of rings D and E and hence the entire molecule.—STANLEY H. HARPER. *J. Chem. Soc.*, (1939), 1424–1427. (W. T. S.)

Diamino Acridinium Series—Disinfecting Compounds of the. By heating with water the compound obtainable by causing 3,6-diamino-10-methylacridinium chloride, or its 2-alkyl- or 2,7-dialkyl-10-alkyl- or -benzyl salts (of strong mineral acids) to react with acetone in the presence of sodium hydroxide, or with an aliphatic, aliphatic-aromatic or hydroaromatic ketone in the presence of caustic alkali, there are obtained aqueous solutions of the 3,6-diaminoacridinium hydroxides. These hydroxides may be transformed into the corresponding ethers by means of alcohols, phenols, alcoholates or phenolates, or into the corresponding acridinium salts by means of salts or acids. Dilute acids split up the ketones gradually when the compounds are allowed to stand at room temperature and very quickly when boiled. By applying calculated amounts of acid there may be obtained neutral, or, if dibasic or polybasic acids or the salts thereof are used, acid acridinium compounds of the corresponding acids. Instead of the acids there may be used the salts formed with the aid of readily volatile bases, such as ammonia, aniline, methylamine, dimethyl aniline; there may also be used the acid amides, such as formamide or acetanilide, which, on boiling with water, yield the corresponding ammonium salts or amine salts, the acridinium hydroxides displacing the readily volatile amines. The latter pass over with the water vapor. The salt formation at the amino nitrogen is thus avoided, since the transformation only takes place until all of the acridinium hydroxides are converted into the acridinium salt whereas an excess of the amine salt remains dissolved in an unaltered condition. Numerous examples with details are described.—MAX BOCKMÜHL and OTTO SIEVERS, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,145,070, Jan. 24, 1939. (A. P.-C.)

5,5-Di-Isobutenyl Barbituric Acid—Two Forms of. 5,5-Di-isobutenyl barbituric acid melts at 209° C. There is also formed at the same time a labile form of this acid, which melts at 222° C. and which reverts to the stable form when stored for a long time.—O. SCHALES. *Ber.*, 71 (1938), 1116–1117; through *Chimie & Industrie*, 41 (1939), 950. (A. P.-C.)

Methyl Ester (Synthetic) of Pectic Acid. Pectic acid was prepared from aigyokusi (from *Ficus ankeotsang*). It had $[\alpha]_D^{18}$ 290°, the compound, $C_5H_7O_4CO_2H$, contained no methyl oxide- and corresponded to a polygalacturonide. Silver pectate, methylated according to the method of Buston and Nanji, contained 14.35–14.69% methyl oxide, therefore more than the natural ester; it was more water-soluble and was not precipitated by lead acetate.—S. ONO. *J. Taihoku Soc. Agr. and Forestry*, 3 (1938), 98–102; through *Chem. Abstr.*, 33 (1939), 2884. (F. J. S.)

α-Naphthyl Acetic Acid and Some Homologs—Synthesis of, as Possible Phytohormones. A renewed interest in α-naphthylacetic acid has been in evidence since 1935 at which time its plant growth-promoting properties were reported. In a previous study (*Can. J. Research Sec. A. B.*, 17 (1939), 10) Cameron has elaborated a method for preparing large quantities of α-chloromethyl-naphthalene. The present report is concerned with an investigation of some homologs of α-naphthylacetic acid and the by-product which resulted from their syntheses. A report on the effect of these homologous acids on plant growth will be made shortly by another worker. Fractionation of α-chloromethyl-naphthalene yielded 1:5-*bis*-chloromethyl-naphthlene which was converted into the corresponding dinitrile from the diacetic acid was obtained by hydrolysis. Naphthyl carbinol and two ethers thereof were also prepared and described. Four homologous ω-(*l*-naphthyl)-aliphatic acids were prepared. The propionic and butyric acids were synthesized by previously reported methods, while the valeric and hexoic acids were obtained by condensing the appropiate ω-(*l*-naphthyl)-alkyl bromide with sodiomalonic ester.—RICHARD H. F. MANSKE and ARCHIE E. LEDINGHAM. *Can. J. Research Sec. A. B.*, 17 (1939), 14–20. (W. T. S.)

α-Naphthyl Acetic Acid—Simplified Synthesis of. The synthesis of α-naphthylacetic acid has received particular attention since 1935 at which time its plant-growth promoting properties were reported. A number of methods and modifications thereof employed in the preparation of this acid were critically reviewed. In an effort to improve the procedure the present authors were able to prepare α-naphthylacetic acid from naphthlene in an overall yield of 31.5% by hydrolyzing the nitrile obtained when α-chloromethylnaphthlene is refluxed with KCN. This constitutes a practicable method using readily available starting materials.—A. CAMBRON. *Can. J. Research*, 17 (1939), 10–13. (W. T. S.)

N-Pentadecylic Acid—Synthesis of. The following scheme employing the nitrile process for attaching an additional carbon to the chain is used: Myristic acid → butyl myristate → myristyl alcohol → myristyl bromide or iodide → myristyl cyanide → pentadecylic acid. The preparation of *n*-butyl myristate, m. 163–165° C. (90.8% yield), *p*-*n*-tetradecyl alcohol (myristyl alcohol), *n*-myristyl bromide and iodide is given in detail.—CHARLES F. KREWSON. *Pharm. Arch.*, 10 (1939), 88–92. (H. M. B.)

Sabina Ketone—Contribution to the Chemistry of. Permanganate oxidation of *d*-sabinene from oil of savin produced crude *l*-sabin ketone relative to which certain new data are given. This ketone, it was stated, may be regarded as a link between two important natural groups of substances, represented by thujones and phellandrenes. Reduction and amination of crude *l*-sabina ketone yielded, respectively, the ketols and ketylamines. Purified *d*-sabina ketole was oxidized to *l*-sabina ketone. Certain characteristics of *l*-sabina ketone were described.—ANDREW G. SHORT and JOHN READ. *J. Chem. Soc.*, (1939), 1415–1418. (W. T. S.)

Spiro-Compounds—Chemistry of. I. Preparation of Cyclopentane-Spiro-Cyclopentanone and Cyclohexane-Spiro-Cycloheptanone. By the reduction of cyclopentanone and cyclohexanone with magnesium and aluminum amalgam, dicyclopentanediol and dicyclohexane-diol, respectively, have been prepared. These diols are accompanied by a certain proportion of cyclopentylidene-cyclopentanone and cyclohexylidene - cyclohexanone. Dicyclopentanediol on being treated with sulfuric acid undergoes pinacone pinacoline transformation and gives cyclopentane-spiro-cyclohexanone. This on being oxidized yields cyclopentane-*l*-carboxy-*l*-butyric acid which yields cyclopentane-spiro-cyclopentanone. Dicyclohexanediol gives a mixture of cyclohexane-spiro-cycloheptanone and dicyclohexene.—MUHAMMAD QUDRAT-I-KHUDA and AMALENDU KUMAR RAY. *J. Indian Chem. Soc.*, 16 (1939), 525. (F. J. S.)

Spiro-Compounds—Chemistry of. II. Synthesis of Cyclopentane-Spiro-Cyclopentanone. Cyclopentane-spiro-cyclopentanone has been synthesized from cyclopentane-*l*-carboxy-*l*-butyric acid, which has been synthesized in a way which leaves no doubt regarding its configuration. The lactone obtained by the reduction of the anhydride of cyclopentane-1-carboxy-1-acetic acid yields a bromo ester which by the action of sodiomalonic ester and subsequent hydrolysis gives cyclopentane-1-carboxy-1-butyric acid. This acid has been converted into the spiroketone both by Dieckmann condensation of its ester, followed by hydrolysis, as also by its pyrogenetic decomposition in the presence of baryta.—MUHAMMAD QUDRAT-I-KHUDA and ASUTOSH MUKHERJEE. *J. Indian Chem. Soc.*, 16 (1939), 532. (F. J. S.)

BIOCHEMISTRY

Adrenaline and Tyrosine—New Methods of Determining. To the neutral or acid solution to be analyzed add a measured volume of standard iodine solution, and convert into hypoiodite by addition of sodium hydroxide solution. After allowing to stand for some time, acidify and titrate the liberated iodine with sodium thiosulfate solution. An acid solution of potassium iodide and potassium biiodate can be used instead of the iodine solution.—K. H. SLOTTA and K. NEISSER. *Ber.*, 71 (1938), 1011–1016; through *Chimie & Industrie*, 41 (1939), 954. (A. P.-C.)

Adrenaline in Suprarenal Gland Extracts—Stability of. The author found that a suprarenal gland extract that had been prepared with a salt solution (sodium or ammonium sulfate) almost at once lost all of its adrenaline activity as it became brown. On the other hand, an aqueous suprarenal gland extract maintained its adrenaline activity practically unchanged for long periods when the proteins present in the gland are allowed to protect the adrenaline. The author attempted to slow the destruction of adrenaline by employing proteins from other sources but was unsuccessful. The two extracts reacted differently toward hydrogen peroxide solution: in the solution prepared using a salt, the adrenaline rapidly underwent oxidation while in the aqueous extract of the glands containing protein it remained unchanged.—P. DONINI. *La Rassegna di Clinica, Terapia e Scienze affieci*, 4 (1938), 185; through *Wien. Pharm. Wochschr.*, 71 (1938), 150. (M. F. W. D.)

Alanine and the Sum of Serine + Aspartic Acid—Determination of. The method of Kendall and Friedemann is not specific for alanine. Fürth and co-workers modified the procedure in the hope of making the determination more specific, but their procedure was complicated and success only partial. As a result of numerous experiments it was found that the addition of one-tenth the volume of 5% mercuric acetate solution to that of the solution of hydroxy acids formed by desamination of the amino acids suffices to inhibit the formation of acetaldehyde from serine and aspartic acid during the ultimate oxidation by potassium permanganate. Under these conditions all the acetaldehyde formed comes from the alanine. The color reaction which acetaldehyde gives with sodium nitroprusside and piperazine is specific. It is, therefore, possible to carry out a colorimetric determination of alanine in the presence of other aldehydes which arise from the other amino acids present. As little as 2 mg. of alanine can be determined with an accuracy of about 5%. By changing the conditions of the permanganate oxidation (increasing the manganese sulfate concentration and increasing the time allowed for the reaction) and omitting the addition of mercuric acetate, acetaldehyde is formed quantitatively from alanine, serine and aspartic acid. It is possible in this way to determine the sum of these three amino acids and also to determine alanine alone, irrespective of what other amino acids are present. Values obtained by this new method show 95 to 97% of the true alanine content and 93 to 95% of the actual content of serine + aspartic acid. —CL. FROMAGEOT and P. HEITZ. *Mikrochimie Acta*, 3 (1938), 52–67; through *Chimie & Industrie*, 41 (1939), 249. (A. P.-C.)

Antisterility Factor—Synthetic. The synthetic mono-*n*-dodecyl ester of dimethyltetrahydronaphthohydroquinone possesses a certain physiological activity resembling that of vitamin *E*, but it differs in two respects from the tocopherols: (1) the tocopherols possess a cyclic ether function on the aromatic nucleus, and this function is therefore not essential for physiological activity; (2) the dodecyl chain of the synthetic compound is not the same as the side chain of the tocopherols, and the structure of the latter is therefore not decisive. It follows that the specificity of the action of vitamin E is very small.—W. JOHN and PH. GÜNTHER. *Hoppe-Seyler's Z. Physiol. Chemie*, 254 (1938), 51–56; through *Chimie & Industrie*, 41 (1939), 728. (A. P.-C.)

Ash Determination in Cereal and Other Vegetable Materials. The material is ashed in the presence of magnesium nitrate dissolved in carbitol.—C. H. BRIGS. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 163. (E. G. V.)

Ascorbic Acid—Colorimetric Determination of. Discrepancies observed by certain authors in the determination of ascorbic acid may be due to the presence of iron in the fruit and not to preservatives.—J. V. SCUDI and H. D. RATISH. *Ind. Eng. Chem., Anal. Ed.*, 11(1939), 98. (E. G. V.)

Ascorbic Acid—Combined, in Plant Foodstuffs. I. Working with alcoholic and ethereal extracts of cabbage, germinated kancha mung (*Phaseolus mungo*) and the Indian fruit bel (*Ægle marmelos*), it has been demonstrated that the increase of ascorbic acid value, which these extracts undergo on heating, cannot be due to the destruction of ascorbic acid oxidase but is to be ascribed to the presence of some ascorbic acid in a combined form. It is proposed to call this combined ascorbic acid "ascorbigen." Ether has been found to be able to extract ascorbigen from cabbage in a state practically free from ascorbic acid. Ascorbigen solutions obtained from cabbage undergo splitting in a 0.2% acid solution (with HCl) at room temperature. Ripe and green mangoes have been found to be free from ascorbigen.—JATINDRA CHANDRA PAL and B. C. GUHA. *J. Indian Chem. Soc.*, 16 (1939), 481. (F. J. S.)

Ascorbic Acid—Combined, in Plant Foodstuffs. II. Chloroform has been found to be the most effective solvent for the extraction of ascorbigen from dried cabbage. The chloroform extract does not reduce the indophenol indicator in the cold and is, therefore, free from ascorbic acid. Treatment with sulfuretted hydrogen in the cold does not produce any dye-reducing value, showing the absence of dehydroascorbic acid, but when heated in an atmosphere of hydrogen sulfide or nitrogen, dye-reducing substances are produced in equal quantities. About 60–70% of the reducing substances produced by heat disappear on ascorbic acid oxidase treatment, from which it appears that, apart from ascorbigen, cabbage contains some nonspecific reducing substances in a combined state. Biological tests with guinea pigs by the curative method, in which equivalent quantities of an ascorbigen preparation (chloroform extract of cabbage) and pure ascorbic acid were fed, give comparable results. By extracting dried cabbage with chloro-

form, evaporating the solvent and extracting with water, some concentration of the ascorbigen can be effected.—PRATUL NATH SEN-GUPTA and B. C. GUHA. *J. Indian Chem. Soc.*, 16 (1939), 496. (F. J. S.)

Ascorbic Acid—Free and Total, Distribution of, in the Liver and Muscle of Bengal Fresh-Water Fish. The ascorbic acid contents of the liver and muscle tissues of 34 kinds of Bengal fresh-water fish have been determined by the usual method and by the method of Sen-Gupta and Guha. From the results it is clear that among all the different varieties of fish investigated Koi (*Anabas testudineus*) has the highest ascorbic acid content in the muscle, *viz.*, 30 mg. per cent. The next best muscle sources are Pangash (*Pangasius pangasius*) and Rohu (*Labeo rohita*). The concentration of the vitamin is highest in the Rohu fish liver, *viz.*, 171.1 mg. and then comes Dhain liver (*Silonia Silundia*), *viz.*, 127.4 mg. The difference between the total and free ascorbic acid is much greater in the case of liver than in muscle. It has been found that both in the liver and muscle, the vitamin C concentration decreases as the size of the fish increases.—K. C. SAHA. *J. Indian Chem. Soc.*, 16 (1939), 511. (F. J. S.)

Ascorbigen—Concentration of, from Cabbage. Different protein-precipitating reagents were used for the concentration of ascorbigen from cabbage juice. However, most of the ascorbigen was obtained in the filtrate. Norite charcoal and active charcoal (Schering-Kahlbaum, "carbo-active") were found to adsorb 60% of ascorbigen from fresh cabbage juice. Ascorbigen can be eluted satisfactorily from this adsorbate by a chloroform–alcohol mixture. The ascorbigen preparation obtained by the charcoal adsorption method gave a strong Molisch reaction and reduced Fehling's solution. It contained nitrogen and sulfur but no phosphorus, it did not give xanthoproteic, biuret and Millon's tests, and it gave positive glyoxylic acid and Pauly reactions. The ascorbigen preparation on heating, decomposed and gave reducing substances, 60% of which were oxidized by ascorbic acid oxidase. The remainder consisted of non-specific reducing substances which were also apparently present in a combined state in the ascorbigen preparation. The ascorbigen preparation could be further concentrated by means of sodium tungstate and sulfuric acid. The active materials were not precipitated by these reagents but appeared quantitatively in the filtrate.—BAIDYANATH GHOSH and B. C. GUHA. *J. Indian Chem. Soc.*, 16 (1939), 505. (F. J. S.)

Azo Dyes and Immuno-Biology. Diazotization of Arsphenamine. Diazotization of arsphenamine in hydrochloric acid solution immediately produces oxidation of the arsonic group. The aminohydroxy group also seems to undergo oxidation. There is formed a mixture of tri- and penta-valent arsenic compounds, some of which can be coupled and some not. The composition of the mixture depends to a large extent on operating conditions. It could not be determined whether it also contained diazotized or tetrazotized arsphenamine. Attempts were made to couple the "diazotized" arsphenamine with horse serum and tyrosine, but azoproteins could not be obtained by the method which is applicable to atoxyl, sulfanilic acid, etc.—H. E. FIERZ-DAVID. W. JADASSOHN and A. MARGOT. *Helv. Chim. Acta*, 2 (1938), 280–293; through *Chimie & Industrie*, 41 (1939), 519. (A. P.-C.)

Blood Platelets in Sucklings and Arakawa's Reaction. In cases of sucklings nourished with milk negative to Arakawa's reaction, anemia and thrombocytosis, and especially an increase of pathological large platelets were seen; and blood platelet counts became larger as Arakawa's reaction become weaker. Therefore, sucklings nourished with milk negative to Arakawa's reaction are more or less inclined to a state of B-avitaminosis.—M. SHINDO. *Tôhoku J. Exptl. Med.*, 36 (1939), 258 (A. C. DeD.)

Blood Serum—Determination of Sodium in. A discussion of the technic of the quantitative determination of sodium in blood serum.—E. C. NOYONS. *Pharm. Weekblad*, 76 (1939), 307. (E. H. W.)

Blood Sugar—Determination of High Concentrations of, by Means of Ferricyanide. Two modified ferricyanide methods for blood sugar are described, depending on the iodometric titration of the ferrocyanide formed. One uses hundredth-normal ferricyanide solution and can be used for up to 1.7% glucemia with an error of ±0.3%; the other uses fiftieth-normal solution and is useful for concentration up to 3% and over with an error of ±0.6 to 0.4%. In both cases the titrations are strictly proportional to the quantity of glucose though the factors are somewhat lower in blood filtrates than in pure glucose solutions.—M. WIERZUCHOWSKI, F. DZISIOW, J. SYSA and Z. BORKOWSKI. *Hoppe-Seyler's Z. Physiol. Chemie*, 253 (1938), 231–243; through *Chimie & Industrie*, 41 (1939), 659. (A. P.-C.)

Caffeineless Coffee and Theineless Tea—Preparation of. The caffeine is decomposed by aeration of coffee beans in presence of water.—SOC. ANON. CAFÉ HAG. Belg. pat. 430,910, Jan. 31, 1939. (A. P.-C.)

Carotenoids in Yellow Corn. A simple rapid spectrophotometric method is described for determining the carotene-cryptoxanthin content of yellow corn. A chromatographic method is outlined, whereby the carotene can be separated quantitatively from cryptoxanthin. The results obtained on five commercial samples of yellow corn indicate that the carotene-cryptoxanthin contents vary considerably. A typical absorption curve for the cryptoxanthin-carotene fraction of yellow corn is reported, with a maximum at 4500 Å. Absorption curves for pure β-carotene and purified cryptoxanthin in heptane are given. A new extinction coefficient for pure cryptoxanthin in heptane is reported.—L. O. BUXTON. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 128–129. (E. G. V.)

Citric Acid—Utilizing Nicotiana Rustica for the Production of. *N. rustica* contains 3–4% of malic acid and up to 12% of citric acid (as citrates). High citric acid content is associated with abundant supply of fertilizer and water, high nicotine content and inferior quality.—A. SCHMUK. *Tabachnaya Prom.*, 3, 4–6 (1933); through *J. Soc. Chem. Ind.*, 58 (1939), 550. (E. G. V.)

Copper—Action of, in Preparations for Internal Use. A review article discussing the allowable limits of copper in foods and the rôle of copper in the body.—WALTER MEYER. *Scientia Pharm.*, 9 (1938), 140–146. (M. F. W. D.)

Copper—Concentration of, in the Blood of Sheep Following Severe Hemorrhage. It is not agreed among investigators whether there is a rise or a fall in the copper content of the blood of experimental animals following severe hemorrhage. The present paper shows that in sheep the loss of 25 cc. of blood per Kg. body weight is not associated with any disturbance of the copper concentration in the whole blood. The method used for the blood copper analysis is described along with the other details of the experimental part.—A. T. DICK. *Australian J. Exptl. Biol. Med. Sci.*, 17 (1939), 271–274. (W. T. S.)

Endocrine Compounds. Pituitary Gland. A discussion.—A. RICHARD BLISS, JR. *Drug and Cosmetic Ind.*, 45 (1939), 34–35. (H. M. B.)

Endocrines in Relation to the Gastrointestinal Tract.—J. B. COLLIP. *Am. J. Digestive Diseases*

Nutrition, 5 (1938), 587–590; through *Chem. Abstr.*, 33 (1939), 2194. (E. G. V.)

Ether in Blood—Application of Widmark's Micro Method to the Determination of. Determination of the oxidation factor of ether by potassium dichromate (micrograms of ether per 0.01 cc. of normal sodium thiosulfate) in aqueous ether solutions gives variable results, the value of this empirical factor varying with the ether concentration. Determination of this factor in blood containing known amounts of ether gave a constant value of 0.900 ± 0.002 (average of 49 analyses), as compared with a theoretical value of 0.926.—O. DYBING. *Norsk Mag. Laegevidenskap.*, 99 (1938), 1105–1110; through *Chimie & Industrie*, 41 (1939), 886. (A. P.-C.)

Fat-Soluble Vitamins and Provitamins—Process for Extracting. Natural products containing vitamins are saponified directly, and the resultant soaps are treated with a vitamin solvent. The vitamin solution is separated from the soap and the solvent is evaporated.—M. VERMEULEN. Belg. pat. 430,-869, Nov. 30, 1938. (A. P.-C.)

Histamine—Observations on Recent Methods of Determining. Comparative histamine determinations were carried out by the physiological method (measuring the activity of histamine extract on the guinea-pig intestine) using extracts prepared either by the Barsoum and Gaddum method or by the Code method. In the Barsoum and Gaddum method, elimination of trichloroacetic acid from the extract to obtain satisfactory neutrality to Congo red requires at least 5 extractions with ether. Even after boiling for 20 minutes with hydrochloric acid, two evaporations with 10 cc. of alcohol are insufficient to effect satisfactory removal of the acidity. All the extracts prepared by this method showed lack of stability and rapidly lost their activity, even when stored in the refrigerator. Extracts prepared by the Code method retain their initial p_H and the loss in activity is appreciably slower. In addition to being more accurate, this method is also more rapid than that of Barsoum and Gaddum.—L. BUSINCO and G. CIUNCHI. *Boll. soc. ital. biol. sper.*, 13 (1938), 905–908; through *Chimie & Industrie*, 41 (1939), 885. (A. P.-C.)

Imidazole Bodies (Histamine)—Modification of Pauly's Reaction in Connection with the Microcolorimetric (Photometric) Determination of. The increasing importance of histamine makes it desirable to improve methods for its determination. The biological methods are difficult and not entirely satisfactory and Pauly's color test gives a color which fades too rapidly and is given by phenols, ethers, ketones, etc. The following technic is an improvement: Take 2 cc. of an aqueous solution of histamine hydrochloride (or other imidazole compound or blood filtrate), add 1 cc. of saturated sodium carbonate solution and 0.5 cc. of diazo reagent which is prepared by mixing one part of a solution containing 5 Gm. of sulfanilic acid and 50 cc. of concentrated hydrochloric acid and water to make 1 liter with 2 parts of 0.5% sodium nitrite solution. A cherry red color appears at once. Immediately add 5 cc. of 95% alcohol; determine the intensity of the color in a Pulfrich colorimeter. The addition of the alcohol makes the color stable for about 1 hr.—A. MACIAG and R. SCHOENTAL. *Mikrochemie*, 24 (1938), 243–250; through *Chimie & Industrie*, 41 (1939), 460. (A. P.-C.)

Incineration of Biological Materials. In a critical study of various methods, those of Jannasch, Cronheim and Pincuseen, of Erdös, and of Fresenius and Babo, modified by Erdös and Groak, were considered the best.—J. ERDÖS. *Diagnostica tec. lab.*, 9 (1938), 488–495; through *Chimie & Industrie*, 41 (1939), 661–662. (A. P.-C.)

Internal Secretion Glands—Preservation of Certain. At the present time refrigeration is the generally employed method for preserving internal secretion glands for the preparation of insulin, hormones, etc. Other processes, however, can be used, such as preserving in organic solvents, and especially drying; the latter process, though insufficiently studied, seems particularly effective.—G. EINHORN and M. VILCHEK. *Miasn. Ind. S. S. S. R.*, 9 (1938), No. 9, 11–14; through *Chimie & Industrie*, 42 (1939), 47. (A. P.-C.)

Isoneoergosterol. Isoneoergosterol is obtained from the most soluble fraction of the raw material; it has a melting point of 138° to 139° C. and an optical rotation of −59.1°. It easily forms a difficultly soluble digitonide, whereas it is difficult to precipitate neoergosterol as a digitonide. It gives a sharp color reaction with Liebermann-Burchard's and with Rosenheim's reagents. When treated with 3,5-dinitrobenzoyl chloride it gives two different dinitrobenzoates, one of which is identical with that of neoergosterol and the other with that of dehydroergosterol. Isoneoergosterol would thus seem to be a molecular compound of neoergosterol and of an isomer of dehydroergosterol.—T. ANDO. *Bull. Chem. Soc. Japan*, 13 (1938), 371–375; through *Chimie & Industrie*, 41 (1939). 726. (A. P.-C.)

Leucine—Microdetermination of, by the Ninhydrin Method. Oxidize 0.2 to 5.0 mg. of leucine by boiling for 15 minutes with 4 cc. of 1% ninhydrin solution in presence of 7.5 mg. of ammonium sulfate and 0.5 Gm. of citric acid, and then steam distilling; collect the distillate in 5 cc. of 1% sodium bisulfate solution and titrate iodometrically. Under these conditions oxidation of leucine into isovaleric aldehyde is quantitative.—T. LAINE. *Suomen. Kemistilehti (B)*, 11 (1938), No. 10, 28; through *Chimie & Industrie*, 41 (1939), 886. (A. P.-C.)

Lipin Metabolism—Chemistry and Physiology of. A review.—B. FLASCHENTRAGER. *Schweiz. med. Wochschr.*, 68 (1938), 189–192; through *Chem. Abstr.*, 33 (1939), 2193. (E. G. V.)

Liver Extract. An aqueous extract of bovine liver, concentrated in vacuum to 53 to 55% water, contains 4 to 8% reducing glucides, 4.5 to 7% ash, 1 to 2% nitrogen (determined by the Barnstein method), 2.4 to 3.9% of nitrogen (by Kjeldahl). The acidity of the extract is equivalent to 7 to 11% of lactic acid. The extract exerts an inhibitory effect on the microflora. It improves considerably the composition of the blood of anemic patients and rapidly restores it to normal.—K. STARUKHINA, N. KISELEVA and E. KLIMOVA. *Miasn. Ind. S. S. S. R.*, 9 (1938), No. 7, 30–32; through *Chimie & Industrie*, 41 (1939), 985. (A. P.-C.)

Liver—Hemotopoietic Substance in. Bile, taurocholic acid and nucleic acid precipitate liver material active in pernicious anemia from aqueous solutions.—H. D. DAKIN and R. WEST. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 124. (A. E. M.)

Male Sexual Hormone. X. Egg yolk contains a substance different from true male hormone, which gives the cockscomb test but is inactive in the testicular test.—S. HIRANO and K. HIRASAWA. *J. Pharm. Soc. Japan*, 58 (1938), 144–145; through *Chimie & Industrie*, 41 (1939), 526. (A. P.-C.)

Manganese—Microdetermination of, in Wine. Organic matter is destroyed by heating with sulfuric acid plus hydrogen peroxide in a Kjeldahl flask. The manganese in the residue is oxidized to permanganate by means of potassium persulfate and silver nitrate and determined colorimetrically.—G. GHIMICESCU and G. KOTCIS. *Mikrochemie*, 25 (1938), 184–186; through *J. Soc. Chem. Ind.*, 58 (1939), 424. (E. G. V.)

Nicotinic Acid—Minimum Dose of. From a study of twenty-six dogs in thirty-five attacks of

acute black tongue it was found that the minimum curative dose daily of nicotinic acid was 0.5 mg. per Kg. of body weight. Larger doses were all equally effective. With 0.2 mg. per Kg. the mouth lesions healed, but gain in weight and appetite were delayed. Doses of 0.1 mg. per Kg. arrested the progress of the mouth lesions but did not prevent the loss of appetite and weight. Autoclaving a solution of nicotinic acid did not impair its effectiveness. —G. MARGOLIS, L. H. MARGOLIS and S. G. SMITH. *J. Nutrition*, 16 (1939), 541; through *Brit. Med. J.*, 4094 (1939), 1316H. (W. H. H.)

Pharmaceutical Analysis—Absorption Spectrophotometry in. I. Oestrogenic Preparations. It was decided to investigate the possibility of spectrophotometric absorption methods in the routine control of preparations such as tablets and ampuls. Preliminary results are given as applied to the following substances: diethylstilboestrol; 4:4′-dihydroxy-γ-δ-diphenyl-*n*-hexane (Hexoestrol); diethylstilboestrol dipropionate; oestradiol monobenzoate, and progesterone. The method determines first the absorption curves for the pure compounds. If these curves show definite characteristics such as peaks or inflexions the numerical values obtained can be used for quantitative determinations. The method used was as follows: Approximately 1 Gm., accurately weighed, was transferred to a separator with 15 cc. of peroxide-free ether. The ethereal solution was shaken with four 5-cc. quantities of *N*/1 sodium hydroxide, avoiding emulsification. The alkaline extracts were transferred to a second separator, acidified with 3*N* hydrochloric acid and extracted with three 15-cc. quantities of peroxide-free ether. The combined ether extracts were washed with 5 cc. of 2.5% sodium bicarbonate solution and evaporated to dryness. The residue was dissolved in spectroscopically pure dehydrated alcohol and made up to the requisite volume to yield a 0.001% solution of diethylstilboestrol, and the extinction coefficient was determined in a 1-cm. cell, readings being taken at 0.02 differences. The same quantity of olive oil was similarly treated, and although some small visible quantity was yielded to the alcohol, it showed no measurable absorption, and thus the whole of the absorption at 240 mμ could be taken as due to diethylstilboestrol. The determination was also applied to tablets containing diethylstilboestrol, with good results. Spectrometric absorption methods are stated to yield an accuracy within approximately ± 2.5%.—W. F. ELVIDGE. *Pharm. J.*, 143 (1939), 92. (W. B. B.)

Proteins of Some Species of Bengal Fish—Biological Value of, by the Nitrogen Balance and Growth Methods. The biological value of the proteins of some common species of Bengal fish, *viz.*, Katla (*Catla catla*), Mrigel (*Cirrhina mrigala*), Air (*Arius arius*), Koi (*Anabas Testudineus*), Singhi (*Saccobranchus Fossilis*), Sarputi, Poa and Koral has been determined by the nitrogen balance as well as the growth methods. The digestibility and biological value of the fish proteins are in general very high. The digestibility varies between 83 and 97% and the biological value between 70 and 88%. A growth per Gm. of proteins ingested varies from 1.48 to 1.83 per day.—K. P. BASU and K. GUPTA. *J. Indian Chem. Soc.*, 16 (1939), 543. (F. J. S.)

Prune Products—Dried Italian. Preparation of dried products and beverages is discussed.—E. H. WIEGAND and K. P. FENNER. *Oregon Agric. Exp. Sta. Bull.*, 353 (1938); through *J. Soc. Chem. Ind.*, 58 (1939), 545. (E. G. V.)

Reducing Substances—Analysis of, by Formation of Complexes. Ascorbic Acid in Musts and Wines. The reducing substances contained in vegetable tissues can combine with substances that are neutral (from an oxidizing or reducing standpoint) to form complexes possessing no reducing power. Oxidized ascorbic acid is instantaneously destroyed at p_H 8; it can be reduced quantitatively by cysteine in bicarbonate medium; after blocking the cysteine (*e. g.*, with formaldehyde or acetaldehyde) the ascorbic acid can be determined by reduction. The presence of ascorbic acid was proved in all living tissues; the amount decreased as ripening progressed, and disappeared completely in certain completely ripe fruit (grapes, apples). The reducing substances in orange and lemon juices consist practically entirely of ascorbic acid; the juice of the leaves often contain considerable amounts of —SH derivatives, which can constitute $^1/_3$ to $^1/_2$ of the reducing substances. At the beginning of Oct. 1937 grapes were found to contain from 0.5 to 1 milliequivalent of total ascorbic acid; just before complete ripening, the fruit tends to dry and shrivel and the total ascorbic acid decreases to 0.—L. GENEVOIS, L. GATET and P. CAYROL. *Compt. rend. 18me Congr. Chim. Ind., Nancy*, (Sept.–Oct. 1938), 93–94. (A. P.-C.)

Riboflavin in Liver Extract. It has been shown that commercial liver extracts vary enormously in their content of two subsidiary factors, and it is now demonstrated that a similar variation occurs in the concentration of riboflavin. The following method is satisfactory for liver extracts examined by the author: Using a 1-cc. pipette graduated in 0.01 cc., transfer 1 cc. of the extract to be tested to a 50-cc. separating funnel. Add 1 cc. of *N*/1 hydrochloric acid, mix, add 10 cc. of acetone slowly with a continuous mixing. Add 10 cc. of chloroform, shake and allow to separate. Run off the lower layer into a 100-cc. separating funnel. Continue the acetone-chloroform treatment of the upper layer in exactly the same manner until the lower layer ceases to give a blue fluorescence when examined in "black light." Reserve the extracted upper layer. Extract the combined chloroform-containing lower layers with successive quantities of 5 cc. of water until no more fluorescing material can be removed. Discard the extracted lower layer and combine the aqueous extracts, extracting with successive quantities of chloroform in order to remove any blue fluorescing material. Transfer the aqueous extract, freed from blue fluorescing material, to a suitable round-bottomed flask, add the reserved upper layer and remove acetone by heating in a vacuum to a temperature of 35° to 40° C. Add *N*/1 sodium hydroxide until just pink to phenolphthalein, which is used as an internal indicator, and make up to a volume of 30 cc. Transfer to a shallow evaporating dish, adding an equal volume of *N*/1 sodium hydroxide. Expose to unfiltered ultraviolet radiation for a suitable time. (An S 500 Hanovia analytical lamp for 10 minutes at a distance of 18 in. was found to be satisfactory.) Transfer the irradiated solution to a 200-cc. separating funnel, add a 20% solution of citric acid until the mixture is faintly acid to phenolphthalein, and extract with 10-cc. quantities of chloroform until no more green fluorescing material is removed. Bulk the chloroform extracts to a suitable volume and compare the fluorescence of 10 cc. of this in a test-tube with prepared luminflavin standard tubes. Prepare a series of 10 standard dilutions of riboflavin in water containing 1 mg. per 100 cc. in steps of 0.1 mg. per 100 cc. Take 1 cc. of each of the standard riboflavin solutions, add 4 cc. of water and 5 cc. of *N*/1 sodium hydroxide and expose for ten minutes to unfiltered ultraviolet radiation. Make just acid to phenolphthalein and extract with chloroform. Make up the chloroform extracts to 20 cc. Take 10 cc. of this and seal up in thin-walled test-tubes of non-fluorescent glass, using tubes identical

with those to be used for the comparison of the test samples.—G. E. SHAW. *Pharm. J.*, 143 (1939), 222. (W. B. B.)

Serum Globulins—Colorimetric Microdetermination of. Mix 0.1 cc. of serum with enough half-saturated ammonium sulfate solution to make exactly 10 cc. and compare the cloudy solution in a colorimeter with a decinormal solution of cobalt sulfate, using blue light obtained with a Schott B. G. 3 filter 1 mm. thick. A correction curve for calculating the results is given.—M. PAÏC and MELLE. V. DEUTSCH. *Bull. soc. chim. biol.*, 20 (1938), 1112–1114; through *Chimie & Industrie*, 41 (1939), 886. (A. P.-C.)

Sexual Hormones. A study of derivatives of estrone, equiline and pregnane. 17-Ethinyldihydroequilin administered *per os* in 2γ doses is more active than 17-ethinylestradiol. Moreover, the strong resorption by the stomach and intestine observed in the case of ethinyl compounds and which governs their high potency when administered *per os*, seems to be due to the ethinyl radical. A similar phenomenon is observed in the pregnane series: pregneninol-3-one is active *per os* at doses of 4 mg., whereas progestrone is completely inactive even in 60-mg. doses. Subcutaneously pregnenin-ol-one is about a third as active as progestrone.—H. H. INHOFFEN, W. LOGEMANN, W. HOHLWEG and A. SERINI. *Ber.*, 71 (1938), 1024–1032; through *Chimie & Industrie*, 41 (1939), 526. (A. P.-C.)

Silicic Acid Contents of Blood and Microdetermination of Silicic Acid in Blood Ashed by Kraut's Method. Estimations of silica in 10 samples of normal blood by the usual methods gave 3.2 to 0.5 mg. per 100 cc. of blood or 0.37 to 0.006% of the sulfated ash. These values are lower than those obtained by Kraut's method (*Hoppe-Seyler's Z. physiol. Chem.*, 194 (1931), 81–97). A much longer time than Kraut recommends is necessary to reach constancy of weight of the sulfated ash. Even after heating 6 hours results are high.—H. FRANK and G. GERSTEL. *Hoppe-Seyler's Z. physiol. Chem.*, 253 (1938), 225–230; through *Chimie & Industrie*, 41 (1939), 659. (A. P.-C.)

Sugar—Determination of Color and Turbidity in Solutions of Granulated. A method has been devised for the determination of both color and turbidity in the same solution without filtration or other treatment. A photoelectric colorimeter is used and the readings are made using blue and yellow color filters. The apparatus is standardized by determining the relative percentage absorption of blue and yellow light by a given unit of color and turbidity. Knowing this relationship, it becomes a matter of simple calculation to express both color and turbidity as percentage of absorption of blue light, which in turn may be expressed in terms of the log of the transmission if desired. The method is rapid and the results are reproducible. A colorimeter has not yet been devised which is suitable for routine control work.—A. R. NEES. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 142–145. (E. G. V.)

Sulfanilamide—Action of. *Alpha* streptococci in oatmeal infusion medium were not killed by varying concentrations of sulfanilamide during 24 hours incubation, but their growth was inhibited and their fermentation power lost in the presence of 1:2500 sulfanilamide. It was postulated that sulfanilamide exerts its bacteriostatic action by preventing the activation of zymogens or by inhibiting the action of enzymes. However, 1 cc. saturated sulfanilamide solution caused no inhibition of curdling, fermentation and coagulation, respectively, when added to 1 cc. milk plus renin, to 1 cc. medium plus $CHCl_3$-killed pulverized yeast, and to 1 cc. citrated human blood serum plus thrombin plus $CaCl_3$. When 1 cc. of citrated blood was mixed with an equal amount of saturated sulfanilamide solution and $CaCl_2$ was added, no clotting occurred; clotting occurred promptly on the addition of thrombase, but not on the addition of cephalin (thromboplastin). It is concluded that sulfanilamide prevents the coagulation of blood by inhibiting the calcium lipoid activation of prothrombase (zymogen) into thrombase.—P. H. BELDING and L. J. BELDING. *Dental Items of Interest*, 61 (1939), 1143; through *Squibb Abstract Bull.*, 12 (1939), A-1531. (F. J. S.)

Sulfanilamide Derivative—Liver Function Tests During Medication with. The possibility of liver damage being produced by sulfanilamide and related compounds has been raised by several reports of parenchymatous liver injury following medication with these drugs. The author performed galactose tolerance tests on a series of patients being treated with dimethyldisulfanilamide for gonorrhea. Twenty-nine patients were studied, and it was found that in no case did the drug interfere with the function of the liver as shown by the test. It was found that patients with gonorrhea generally had a diminished tolerance for galactose even before the medication was commenced, and this was thought to be due to the deleterious effect of some toxin elaborated by the gonococcus. The effect of the drug was not to decrease this already injured liver function, but to improve it, presumably by combating the infection. Patients with normal liver function never showed a decrease following treatment with the drug, and those with gonorrheal icterus improved under treatment.—W. SCHMIDT. *Klin. Wochnschr.*, 18 (1939), 953; through *Abbott Abstr. Bull.*, (1940), No. 617. (F. J. S.)

Sulfapyridine—Relation of Concentration of Free to Conjugated, in the Blood of Patients. Patients show wide variation in blood content of free and total sulfapyridine when receiving standard dosage by weight, but the conjugated drug in most cases is present in about 2 to 3 mg. concentration per 100 cc. blood. However, in a few instances, patients with high levels of free sulfapyridine depart from this tendency and have high conjugated drug content in the blood.—ARMINE T. WILSON, DELORES KAELY and GLENN E. CULLEN. *Proc. Soc. Exptl. Biol. Med.*, 42 (1939), 187. (A. E. M.)

Sulfate in Urine—Simple Method for Estimating. The sulfate is precipitated with barium chloride, the precipitate is centrifuged in tubes designed for protein determination, and the volume of the precipitate is read. The error of the method, after adequate calibration, is 8 to 10% over the range of 100 to 400 mg. of sulfate.—C. RIEBELING. *Hoppe-Seyler's Z. physiol. Chem.*, 251 (1938), 41–42; through *Chimie & Industrie*, 41 (1939), 659. (A. P.-C.)

Sulfhydryl Groups in Proteins—Estimation of. Porphyrexid and porphyrindine are reduced by cysteine and by sulfhydryl groups of proteins at low temperatures. Sulfhydryl can be estimated in an unknown compound by reduction of porphyrindine in Thunberg tubes at p_H 7.2. Native egg albumin shows no sulfhydryl groups by this method, whereas denatured ovalbumin shows 0.58%. The carrier of Warburg's yellow enzyme does not reduce the reagent and after denaturation the reduction indicates 0.03% cystine, corresponding to 0.1 sulfhydryl group per molecule of protein (molecular weight 70,000).—R. KUHN and P. DESNUELLE. *Hoppe-Seyler's Z. physiol. Chem.*, 251 (1938), 14–18; through *Chimie & Industrie*, 41 (1939), 659. (A. P.-C.)

Tannic Acid—Microdetermination of, in Wine. In the procedure detailed, Fehling's solution is re-

duced by the wine before and after its treatment with basic lead acetate to remove tannin, the cuprous oxide formed is dissolved in ferric sulfate plus dilute sulfuric acid, and the solution titrated with 0.01*N* potassium permanganate. The method is accurate to about 2%. Test data are recorded.—G. GHIMICESCU and M. GHEORGHIU-VIERIU. *Mikrochemie*, 25 (1938), 187–191; through *J. Soc. Chem. Ind.*, 58 (1939), 424. (E. G. V.)

α-Tocopherol—Colorimetric Determination of. Vitamin E or α-tocopherol (1 mol.) is oxidized rapidly and completely by ferric chloride (2 mols.) in the presence of α,α′-dipyridyl. The ferrous ions are removed from the sphere of action as formed, giving the colored coördination compound with dipyridyl, and the intensity of the red color is determined photometrically. To 1 cc. of alcoholic solution containing 0.1 to 0.4 mg. of tocopherol 1 cc. of freshly-prepared 0.2% solution of ferric chloride in absolute alcohol is added. After mixing, 1 cc. of freshly-prepared 0.5% of α,α′-dipyridyl in absolute alcohol is added and the mixture diluted to 25 cc. with alcohol. The intensity of the red color of ferrous dipyridyl is measured after fifteen minutes with the Zeiss-Pulfrich photometer using screen 50 and a 1 cm. cell, a blank solution containing ferric chloride and dipyridyl being placed in the other cell of the photometer. Curves showing the relation between photometer reading and concentrations of ferrous ion and α-tocopherol are given. Since α- and β-carotenes are also oxidized completely by ferric chloride in the presence of dipyridyl, the results must be corrected for carotenes in the material examined. The determination of α-tocopherol may be carried out on the unsaponified oils, but it is better to use the unsaponifiable fraction. The colorimetric method gives results in agreement with those obtained by potentiometric titration after reduction of gold chloride and has the advantages of being more rapidly carried out and of being applicable to the determination of smaller quantities of tocopherol. Preliminary experiments have shown good agreement between the colorimetric and biological determinations of the vitamin E potency of oils.—A. EMMERIE and C. ENGEL. *Rec. trav. chim.*, 57 (1938), 1351; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 292. (S. W. G.)

Tuberculosis—Agent for the Determination of. Blood-fibrin or unaffected solid tissue (for example, fibrous connective tissue, bone marrow, or, especially, muscular tissue) from a tuberculous animal is extracted with weakly alkaline (0.1*N*-sodium hydroxide) or weakly acid solutions, which are then neutralized, buffered to p_H 6.7–7.0, and kept sterile by adding a preservative. For example, blood fibrin is dessicated with acetone, powdered, extracted with 50 parts of 0.1*N* sodium hydroxide, and the solution neutralized with a solution of 0.05*N* mono-potassium acid phosphate and 0.05*N* hydrochloric acid to p_H 6.9. A few drops of preservative (tricresol in glycerin) are added and the solution is stored in sterile vials. It is used as a sensitizing agent specific to tuberculosis for intradermal injection.—C. E. EVERY. From LAKELAND FOUNDATION. Brit. pat. 501,799; through *J. Soc. Chem. Ind.*, 58 (1939), 552. (E. G. V.)

Uric Acid Riboside—Source and Constitution of. Newton, Benedict and Davis (*loc. cit.*) have previously reported the isolation of uric-*d*-riboside from beef blood. Using the procedure of Newton, *et al.*, the present authors have isolated this riboside from liver and determined the position of its linkage. A comparison of the ultraviolet absorption spectra of the riboside to those of 1-methyl, 3-methyl and 7-methyluric acid revealed that the ribose radical is attached at position 9 of uric acid.—RODERICK FALCONER and J. MASSON GULLAND. *J. Chem. Soc.*, (1939), 1369–1371. (W. T. S.)

Vitamin A Alcohol in Fish Livers—Free, Note on the Occurrence of. Fresh livers from the ling (*Molva molva, M. vulgaris* Day) were placed in solid carbon dioxide in special containers and kept there until the oil was extracted. The minced livers were ground with sand and anhydrous sodium sulfate and then extracted with cold peroxide-free ether. The ether was removed by distillation in nitrogen, and the oil was immediately heated for a short time at 100° in a high vacuum to remove traces of water and to inactivate any hydrolytic enzymes. Particulars of the oils extracted from two batches of livers collected on different occasions are given in a table. The results seem to indicate a marked seasonal variation in the vitamin content of the livers of English ling, which may be compared with the small variation noted for New Zealand ling (*Genypterus Blacodes*). Analytical distillation was used to estimate the proportion of vitamin A alcohol present in the fish livers. Estimation of the true proportion of free vitamin in the oil of the fresh livers is rendered difficult by the overlapping of the elimination curves of vitamin A alcohol, and vitamin A esters, but an approximation may be arrived at by assuming that the eliminaton curve for vitamin A alcohol is symmetrical and has a maximum at 120°. It would appear from the experiments conducted that a small proportion of free vitamin A was present in the oil extracted from the fresh livers in spite of the attempt to reduce hydrolysis after the death of the fish.—T. H. MEAD. *Pharm. J.*, 143 (1939), 102. (W. B. B.)

Vitamin A and Carotenoids. Kinetic Study of the Carr and Price Reaction. The weakening of the reaction of Carr and Price in the presence of acetic anhydride is characteristic for vitamin A_1 in the absence of unsaturated fatty acids. The kinetic study, together with the inversion of the absorption values with red and yellow filters, distinguish easily between vitamins A_2 and A_1.—P. MEUNIER and Y. RAOUL. *Bull. soc. chim. biol.*, 20 (1938), 861–877; through *Chimie & Industrie*, 41 (1939), 527. (A. P.-C.)

Vitamin A and D Potencies of Liver and Intestinal Oils of Gray Cod (Gadus Macrocephalus). A year-round study of the seasonal variations of the liver and intestinal content of *G. macrocephalus*, a species of true cod present in the coastal waters of British Columbia and Alaska, showed a definite increase in the liver content (4% in August) during the fall and winter months (prespawning period) accompanied by a rise of the liver oil content (42.8% in October) and a decrease in the vitamin A content (1100 blue units per Gm. in October). A similar fall in the vitamin D content (125 International units in November) was noted. The vitamin A and D contents (6500 and 365) and the unsaponifiable matter of the liver oil were above the average for gadids. The intestines (2.4%) yielded less oil than the liver (31.2%) but the oil was relatively high in vitamin A (16,000 blue units per Gm.) and low in D (35 International units per Gm.). Summaries of these seasonal variations are tabulated.—L. I. PUGSLEY. *J. Fisheries Research Board Can.*, 4 (1939), 405–408; through *Chem. Abstr.*, 34 (1940), 1127. (F. J. S.)