# PHARMACEUTICAL ABSTRACTS

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CONTENTS

## PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

### PHARMACOLOGY (*Continued*)

**Sodium Cacodylate and Colchicine—Action of, on Various Dehydrogenases.** Colchicine had no effect on the activity of any of the muscle and liver dehydrogenases studied. Sodium cacodylate, 0.0001*M*, had no inhibiting action on the succinic, lactic and citric dehydrogenases of beef muscle and liver, while sodium arsenite under the same conditions had a strong inhibiting action. The activity of succinic dehydrogenase of beef muscle was increased by sodium cacodylate. Subcutaneous injections of colchicine or sodium cacodylate in rats had no effect on the dehydrogenase activity of the livers, examined 24 hours later. Thirty-seven references are given.—E. GAL. *Bull. soc. chim. biol.*, 20 (1938), 1188–1205; through *Chem. Abstr.*, 33 (1939), 1766. (F. J. S.)

**Suprarenal Cortex, Pancreas and Spleen—Lecithinolytic and Lysocithinolytic Power of.** From the experiments it is found: That the adrenals of a normal guinea pig and those of a scorbutic guinea pig have a lecithinolytic and lysocithinolytic power less than in normal conditions; that in scurvy, the lysocithinolytic power of the pancreas is decreased; that the spleen is without lysocithinolytic activity both in normal conditions and in scurvy.—M. T. MALATO. *Biochim. terap. sper.*, 25 (1938), 318. (A. C. DeD.)

**Tyramine—Circulatory Action of, in Studies on Humans.** Studies of the effect of tyramine on the circulation of human beings were made. Tyramine is active on subcutaneous and intravenous injections. No significant effect on the circulation could be noted after oral or rectal administration. On administration in active doses, tyramine produces a considerable, rapid but transient rise in blood pressure. The constancy of the diastolic pressure, which rises only slightly, and the resulting greatly increased pulse pressure give the blood pressure rise such a characteristic appearance, that it does not seem possible to ascribe to tyramine the intrinsic rôle in the mechanism of the increased pressure, which a high diastolic pressure and low amplitude certainly show. The amount of blood circulating increases considerably after doses of tyramine. As a result of the emptying of the venous reservoirs, there is produced first on intravenous injection a sharp increase in the venous pressure. The strength of the heart is increased by tyramine. The stroke volume of the heart shows a sharp rise after injections made intravenously and a precipitous fall after a brief hold at the maximum. The increased stroke volume is explained principally through the primary sympathomimetic action of tyramine on the heart muscle and only to a small extent on the stagnation of the blood resulting from the mobilization of the blood reservoirs. The heart rate is affected by tyramine to produce, at first, an acceleration and then a slowing. Sometimes severe tachycardias and sometimes remarkable bradycardias are observed. This lability of the heart action observed after tyramine is explained through interference with the primary heart action and the secondary opposing nervous regulation.—F. MEYER and H. ECKERS. *Naunyn-Schmiedeberg's Arch.*, 189 (1938), 200; through *Scientia Pharm.*, 9 (1938), 102. (M. F. W. D.)

**Urea, Creatine, Taurine and Viscosity—Influence of, on Tissue Respiration in Vitro.** Effect of urea, creatine, taurine and viscosity upon tissue respiration of kidney cortex of rabbit was investigated by Warburg's methods. Addition of 20 mgm. per cent urea to Ringer's solution caused no appreciable influence on the tissue respiration. By the presence of 2 mg. per cent creatine in Ringer's solution the tissue respiration was hardly affected. Ten and 20 mg. per cent taurine in Ringer's solution elevated the rate of tissue respiration slightly. Tissue respiration in serum was greater than that in viscous Ringer's solution.—H. YAMAMOTO. *Tohoku J. Exp. Med.*, 35 (1939), 22. (A. C. DeD.)

**Vitamin E—Investigations into the Method of Estimating. II. Further Observations on Vitamin E Deficiency and Implantation.** Further investigations show that the effect of a gestation-resorption is to diminish the probability of implantation following upon a subsequent positive mating. The lowered implantation rate is directly associated with the gestation-resorption, since comparable virgin animals of the same age do not show the lowering. There are indications that such virgin animals have a lower vitamin E threshold than animals of the same age that have already undergone a gestation-resorption.—A. L. BACHARACH and E. ALLCHORNE. *Chemistry and Industry*, 57 (1938), 600. **III. Relation between Dosage and Response to Vitamin E.** No indication has been obtained that any significant difference follows the administration of a given total dose of vitamin E during five and ten days, respectively, after positive mating. The re-

sponse curve relating fertility (percentage of five litters/positive implantations, per cent) to dose is very steep: doubling the dose raises the fertility rate from about 25% to nearly 100%. It appears that quantitative comparisons of vitamin E activity can only be made with reasonable accuracy by establishing the mean fertility dose for test substance and "standard."—A. L. BACHARACH, E. ALLCHORNE and E. VAN ROSSUM. *Ibid.*, 57 (1938), 600. (E. G. V.)

TOXICOLOGY

**Acetanilids—Halogenated, Toxicity and Antipyretic Properties of.** Reference is made to recent investigations of compounds containing fluorine. The present study had to do with antipyretic properties of *m*- and *p*-fluoroacetanilid and *p*-chloracetanilid and the relative toxicities of acetanilid and *p*-fluoroacetanilid. Details of experimental work are reported and findings discussed. *p*-Fluoroacetanilid shows no greater acute toxicity for cats than does acetanilid; *p*- or *m*-fluoroacetanilid shows very little or no antipyretic activity.—MELVIN F. W. DUNKER and MARVIN R. THOMPSON. *J. Am. Pharm. Assoc.*, 28 (1939), 70. (Z. M. C.)

**Barbiturate Poisoning—Use of Picrotoxin in Treatment of.** In reviewing the literature on the experimental use of picrotoxin in the treatment of barbiturate poisoning, Rovenstine points out that there is ample evidence that this drug is an active antidote for overdoses of barbiturates in laboratory animals. In sublethal doses of barbiturates, it shortens the recovery time; in lethal doses, within certain limits, it prevents death; and, when hopelessly large doses have been given, it prolongs life. Four cases of barbiturate poisoning in human beings are reported, all of them having been treated with picrotoxin by the method of repeated doses. In each case, the amount of barbiturate taken was well within the fatal range. Three patients recovered; one, who had taken an amount usually regarded as hopelessly fatal, died. The results obtained in these cases suggest that the action of the drug in human beings is comparable to that observed in laboratory animals. The importance of physiologic accessory measures is stressed.—E. A. ROVENSTINE. *Am. J. Med. Sci.*, 196 (1938), 46; through *Abbott Abstract Service*, (1938), No. 355. (F. J. S.)

**Bromides—Their Use and Abuse.** Psychogenic disorders are on the increase, and bromides figure prominently in their treatment. The cumulative toxic effects of bromides are not widely realized or recognized. Bromide intoxication is said to be caused not so much by the total dose of bromides as by the relation between daily intake of bromide and chloride. Approximately four times as much chloride must be taken daily as bromide, in order to maintain a balance. The symptoms of brominism are varied, but they usually include incoördination, disorientation, acne and furred tongue. Many times acute maniacal or very excited delirious states may result. If more bromide is given to control these, a vicious circle may be established. Diagnosis may be established by determination of blood bromide level; values from 150–300 mg./100 cc. usually accompany the delirious or psychotic states, while values above 100 should be considered with suspicion. The treatment is high chloride intake.—G. R. KAMMAN. *Minnesota Medicine*, 21 (1938), 484; through *Abbott Abstract Service*, (1938), No. 334. (F. J. S.)

**Copper—Effect of Feeding Different Levels of, to Rats.** The authors point out that it is now commonly accepted that copper is an essential element, and that it functions specifically in the stimulation of hemoglobin formation. Since copper is commonly believed to be toxic, it seemed desirable to ascertain the level at which it begins to exhibit toxic effects. White rats were fed *ad libitum* diets which contained 0, 500, 1000, 2000 and 4000 parts per million of added copper in the form of copper sulfate. The rats voluntarily ingested amounts of copper ranging from 5.05 to 11.8 mg. copper per day, but at the higher concentrations, food intake was so restricted that partial starvation and death resulted. Slight toxicity was observed on 500 p. p. m.; the effects were more intense on the higher levels. The results showed that copper does not begin to exert toxic effects until at least 150 times the therapeutic dose has been reached. The copper content of the liver can apparently be increased to 14 times normal without obvious damage.—R. BOYDEN, V. R. POTTER and C. A. ELVEHJEM. *J. Nutrition*, 15 (1938), 397; through *Abbott Abstract Service*, (1938), No. 321. (F. J. S.)

**Derris—Toxicological Studies of. Chronic Toxicity of Derris.** *Derris elliptica* administered orally to rabbits in amounts up to 30 mg. per Kg. of body weight daily for a period of 30 days produced no demonstrable effects upon growth. In amounts of 60 mg. and above, a distinct "cumulative" toxic effect was observed. On two growing dogs a diet containing 0.04% derris had a stunting effect as compared with litter-mate controls. Adult dogs tolerated similar amounts

for periods up to 240 days without manifesting any gross changes in appearance, food consumption or weight. Likewise no significant alterations were noticed in the blood or urine. Rats maintained on diets containing 0.0078 and 0.0156 % grew as well as the controls. Rats on 0.0312% derris showed only a slight inhibition in growth; the inhibition was more pronounced as the concentration of derris was increased. On diets containing 0.125, 0.25 and 0.5% derris, the animals did not live. Although the decreased growth rate might have been due partly to lowered food intake, the toxic effect of the derris in the diet should not be overlooked. Pathological studies indicated that derris in all the concentrations used was somewhat injurious to dogs and rats, the liver being the only organ consistently affected. In rats the first effect was periportal irritation, followed by mid-zone focal necrosis with larger doses. In dogs the effect in the majority of cases was a periportal irritation, accompanied in most of these cases by vasoconstriction of the hepatic veins and passive congestion. Further studies of a wider scope are needed before derris or any of its oxidation or decomposition products may be pronounced wholly innocuous when present in minute quantities on fruits and vegetables subjected to dusting or spraying with insecticides containing derris as the active ingredient.—A. M. AMBROSE and H. B. HAAG. *Ind. Eng. Chem.*, 30 (1938), 592–595. (E. G. V.)

**Lead Poisoning—Precautions in Treatment of, with Calcium.** The authors have studied lead poisoning for five years, and certain dangers associated with "deleading" by means of calcium have come to their notice. It is well known that distortion of calcium metabolism (by the administration of large amounts of calcium) will cause lead to be mobilized from the bones, thus bringing about excretion. This mobilization is not without its dangers if carried out too rapidly, for if the lead level in the blood rises above a certain point toxic symptoms will appear. It is not generally realized that the effective way to counteract this effect is to administer large quantities of phosphates. These have the tendency to demobilize the lead by causing it to redeposit in the bones. By this use of phosphates it is possible to continue with a diet containing normal optimum amounts of calcium. Another effect of phosphates is to promote the formation of insoluble lead phosphate in this intestine, thus combating absorption.—I. GRAY and I. GREENFIELD. *N. Y. State J. Med.*, 38 (1938), 1313; through *Abbott Abstract Service*, (1938), No. 402. (F. J. S.)

**Lye Poisoning.** A general review of the incidence, site of action, treatment for and prognosis of lye poisoning caused by the ingestion of drain pipe cleaners, washing powders and paint removers.—JEAN M. MARTIN and JAY M. AREANA. *Southern Med. J.*, 32 (1939), 286. (W. T. S.)

**Narcotic Drugs—Toxicology of.** The barbiturates and the thiobarbiturates may be extracted with ether from stomach washings, viscera or urine after acidification. The finding of barbiturates in these depends on the nature and dose of the barbiturate taken. Veronal will always be found in severe poisoning or fatal cases in large amount, luminal in smaller quantities and many of the others in traces only. In poisoning with barbiturates the residue obtained by extracting acidified urine with ether should give a positive Millon reaction, a positive cobalt test, and it should be crystalline although this latter is frequently difficult to obtain. A positive identification of the individual barbiturate can be made if sufficient material is obtained by extraction for a melting point and mixed melting point determination. Amidopyrine may be separated from a barbiturate by extracting the fluid or tissue first with ether from alkaline solution followed by ether from acid solution. The deep red color of acid urine is an indication that amidopyrine should be sought. The two straight chain ureides, Adaline and Bromural, are rapidly destroyed in the body. In poisoning by these compounds large quantities of bromide are found in the tissues and urine. Positive post-mortem identification of these drugs by chemical means was not possible. Morphine is extracted from viscera by the Stas-Otto process using ethyl acetate as the extracting solvent. Alcoholic extracts of alkaloids should be concentrated or evaporated at 40–50° C. for best results. In persons not addicted to morphine the alkaloids are slowly destroyed and poisonous doses yield abundant quantities of drug on chemical examination of viscera. Morphine addicts may ingest large doses but only traces be found in the viscera. Oxydimorphine and pseudomorphine were detected in exhumation cases, one after 19 months' burial. It is concluded that the change from morphine to pseudomorphine occurs in decomposing viscera. A table of barbiturates marketed in Britain giving the various trade names and melting points is included.—G. ROCHE LYNCH. *Analyst*, 63 (1938), 240. (G. L. W.)

**Poison Gas Detection.** A discussion of the methods used in the detection of the presence of poison gas in the atmosphere. Three methods, especially, are discussed. These are: (1) detection by acid production on hydrolysis, (2) electrical conductivity method and (3) chemical reaction.—G. H. GILL. *Pharm. J.*, 141 (1938), 549. (W. B. B.)

**Potassium Chlorate—Toxic Encephalopathy Resulting from.** Greengard presents the report of a child who was treated for an ulcerative stomatitis by the administration of a saturated solution of potassium chlorate in doses of one teaspoonful every three hours. In addition to this, the patient received two intravenous injections of sulfarsphenamine. After a week of the potassium chlorate medication, during which time a total of seven to eight Gm. of the drug had been ingested, the child began to show signs of cerebral damage, demonstrating disorientation, stupor, muscular weakness and one attack of convulsive movements. The condition improved slowly over a period of five to six weeks, but some doubt still remains as to whether the patient will be entirely normal. A careful examination revealed no other disease, and indicated the drug to be the cause. The author wondered how this poisonous substance came to be prescribed, but found the drug recommended in two medical texts.—J. GREENGARD. *J. Pediatrics*, 12 (1938), 197; through *Abbott Abstract Service*, (1938), No. 268. (F. J. S.)

**Red Squill—Study of the Toxic Principles of.** Red squill has been widely used as a raticide perhaps because it is acceptable to rats and relatively non-toxic to domestic animals. A study of red squill begun in 1931 has resulted in obtaining a highly toxic, reasonably stable non-crystallizable product whose chemical nature has not yet been determined. Experimental work covers feeding of both red and white squill, extraction studies, extraction procedure, purification of the extract, feeding of extracts to rats. The following conclusions were reached: Temperatures up to 100° are not injurious to the toxic principles of red squill. The rat-killing principle of red squill is extracted from red squill by a menstruum comprised of 80% alcohol. Both animal charcoal and activated charcoal adsorb the rat-killing principle from an aqueous solution. It may be recovered from the charcoal by treating the latter with 80% alcohol. A highly potent product has been obtained which possesses a toxicity one hundred times that of red squill powder from which it is obtained. It has been shown that female rats are killed with about half the dose of red squill powder and squill extracts that is required to kill male rats. FLOYD J. LEBLANC and C. O. LEE. *J. Am. Pharm. Assoc.*, 28 (1939), 151. (Z. M. C.)

**Saline Solution—Effects of Massive Injections of.** Cats were given massive infusions of 1% saline solution to determine the amount necessary to prove lethal. This was found to be about 500 cc. per kilo, given at the rate of 5 cc. per kilo per minute. A comparable dose for a man would be 35 liters given at the rate of 350 cc. per minute. The effects on the animals during infusion included vomiting and diarrhoea of watery material; the blood pressure was little affected. Diuresis occurred, and 20% of the injected fluid was eliminated by the kidneys before death occurred. Autopsies revealed that the fluid had diffused promptly from the blood stream into the tissues of the gastrointestinal tract and its accessory glands. Here, the salt content was higher than 1%. In the other parts of the body, the solution collected in the tissue spaces is essentially a 1% concentration. No increase in the water content of the cerebrum could be found, so that death was not due to cerebral edema. Recovery from anything short of a lethal dose was complete.—R. A. CUTTING, A. M. LANDS and P. S. LARSON. *Arch. Surgery*, 36 (1938), 586; through *Abbott Abstract Service*, (1938), No. 328. (F. J. S.)

**Silicates—Organic, Toxicity of.** Organic compounds of silicon used as solvents, components of paint and preservatives of stone. Toxicity of ethyl silicate (tetraethyl-ortho-silicate) studied on animals demonstrates pulmonary damage, but no properties similar to slow action of silica in producing silicosis. Displays high degree of toxicity, acute and possibly related to action of silica.—CURRENT COMMENT. *J. Am. Med. Assoc.*, 110 (1938), 291. (G. S. G.)

**Sulfanilamide—Toxicity of.** Studies on acute toxicity of sulfanilamide and acetyl sulfanilamide given orally to mice, rabbits and dogs, and chronic toxicity on dogs and rats. Observations made on blood picture, acid-base equilibrium and renal function. Drugs administered in 10% suspension in acacia by mouth. Acacia did not seem to influence toxicity of drugs. In administration of very large doses, for acute toxicity studies, the rate of absorption from intestinal tract contributes to variability of results. Acetyl sulfanilamide is less soluble in water than sulfanilamide and therefore absorbed less readily and completely than sulfanilamide. No observable symptoms with blood concentrations under 30 mg. per 100 cc.; severe symptoms between 60 and

80 mg. per 100 cc., coma and paralysis. Studies on chronic toxicity showed that blood concentrations varied from 5 to 20 mg. per 100 cc. The $p_H$ of blood and urine was studied and the carbon dioxide content of blood; they indicate definite acidosis due to alkali deficit. No significant changes noted in blood picture. Temporary decrease in renal function noted after large doses, but no permanent kidney injury. Experiments indicate definite but low toxicity in massive doses, and no chronic toxicity when small doses are administered over long period. Acetyl sulfanilamide is slightly more toxic than sulfanilamide.—E. K. MARSHALL. *J. Am. Med. Assoc.*, (1938), 252. (G. S. G.)

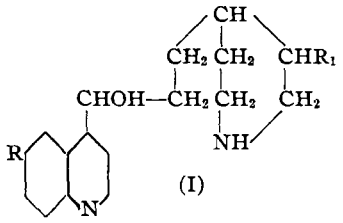
**Thallium Poisoning—Iodides as Antidotes in.** The authors find that iodides administered subcutaneously reduce greatly the toxic effects of thallium acetate. Rats given thallium acetate in the diet (0.3 mg. to 0.4 mg. per kilo body weight) quickly developed symptoms of acute thallium poisoning and lost almost all hair, and the thallium had to be periodically omitted from their diet. Animals given 0.3 mg. per kilo body weight for 32 days and then 0.4 mg. for six days were completely protected by daily injections of 0.5 cc. of solution of iodide of lithium, potassium or sodium (containing 20 mg. of iodine per cc.). All rats that remained, increased in weight and preserved their coats. Rats injected with magnesium iodide appeared healthy but lost much hair, while calcium iodide caused dermatitis and had to be discontinued.—O. V. HYKES and F. A. DIAKOC. *Biologicke Spisy Vysoke Skoly Zverolekarski*, 15 (1938), 29–45; through *Chemist and Druggist*, 129 (1938), 482. (A. C. DeD.)

THERAPEUTICS

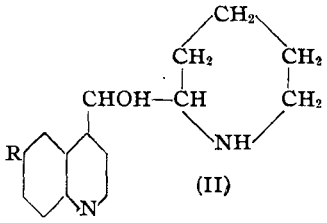
**2-(*p*-Aminobenzenesulfonamido)pyridine—Treatment of Lobar Pneumonia with.** The treatment of eight cases of lobar pneumonia with 2-(*p*-aminobenzenesulfonamido)pyridine is described. Treatment was commenced from twelve hours to four days from the onset. In every case exhibition of the drug was followed by immediate fall of temperature and pulse rate and by improvement in the clinical condition. In all cases in which the drug was administered in full and efficient dosage the subsequent course was uneventful and recovery rapid. Serum and all other forms of treatment other than symptomatic were withheld.—S. C. DYKE and G. C. K. REID. *Lancet*, 235 (1938), 1157. (W. H. H.)

**β-Aminopyridine—Effect of, in Experimental Blacktongue.** One hundred and fifty milligrams of β-aminopyridine was obtained by extraction from eight liters of solution (Cohn fraction D) representing one ton of fresh liver. It was shown to be the same as the synthetic product. Experiments on dogs with diet which induced black tongue showed β-aminopyridine to be, at least, as effective as nicotinic acid in rapidity and completeness of cure.—Y. SUBBAROW, W. J. DANN and E. MEILMAN. *J. Am. Chem. Soc.*, 60 (1938), 1510. (E. B. S.)

**Antiplasmodial Action and Chemical Constitution. II.** The two diastereoisomeric di-




(I)




(II)

hydroquinicinols (I, R=OMe, $R_1$=$CH_2.CH_3$) were prepared by reduction of the corresponding ketone, and, together with a methylation product *d*-*N*-methyldihydroquinicinol, were shown to be inactive in experimental bird malaria. From this result it seemed essential that the piperidine ring system should be as near the quinoline ring system as possible, consistent with the retention of the carbinol group, and the synthesis of substances having the structure II (R=H or OMe) was successfully undertaken. The starting materials were ethyl ε-benzamidocaproate and ethylcinchoninate (for compounds having R=H), or ethyl-ε-benzamidocaproate and ethyl quininate (for compounds having R=OMe), and improved processes for obtaining these in quantity are described. In each case, condensation of the two esters by sodamide free from nitrite gave uncharacterized oils which were hydrolyzed by hydrochloric acid to stable crystalline products, namely, ε-benzamidoamyl-4-quinolyl ketone and ε-benzamidoamyl-4-(6-methoxyquinolyl) ketone, re-

spectively. These were converted by more drastic hydrolysis into oily amino ketones, which on mono-bromination in hydrobromic acid solution yielded the stable α-bromo-ε-aminoamyl-4-quinolyl and α-bromo-ε-aminoamyl-4-(6-methoxyquinolyl) ketone, respectively. Cyclization, by shaking with saturated sodium carbonate solution in the presence of ether, was followed by immediate catalytic reduction of the crude product to give 4-quinolyl-α-piperidylcarbinol (II, R=H) and 4-(6-methoxyquinolyl)-α-piperidylcarbinol (II, R=OMe). In the latter case an *iso-* form of the base was also isolated. Direct action of the corresponding iodides yielded the *N*-methyl, *N*-allyl and *N*-crotyl derivatives of these bases, while catalytic reduction of the *N*-allyl and *N*-crotyl derivatives gave small quantities of the *N*-propyl and *N*-butyl derivatives. Tests on experimental bird malaria showed that no quinolyl derivative without the 6-methoxy group, and no *N*-alkyl derivative, had any activity, but the two parent isomeric 6-methoxy bases were active, 4-(6-methoxyquinolyl)-α-piperidylcarbinol being about half as effective as quinine in terms of the therapeutic index.—A. D. AINLEY and H. KING. *Proc. Roy. Soc.*, B, 125 (1938), 60; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 646. (S. W. G.)

**Ascorbic Acid—Production of Metallic Compounds of.** The preparation of standard methods of salts of *l*-ascorbic acid is claimed; the calcium, iron and gold salts are described, as also are the physiological properties of these and of the copper, magnesium, silver, mercury, zinc, aluminum, sodium and stannous salts. The calcium salt is claimed to be particularly readily absorbed by the body (in comparison with other calcium compounds) and to be of value in the treatment of rickets, pyorrhea, etc.—S. L. RUSKIN. Brit. pat. 488,784; through *J. Soc. Chem. Ind.*, 11 (1938), 1363. (E. G. V.)

**Barberry and Its Significance in German Healing Arts.** A continuation with ten references.—R. KRESZ. *Deut. Apoth. Ztg.*, 53 (1938), 1313. (H. M. B.)

**Bismuth—Excretion of.** The authors report the result of investigation of the therapeutic effect and urinary output of a number of bismuth preparations. The results of administration of these preparations by intramuscular and oral routes were compared. Sobisminol is the only substance with a good therapeutic effect and urinary excretion after oral administration of large doses—1.26 Gm. of bismuth daily. Herxheimer reactions were noticed after administration of arsenicals to those cases which had had a large dose of bismuth orally.—T. SOLLMANN, H. COLE, K. HENDERSON, G. W. BINKLEY, H. CONNORS, G. COOPER, W. F. SCHWARTZ, M. SULLIVAN and W. R. LOVE. *Arch. Derma. and Syphil.*, 37 (1938), 993; through *Brit. Med. J.*, 4061 (1938), 976D. (W. H. H.)

**Burns—Treatment of.** The treatment of burns is quite well standardized, and little variation exists in the therapy of the severe systemic effects. There is more scope for different types of treatment in the handling of the local lesion. The author has found tannic acid jelly superior to the tannic acid spray usually used, due to the fact that when the jelly is applied a dressing may be placed over it immediately, and the shock of exposure to the air is avoided. However, in circular burns involving the forearm or hand, the author prefers not to use so escharotic a substance as tannic acid, since the tough eschar may contract and interfere with the circulation. In such cases, he applies Butesin Picrate Ointment, which leaves the surface of the burn flexible and pliable. The treatment of the systemic reactions to severe burns follows conventional lines, with emphasis on the necessity of giving adequate doses of morphine. Skin grafting is done soon after healthy granulation is established.—U. E. GEBHARD. *Industrial Medicine*, 7 (1938), 622; through *Abbott Abstract Service*, (1938), No. 434. (F. J. S.)

**Camphor in Oil—Effect of, on Lactation.** Claimed that camphor in oil given intramuscularly to postpartum patients induces rapid involution of lactating breast. Tested on a few postpartum patients, but of no discernable value compared to untreated cases. Experimental work with adequate controls done on rats and guinea pigs. Gain or loss in weight of young used as indication of quantity and quality of milk. One grain of camphor daily to rats, and $1^1/_2$ grs. to guinea pigs. Experiment indicated no inhibition of lactation. More tests necessary on human to justify use of camphor in oil.—R. R. GREENE and A. C. IVY. *J. Am. Med. Assoc.*, 110 (1938), 641. (G. S. G.)

**Cancer—Campaign against, in Chile.** The work of Cancer Commission is described and emphasizes importance of early diagnosis and institution of treatment. Finds that the chief centers of attack are the uterus and mammary glands in women and digestive tract in both sexes. Cancer institutes established in important cities, with clinics in the majority of provincial hos-

pitals.—*Semana Surena Del Cancer*, Concepciou, Chile, 1937; through *Bol. Ofic. Sanit. Panamericana*, 17 (1938), 276. (G. S. G.)

**Cardiazol Convulsion Therapy.** Cardiazol convulsion treatment has been applied to four subjects of acute mania, five of psychotic depression and three of hysterical emotional disorder. Recovery took place in all four maniac cases, but one has since relapsed. Of the depressed cases four recovered, and one, of over three years' duration, has greatly improved. All three hysterical cases have remitted, one of eleven years' duration having made a dramatic and apparently complete recovery which has now lasted eleven months.—L. C. COOK and W. OGDEN. *Lancet*, 235 (1938), 885. (W. H. H.)

**Celandine, Chelidonium Majus, a Native Drug Plant Used in the Treatment of Liver, Gall Bladder and Stomach Disorders.** A review with thirteen references.—DIETER SCHMALTZ. *Deut. Apoth. Ztg.*, 53 (1938), 1169–1171. (H. M. B.)

**Chemotherapeutic Agents—Fatty and Steroid Derivatives of.** Fatty and steroid residues have been introduced into quinine, azo-dyes, arsanilic acid, quinoline, etc., with a view toward producing lipophilic chemotherapeuticals. The authors expected that such compounds would have a selective affinity for the cell wall of the tubercle and leprosy bacilli and be generally effective in cases where the infected tissue is lipoidal in character. 4-Cetylaminoazobenzene-4′-arsonic acid was found to exhibit a very low toxicity. Additional pharmacological studies of the compounds are to be reported.—ERNEST BERGMANN and L. HASKELBERG. *J. Chem. Soc.* (London) (1939), 1. (W. T. S.)

**Cobra Venom—Treatment of Angina Pectoris by.** Cobra venom was used as analgesic to 5 patients with angina pectoris. Three having received other medication were less relieved. Two having had no other treatment responded favorably. Injections given every four days. Effect disappeared on abandoning treatment. No harmful results of venom noted.—A. BULLRICH. *Rev. Argentina Cardiologica*, 3 (1936); through *Rev. Sud. Amer. Endocrin. Immun. Quimioter.*, 21 (1938), 52. (G. S. G.)

**Compounds of Therapeutic Value—Manufacture of.** Interaction of para-amino sulfonic acid (I) with aromatic and araliphatic aldehydes gives anils of superior therapeutic value; these with aqueous sodium bisulfite give water-soluble derivatives. The CHPh., melting point 232°, *p*-$OMe.C_6H_4CH$:, melting point 224°, *p*-$NMe_2.C_6H_4.CH$:, melting point 232°, and dicinnamulidene (II), melting point 52°, derivatives of I are described. II with aqueous sodium bisulfite at 100° gives a water-soluble compound, $SO_2[C_6H_4.NH.CH(SO_3Na).CH_2.CHPh.SO_3Na]_2$.—T. A. HENRY and W. H. GRAY. Brit. pat. 491,265; through *J. Soc. Chem. Ind.*, 11 (1938), 1363. (E. G. V.)

**Devil's Club (Fatsia Horrida)—Hypoglycemic Substance from the Root of.** This paper presents data which show that from the root of *Fatsia horrida* an extract can be prepared exhibiting marked hypoglycemic properties. The attention of the writers was drawn to this substance by the case of a patient who in hospital developed marked symptoms of diabetes. This person had kept in apparent good health for several years by oral doses of an infusion of this root bark. Experiments proved that the material is active when fed by the mouth, and apparently it has no marked toxic effects.—R. G. LARGE and H. N. BROCKLESBY. *Canad. Med. Assn. J.*, 39 (1938), 32; through *Brit. Med. J.*, 4057 (1938), 772A. (W. H. H.)

**Diabetic Patient—Surgical Results in Treated and Untreated.** Uncontrolled or partially controlled diabetic patient jeopardizes prognosis in any complication because he is never in really satisfactory state of nutrition. Analysis of group of 474 clinic and non-clinic patients. Patients kept on high carbohydrate, limited fat diet with enough insulin before meals to keep patient sugar-free for several days before operation. Immediately before, patient is given infusion of 1000 cc. physiologic NaCl with 50 Gm. dextrose. Amount of insulin added to infusion or orange juice for minor surgery determined by urinalysis. Saline infusion repeated after operation. As soon as he can take food by mouth, he is fed every 4 hours, 25 to 50 Gm. carbohydrate. Gangrene more common in untreated patient, also mortality much higher in that group.—SAMUEL STANDARD. *J. Am. Med. Assoc.*, 110 (1938), 627. (G. S. G.)

**Dihydroisocodeine and Codeine—Clinical Study of Comparative Effects of.** Dihydroisocodeine and standard codeine were used in a series of alternate administration experiments on advanced cases of tuberculosis complaining of cough. As tablets of identical size were used the substitution was made without the patient's knowledge. Daily observations were recorded

by the patient, the nurse and the physician in charge. The comparative effects particularly on cough and bowel movements were noted. Dihydroisocodeine has no demonstrable clinical superiority over standard codeine in the usual therapeutic dosage but seems practically equivalent for purposes of cough control. In the great majority of tuberculosis patients requiring medication for cough relief, codeine, 10 mg. orally, is a sufficient dose.—LOWREY F. DAVENPORT. *J. Pharmacol.*, 64 (1938), 236. (H. B. H.)

**Diseases and Their Treatment.** Angina pectoris, coronary thrombosis, arteriosclerosis, high blood pressure and phlebitis are described.—ANON. *Chemist and Druggist*, 130 (1939), 154. (A. C. DeD.)

**Drugs and Poisons—Absorption of, through Skin and Mucous Membranes.** Tests were for vehicles (fixed oils and fats) which do not accelerate penetration of skin, but act as fixative and keep the agent in contact longer. Volatile oils have deeper penetration but are toxic. Volatile oils and aromatic compounds are efficient vehicles for potent alkaloids and other drugs. Tests of relative rate of absorption of intact and injured skin and mucous membrane demonstrate slower rate of absorption for most toxic agents through injured or destroyed mucous membrane and skin. Present report solely on animal experiments.—DAVID I. MACHT. *J. Am. Med. Assoc.*, 110 (1938), 409. (G. S. G.)

**883 F—Treatment of Angina Syndromes by.** 883 F (diethylaminomethyl-benzodioxane) when administered by mouth has produced, in a number of cases, a remarkable sedation, maintained for several months. In grading the doses, which never passed 20 Cg. per day, the authors have never observed a grave incident, especially regarding the heart. The principal consistent trouble is gastric intolerance, which is very efficaciously combated with alkalies, but which in a few instances interrupted the cure. Pure clinical angina and those attached to the aorta are most favorably influenced. In the case of angina with fibrillation of the left ventricle, the success is sometimes complete, often transitory and sometimes fails. The authors believe that this product merits attention by the medical profession for the treatment of angina pectoris.—A. CLERC, J. STERNE and J. P. LENOIR. *Presse Medicale*, No. 85 (1938), 1553. (W. H. H.)

**Estrogenic Substance—Treatment of Joint Pains in Menopause by.** Not all pains in the joints are to be correctly diagnosed as arthritis; neither do all conditions associated with pain, swelling and stiffness of the joints fall readily into the usual classifications adopted for arthritis. For several years it has been observed that women developed joint disturbances in the fourth and fifth decades of life; for those cases not presenting the definite characteristic signs of arthritis, the author proposed the term "menopausal arthralgia." The literature tending to attribute this disturbance to endocrine imbalance is extensively reviewed. Many cases showing thyroid deficiency respond well to thyroid extract, but others do not show myxedema. In many of these, adequate treatment with estrogenic substances brought marked relief. Seventy-one such cases, in which arthritis followed ovariectomy, are reported in the paper. Under adequate treatment, seventy per cent responded to the extent of almost complete relief.—F. C. HALL. *New Engl. J. Med.*, 219 (1938), 1015; through *Abbott Abstract Service*, (1938), No. 431. (F. J. S.)

**Frost Bite—Rational Method of First Aid Treatment of.** The author points out that irrational methods of treatment are traditional for frost bite. Vigorous rubbing with snow is poor treatment since the capillaries in the frozen part are already filled with small ice crystals and the tissue is stiff and brittle. Furthermore, circulation has ceased in the frozen part and this means that any heat applied to it will not be conducted away. This explains the extreme sensitivity of frozen tissue to damage by heat applied in an effort to thaw it out. No temperature higher than that of the body should be allowed to occur in the location of the frost bite. The method suggested for applying these principles to treatment is as follows: Immerse the affected part in water at a temperature no higher than 37.5° C. and allow it to remain without massage or manipulation until well thawed out. It must be remembered that the tissue vitality is very low after thawing, and there is great danger of infection. This must be guarded against carefully.—H. R. CLOUSTON. *Canad. Med. Assoc. J.*, 40 (1939), 166; through *Abbott Abstract Service*, (1939), No. 443. (F. J. S.)

**Fuchsin Paint—Use of, in Leishmaniasis Cutanea.** A paint of basic fuchsin fortified with phenol, boric acid and resorcinol was found superior to the other commonly used treatments (*e. g.*, phosphorated oil and certain antimony compounds) for Leishmaniasis cutanea. The paint

was applied locally and injected, both intramuscularly and at the site of the infection.—Sir Aldo Castellani and G. Amalfitano. *J. Trop. Med. Hyg.*, 42 (1939), 33. (W. T. S.)

**Gonococcic Meningitis—Results of Treatment of, with Sulfanilamide.** Gonococcic meningitis is a complication of gonococcic infection elsewhere in the body. Relatively rare, with 50% mortality. Report of a case of meningitis at first diagnosed as meningococcic, later proved to be gonococcic. Sulfanilamide therapy instituted, 0.324 Gm. three times daily, for 12 days, discontinued 9 days, again instituted because of fever, for 9 days. Wassermann positive, spinal fluid examination indicated cerebrospinal syphilis in addition to gonococcic meningitis. Sulfanilamide given again 42 days later for 2 days. Meningococcic symptoms having disappeared, patient was discharged at end of 3 months to continue antisyphilitic therapy at home. Case unusual because of long duration and recovery.—H. P. Marvin and W. E. Wilkinson. *J. Am. Med. Assoc.*, 110 (1938), 800. (G. S. G.)

**Gonorrhea—Treatment of, by Uleron.** By acting apparently on the reticulo-endothelial system Uleron, 4-(4'-amino-benzol-sulfonamide) benzol-sulfon-dimethylamide, proved somewhat superior to sulfanilamide in the treatment of subacute and chronic gonorrheal infections. The drug was well tolerated in doses of 1 Gm. three times a day for four days which constituted a course of treatment. In spite of the prompt improvement in a majority of cases the author cautions against overlooking residual infections.—H. E. Shih and C. C. Wen. *China Med. J.*, 55 (1939), 1. (W. T. S.)

**Helium—Therapeutic Use of.** The relative low specific gravity and the rapid diffusion rate of a gas mixture composed of 21% oxygen and 79% helium were found by the authors to render this particular mixture useful in conditions obstructive to breathing such as: unresolved pneumonia, cardiac decompensation and static astmaticus.—C. W. Metz, A. A. Wearner and A. E. Evans. *Southern Med. J.*, 32 (1939), 34. (W. T. S.)

**Homeopathy and Its Pharmaceutical Aspects.** The broadest conception of homeopathy implies that a relation between a disease and the appropriate remedy should be indicated by some kind of likeness. In homeopathy, the remedy is selected according to the similarity of symptoms, which is the appropriate stimulus of the particular diseased organism. The author emphasizes the importance of fineness of drug particles in homeopathy, and explains this importance by comparison with the physico-chemistry of the colloids. It is said that the problem of potentizing and of homeopathic dosage cannot be judged by considering only the quantities of substance. It is the energy of a certain quality available for interchange with the living cell which counts, and that, to a great extent, depends on the physical state of the preparation; the preparation again depends on the chemist's work, and the more he understands of the physical facts the better his work will be. Simplicity is also the mark of prescribing in homeopathy, for mixing remedies is contradictory to its principle.—O. Leeser. *Pharm. J.*, 141 (1938), 495, 523. (W. B. B.)

**Homeopathy—Another Viewpoint of.** The author contends that the homeopathic method of determining the symptomatic effects of a drug, let alone the assessing of the results of its exhibition, is grossly unscientific; that if people are psychologically ill, they should be cured by straightforward psychotherapy, which does not pretend to be anything else.—A. M. Spencer. *Pharm. J.*, 141 (1938), 552. (W. B. B.)

**Hospital—Therapeutics Committee of.** The author discusses the organization of the committee and also its function and then gives some details about the work of the committee at Cook County Hospital.—Bernard Fantus. *J. Am. Pharm. Assoc.*, 28 (1939), 106. (Z. M. C.)

**Hydroxyphenyl-β-Aminoethanols and Water Diuresis.** Dogs with a vesicle fistula, by intramuscular route, weak doses of levorotatory *m*-hydroxyphenyl-β-methylaminoethanol augments water diuresis. On the contrary, large doses reduce to a great extent the water diuresis or perhaps cause a cessation of urinary flow for a rather long period of time; the water diuresis again manifests itself but very slowly. Doses of levorotatory *m*-hydroxyphenyl-β-methylaminoethanol that augment water diuresis attenuate the gradual rate of fall in chlorides and tend to exaggerate the rate of fall in urea, which is produced in the normal state after the ingestion of water. When the levorotatory *m*-sympathol diminishes the aqueous diuresis, one observes at the same time an exaggeration of the gradual rate of fall in chlorides and the gradual reduction in the rate of urea is impeded. The doses of dextrorotatory *m*-hydroxyphenyl-β-methylaminoethanol are necessarily higher, and to produce water diuresis must necessarily be greatly increased over its levorotatory isomer. Dogs with a vesicle fistula, by intramuscular route, with weak doses of

levorotatory *p*-hydroxyphenyl-β-methylaminoethanol and also racemic cause a diminution of water diuresis. On the contrary, large doses excite the diuretic effect from the ingestion of water. These phenomena have been observed with large doses to be below the influence of racemic *p*-sympathol and that of the levorotatory isomer.—E. ZUNZ, T. SPARCHEZ and L. GILLO. *Arch. inter. Pharmacodynamie*, 60 (1938), 1. (W. H. H.)

**Hyperthyroidism—Effect of, upon the Metabolism of Vitamin C.** Considerable evidence has been presented to indicate that during febrile states due to infection, the organism uses more vitamin C than during normal periods. This is deduced from the fact that during such febrile incidents the excretion of the vitamin is greatly reduced. The author reasoned that if this increased demand were due to a higher metabolic rate, it should be present in hyperthyroidism. Accordingly, five patients were studied in the hospital under conditions permitting good control of the diet. The urine was collected with a suitable preservative technic, and titrated to determine the amount of vitamin C excreted. It was found that hyperthyroid individuals had a very low excretion of vitamin C before thyroidectomy, and that following this operation the excretion of the vitamin soon reached a normal level. Before operation, the urinary level of vitamin C in four of the patients was as low as that frequently seen in scurvy.—R. A. LEWIS. *Bulletin Johns Hopkins Hospital*, 63 (1938), 31; through *Abbott Abstract Service*, (1938), No. 332. (F. J. S.)

**Hypophysis and Blood Picture.** No change in the leucocyte number of the peripheral blood, both after hypophysectomy and after combined hypophysectomy and splenectomy, was observed. A convenient method for the differential count of bone marrow smears has been described; appliance of this method to normal and hypophysectomized rats revealed a distinctly decreased red blood cell formation in the latter; no impairment of the white cell formation could be observed. After the injection of crude hypophyseal extract the bone marrow had a normal appearance No changes were detected in the fragility of the erythrocytes during the first month after removal of the hypophysis. From these facts the following conclusions may be drawn: It is highly improbable that the hypophysis exerts an influence on the white blood cell formation; the reticulopenia occurring after hypophysectomy is a manifestation of an alteration in the red blood cell formation in the bone marrow; the principle active in preventing the reticulopenia after hypophysectomy must act on the bone marrow, however, solely on the red blood cells. To determine whether it acts directly or indirectly by the way of blood destruction will be the purpose of the authors' next investigation.—G. A. OVERBEEK and A. QUERIDO. *Arch. inter. Pharmacodynamie*, 60 (1938), 105. (W. H. H.)

**Insulin—Influence of Fever on Peripheral Action of.** The work is summarized as follows: Fever may abolish the action of insulin not only by increasing the forces which raise the blood sugar, but also by inhibiting the action of insulin in lowering the blood sugar. In a previous communication (Wien, *Quart. J. Pharm. Pharmacol.*, 10 (1937), 621) it was reported that the hormones liberated from the pituitary, adrenal and thyroid glands all play a part in the fever which produces resistance to insulin. This resistance could partly be explained as variations in the degree of activity of the glycogenic function of the liver which results from stimulation by the pituitary, adrenal and thyroid hormones. It has now been shown that when glucose was infused into the vein in the spinal cat after evisceration, the effect of insulin in reducing the blood sugar was less in an animal in which fever had been produced than in a normal animal, while the deposition of glycogen in the skeletal muscles was completely prevented. The absence of data as to oxygen consumption and the contribution of extra glucose by the liver made it impossible to form a full reckoning of the carbohydrate balance. The sugar which disappeared and was not deposited as glycogen, was probably diverted into some intermediary product of carbohydrate metabolism. The inhibition of insulin action during fever, therefore, is not restricted to the glycogenic function of the liver, but extends to the carbohydrate metabolism of the muscles.—R. WIEN. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 177–185. (S. W. G.)

**Malaria—Study of the Chemotherapy of.** The therapeutic action of methylene blue is due to its function as a vehicle for hydrogen, activating the respiration of the erythrocytes and decreasing the amount of fermentation lactic acid. Several other dyestuffs having about the same oxido-reduction potential (Azure I, Lauth's violet, Janus green, etc.) behave similarly. Substances which facilitate cellular respiration increase the activity of plasmoquin, but have no action on quinine; on the other hand, malonic acid has no influence on the action of plasmoquin.—

M. OESTERLIN. *Arch. Schiffs-u. Tropen-Hyg.*, 41 (1937), 720–728; through *Chimie & Industrie*, 40 (1938) 308. (A. P.-C.)

**Male Hormone Substance—Effect of Synthetic, on Descent of Testicles in Human Cryptorchidism.** Twelve cases of pseudocryptorchidism treated with amounts of male hormone too small to give penile and scrotal growth were sufficient to condition the testes against spastic retention.—JAMES B. HAMILTON and GILBERT HUBERT. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 9. (A. E. M.)

**Mandelic Acid—Pharmacy of, and Its Salts.** A review of the use of salts of mandelic acid in medicine is given.—D. K. LARGE. *Australasian J. Pharm.*, 20 (1939), 269. (A. C. DeD.)

**Menstrual Disorders—Treatment of, with Estrogenic Substances.** In one section of a general article dealing with menstruation and its disorders Israel considers the uses to which estrogenic substances may be put in the treatment of such conditions. The use of these hormones is contraindicated in the treatment of any type of dysfunctional uterine hemorrhage, since the cause of bleeding in such instances is usually a continued and unantagonized action of these very estrogenic principles. Estrogenic substances, on the other hand, are used in amenorrhea, oligomenorrhea or hypomenorrhea with the idea of combating uterine hypoplasia. Certain amenorrheic women, possessing a fair degree of ovarian function, and having uterine hypoplasis, will usually respond to estrogenic treatment alone; in others who have deficient ovarian function, the estrogens are useful as an adjuvant. The dosage of these substances should be sufficient to raise and maintain the blood level to 1000 to 2000 I. U. daily for eight to twelve weeks.—S. L. ISRAEL. *Endocrinology*, 22 (1938), 253; through *Abbott Abstract Service*, (1938), No. 306. (F. J. S.)

**Methenamine—Neutralizing Action of, on Chloroethyl Sulfide.** The authors report that methenamine in aqueous solution is a good therapeutic agent to use as an antitoxic against local or general presence of chloroethyl sulfide (yperite). Ammonium chloride and traces of formaldehyde are formed, but cause no untoward effects.—P. BRUERE and P. BOUCHEREAU. *J. pharm. chim.*, 28 (1938), 490–492. (S. W. G.)

**Monoethanolamine Oleate—Use of, for Injecting into Varicose Veins.** Sodium morrhuate has been widely adopted as a sclerosing solution for varicose veins because of its many advantages, but one of its drawbacks has been the allergic reactions sometimes produced by its injection. The reason for these reactions is considered to reside in the uncertain composition of the compound, which can never be exactly reproduced to the same formula, due to variations in the raw materials. Monoethanolamine oleate was tried with this in mind, because it is a definite chemical compound. Trial in the biologic laboratory showed the new compound to be a little less toxic than morrhuate when given intravenously to rabbits. Accordingly, it was tried in the clinic. Forty-three consecutive cases were given a total of 345 injections. Monoethanolamine oleate was found to be a satisfactory substitute for sodium morrhuate, producing thrombosis fully as well, and not giving rise to allergic reactions. It is more stable in solution.—N. E. MEYER. *Am. J. Surg.*, 40 (1938), 628; through *Abbott Abstract Service*, (1938), No. 342. (F. J. S.)

**Morphine and Scopolamine—Use of, in Pain Relief for Children.** The drugs suitable for pain relief are in general also suitable for preanesthetic medication, and Waters discusses the merits of selecting one combination of drugs and becoming thoroughly familiar with it. The combination chosen is morphine and scopolamine, and certain merits of this mixture are brought out. For a given amount of therapeutic effect, there is a smaller respiratory depression than from morphine alone. Considerable importance is placed upon the varying curve of metabolism in children, as related to the dose of drug required to calm them. This curve rises to a peak at about five years of age, and again at about 11 years, and does not fall to adult levels until about the age of 20. Since reflex irritability directly parallels this curve, it is used as a valuable guide to dosage. Metabolism, and thus dose, is also influenced by various emotional, febrile, painful and endocrine states, which are tabulated. Long experience with these two drugs has rendered them especially valuable.—R. M. WATERS. *Am. J. Surgery*, 39 (1938), 470; through *Abbott Abstract Service*, (1938), No. 324. (F. J. S.)

**Nembutal—Duration of Labor Shortened in Primiparas by Use of.** One of the authors has used Nembutal in obstetrical practice for several years, and has formed the impression that the duration of labor is shortened by this drug. Because no data concerning this effect were found in the literature, the present series of 567 cases is reported. The patients received either Nembutal alone, Nembutal with calcium or calcium alone. The primiparas in the first two

groups showed a duration of labor approximately two and one-half hours less than those of the last group. There was no significant shortening of labor among the multiparas. The authors believe these findings indicate that Nembutal has little stimulating effect upon the propulsive powers in labor, its observed effect being due to hastening of cervical dilation. The duration of labor recorded in these experiments was taken as the time elapsing between the onset of regular pains and complete dilation of the cervix. The second and third stages of labor were therefore not included.—D. N. DANFORTH and W. C. DANFORTH. *Western J. Surg., Gynecol. and Obstet.*, 46 (1938), 379; through *Abbott Abstract Service*, (1938), No. 341. (F. J. S.)

**Nicotinic Acid—Postoperative Stomatitis Treated with.** The therapeutic use of nicotinic acid in two cases of pellagra is described. In both of these cases, the dermatitis and lesions of the mucous membranes cleared up satisfactorily following the administration of nicotinic acid; the mental status of the patients and their general strength also improved. In one pellagrin, a slight abnormality of the electrocardiogram returned to normal, and in the other, free hydrochloric acid appeared in the stomach following treatment. The authors describe two cases of stomatitis which appeared in patients who had vomited profusely for several weeks, and whose chief source of nourishment had been intravenous infusions. The tongues were red and ulcerated, and resembled early pellagrous stomatitis. Since this condition rapidly disappeared in both patients following the administration of nicotinic acid parenterally, the authors suggest that nicotinic acid may be indicated where such conditions appear in persons on a strictly limited diet.—R. FRANCE, R. D. BATES, W. H. BARKER and E. MATTHEWS. *Bulletin Johns Hopkins Hospital*, 63 (1938), 46; through *Abbott Abstract Service*, (1938), No. 333. (F. J. S.)

**Nicotinic Acid—Use of, in Treatment of Pellagra.** Preliminary tests on non-pellagrous subjects demonstrated safety of use of nicotinic acid in aqueous solution, orally up to 50 mg.; and in physiological solution sodium chloride, intravenously up to 100 mg. at the rate of 2 mg. to 0.5 mg. per minute. Report of eleven cases of pellagra of varying types treated with nicotinic acid: (1) orally with hot water; (2) intravenously with physiologic NaCl; (3) hypodermoclysis, solution 2 added to large amounts of physiologic NaCl. Dosage was varied, but all cases were kept on controlled diets. Nicotinic acid appears to be specific for pellagrous glossitis, stomatis and other lesions of mucous membranes due to pellagra. No definite information was obtained as to efficacy in mental symptoms of pellagra. Dosage was not absolutely determined, but 0.5 Gm. daily in 5 doses of 100 mg. each orally and 50 to 80 mg. daily in sterile physiologic NaCl intravenously were effective. Subject for further study.—TOM D. SPIES. *J. Am. Med. Assoc.*, 110 (1938), 622. (G. S. G.)

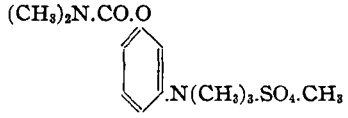
**Pancreatic Achylia—Use of Pancreatic Enzyme in Treatment of.** As part of a review entitled "Surgery and the Basic Sciences," Ivy discusses the question of the effect of pancreatic enzymes by mouth in the treatment of pancreatic achylia. This condition may be controlled by the oral administration of sufficient amounts of potent pancreatin, but much larger doses are needed than have heretofore been given. The material is most effective when given in the form of enteric-coated tablets, as there is some inactivation of the enzymes by the acid gastric contents. The loss of starch in the feces present in dogs with complete separation of the pancreas and intestine could be reduced 50% by feeding pancreatin, while the nitrogen loss could be decreased by 60% and the fat loss by 59%. It seems probable that pancreatic achylia in man could be corrected by the administration of adequate amounts of pancreatin in the proper form. In another report the author has shown that not all commercial preparations of pancreatin are potent.—A. C. IVY. *Surgery, Gynecology and Obstetrics*, 66 (1938), 407; through *Abbott Abstract Service*, (1938), No. 305. (F. J. S.)

**Parathyroid Tetany—Treatment of, by Dissolved Calcium Lactate.** The tetany associated with the accidental removal of the parathyroid glands is fortunately a rare complication; when it occurs, most observers agree that restoring of the calcium in the blood to normal levels is an effective method of treatment. This has been attempted by giving calcium salts of various kinds and by different routes. Obviously, the oral route is preferable if medication given in this way is effective. A review of the literature shows a great divergence of opinion on this point, some contending that orally administered calcium lactate has no effect in raising the blood calcium while others report it to be very effective. The author believes that the reason for this discrepancy is that some observers failed to dissolve the calcium lactate in water before administration, and thus the material was never absorbed. In one case, which is reported, calcium lactate dis-

solved in water and vitamin D were used as the only treatment for parathyroid tetany, with success.—S. J. WILSON. *Arch. Surgery*, 37 (1938), 490; through *Abbott Abstract Service*, (1938), No. 369. (F. J. S.)

**Pemphigus. One Case Successfully Treated with Sulfanilamide.** A man aged 48 came for treatment, stating he had noticed a reddish eruption on his back two months previously. The next lesions appeared on the scalp, and four weeks previously had begun to appear generally over the body. They became progressively worse, and began to form blisters. When examined, the lesions were seen to consist of large bullæ and vesicles containing sero-purulent material. It was recalled that Welsh had demonstrated streptococci in the naso-pharynx of patients suffering from pemphigus, and accordingly sulfanilamide was given in doses of 45 grs. daily for 5 days. At the end of this time, a new eruption appeared on the buttocks and was considered to be due to the drug. The dose was reduced to 15 grs. daily for seven more days. At this time no new bullæ were present, but there was an erythematopapular eruption. This disappeared upon discontinuing sulfanilamide. The case is reported to stimulate further cautious trial of the new remedy.—E. S. LAIN. *Archives of Dermatology and Syphilology*, 37 (1938), 840; through *Abbott Abstract Service*, (1938), No. 329. (F. J. S.)

**Physostigmine to Prostigmin.** From a long series of urethane prepared and examined by Aeschkimann and Reinert, the dimethylcarbamic ester of 3-hydroxyphenyl-trimethylammonium methylsulfate was selected and introduced into practical medicine under the name Prostigmin "Roche."




The similarity in the action of physostigmine and prostigmin has lately been brought out by substituting the latter in myasthenia gravis; it was observed that prostigmin gave temporary relief, but is nevertheless of therapeutical importance. Prostigmin has also been employed in other nervous lesions.—G. BARGER. *Pharm. J.*, 141 (1938), 437. (W. B. B.)

**Pituitrin—Treatment of Herpes Zoster with.** The author states that Vandel was the first to report the effect of pituitary extract on the pain of herpes zoster in 1923. Since that time several observers have reported favorable results. Portnoy reports two cases of herpes zoster, both involving branches of the trigeminal nerve. In both cases the pain was excruciating, and could not be relieved by the usual local applications, or even by morphine. Upon injecting one cc. of surgical pituitrin, the pain disappeared in a few minutes and did not become troublesome until about twenty-four hours later, when the injection was repeated. In one case, the injections were repeated on five successive days. The method by which posterior pituitary extract produces this result is not definitely known, and the theories on the subject are stated to be too complex for presentation in a brief paper. Reactions such as urgent defecation and vomiting occasionally occurred with the pituitrin treatment.—S. H. PORTNOY. *J. Medicine*, 18 (1938), 619; through *Abbott Abstract Service*, (1938), No. 269. (F. J. S.)

**Placental Extract in Measles.** An epidemic of measles in a girls' school is described in which placental extract was used in an endeavor to reduce the severity of the attack and the subsequent complications. There were no serious reactions following the injections. The extract did not have the effect of preventing or postponing the attack; it rendered the attack milder, the duration of temperature shorter, and lessened the subsequent complications. It is probable that the immunity conferred diminishes fairly rapidly after three weeks.—T. N. PARISH. *Brit. Med. J.*, 4044 (1938), 65. (W. H. H.)

**Pneumonia—Use of Sulfanilamide in Treatment of.** All patients admitted to the Parkland Hospital from October 1, 1937 to April 1, 1938, with a diagnosis of lobar pneumonia which could be confirmed by the classical physical findings and by radiologic examination were treated with sulfanilamide, in an effort to evaluate the worth of the drug for this condition. Absolutely no selection was made of cases, and no other treatment beyond general nursing care was given. The doses were rather large: 60 grs. by mouth initially, followed by maintenance doses of 20 or 25 grs. every four hours day and night. Later, better results were obtained by giving 120 grs. of sulfanilamide intravenously in 1000 cc. of normal saline, as the initial dose, following this by

20-gr. doses orally every four hours, day and night. Ninety-four cases were treated by one of these two methods, with a mortality of 19.1%. This includes five cases who were moribund on admission. Mortality among those treated within the first three days after onset was 5.1%.—W. G. REDDICK. *International Clinics*, 3 (1938), 201; through *Abbott Abstract Service*, (1938), No. 373. (F. J. S.)

**Pyuria—Use of Ammonium Mandelate in Treatment of, in Children.** A series of 52 cases of pyuria, of which 21 were cases of persistent pyuria, were treated with either the sodium or ammonium salts of mandelic acid. The youngest child in the series was $2^3/_4$ years of age; the eldest was 13 years. Forty patients were treated with sodium mandelate and ammonium chloride; in 50% of these the urinary infection was cleared up and the urine was sterile in from 1 to 7 days. In 38% it required from 8 to 34 days of treatment to effect the same result. In 12% there was no response to treatment. Of 12 patients treated with ammonium mandelate, 58% responded to the drug within 7 days, while 48% required 9 to 28 days. Twenty children were followed for a period of 1 to 20 months, and among these the recurrence rate was 20% for pyuria, 15% for bacilluria, while 65% had no recurrence. Failures occurred in cases in which there was chronic interstitial nephritis, intolerance to the drugs or inability to produce a urinary acidity of $p_H$ 5.8 or lower.—P. SUMMERFELDT and A. BROWN. *Canad. Med. Assoc. Jour.*, 38 (1938), 353; through *Abbott Abstract Service*, (1938), No. 319. (F. J. S.)

**Quinine in Myotonia, and Prostigmine in Myasthenia.** Quinine relieves myotonia but aggravates myasthenia. But prostigmine in myasthenia reaches a refractory period in patients and has to be discontinued temporarily. Beneficial in small doses for short time. Over a long period or in large doses, it has curare-like effect. Optimum dose must lie between stimulation and paralysis. Experience with quinine in treatment of myotonus extends over cases of myotonia congenita and myotonia atrophica. In every case of myotonia congenita quinine proved of unique value; it abolishes myotonus as long as it is administered. Quinine and prostigmine used in other muscular disorders without benefit. Evidence that myotonia and myasthenia are primary disorders of muscle or of myoneural junction.—FOSTER KENNEDY and ALEXANDER WOLF. *J. Am. Med. Assoc.*, 110 (1938), 198. (G. S. G.)

**Rheumatic Fever and Chorea—Effect of Sulfanilamide in.** Fifty-eight patients were treated with sulfanilamide, the total daily dose approximating six to seven grs. per ten pounds of body weight during the first twenty-four hours, and four to five grs. thereafter. The treatment lasted from a few days to several months. Of this group sixteen were moderately to severely ill at the time treatment was begun, while twenty-five were convalescing and seventeen had an apparently inactive process. In no case did the medication produce any apparent shortening of the course of the disease or any symptomatic relief. The moderately or severely ill patients felt worse while taking it, and many of them had an increased fever. The convalescent patients did not experience so much discomfort following the medication. In all, fifty-three per cent of the patients treated developed toxic reactions in the form of fever or skin eruption. In seven patients who had chorea, the drug had no effect on this manifestation. Use of sulfanilamide is contraindicated in rheumatic fever.—B. F. MASSELL and T. D. JONES. *New England J. Med.*, 218 (1938), 876; through *Abbott Abstract Service*, (1938), No. 331. (F. J. S.)

**Sodium Bromide—Remissions of Attacks in Epilepsy Treated with.** Any sedative may be expected to lessen severity and diminish the number of attacks in epilepsy. Efficacious drug should stop all attacks for the duration of its administration. Study of efficacy of sodium bromide on 96 patients, with varying severity of attacks. Final remissions brought about in 36% but medication must be continued throughout the life of the patient. Early treatment more efficacious. Focal attacks more resistant than grand mal or petit mal. Attacks caused by disease or injury of brain less susceptible to treatment.—LEWIS J. POLLOCK. *J. Am. Med. Assoc.*, 110 (1938), 632. (G. S. G.)

**Sodium Sulfocyanate—Mode of Action of, in Hypertension.** The well-known property which sodium sulfocyanate possesses in forming a complex with iron rendered it useful in relieving hypertension caused by macrocytosis since the size of the red blood corpuscles is influenced by iron metabolism. Sodium sulfocyanate was not useful in treating hypertension resulting from arteriosclerosis.—H. MCGUIRE DOLES. *Southern Med. J.*, 32 (1939), 299. (W. T. S.)

**Solustibosan and Ureastibamine in Treatment of Kala-Azar in Chinese Hamsters.** Solustibosan is least, while ureastibamine is more toxic to hamsters than neostibosan. However, far

more antimony in form of solustibosan was required to bring about a cure in kala-azar. The curative value increases at the same rate as the toxicity.—C. W. WANG. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 418. (A. E. M.)

**Sulfanilamide—Action of, in Rheumatic Fever.** Hypothesis that hemolytic streptococci have etiologic rôle in rheumatic fever suggested the study of the use of sulfanilamide in this disease. Patients were selected for treatment after careful observation of clinical course of disease in each. Report on eight cases of established rheumatic fever treated with sulfanilamide 2–3 Gm. daily. No beneficial effects noted and drug discontinued when gastric symptoms developed. Other toxic symptoms were increasing fever and pulse rate. Only effect from antistreptococcus agent in rheumatic patient infected with hemolytic streptococci is diminution of amount of poisonous substances flowing from infected foci. Curative effect negative. Prophylactic effect still to be studied.—HOMER F. SWIFT. *J. Am. Med. Assoc.*, 110 (1938), 426. (G. S. G.)

**Sulfanilamide—Acute Hemolytic Anemia Following the Use of.** The case of a white man 50 years old is reported. He entered the hospital where a diagnosis of right-sided pyelonephritis was made Efforts to combat pyrexia and pyuria with two ampuls of "uritone" failed, and sulfanilamide was started. On five successive days the patient received the following doses: 30, 40, 40, 40 and 10 grs. At the beginning of this course of treatment the red count was 4,580,000 and the hemoglobin 89%. On the fifth day icterus was noted and the drug was withdrawn. Two days later the red count was 1,010,000 and the hemoglobin less than 25%. Five hundred cubic centimeters of citrated blood were then given, followed by transfusions on three successive days. The patient responded well, and was discharged from the hospital two weeks after the icteric attack apparently well, showing only slight evidence of the residual urinary tract infection. This case emphasized the need for frequent blood counts during the administration of sulfanilamide.—A. M. GINSBERG and J. B. BRAMSI. *J. Missouri Med. Assoc.*, 35 (1938), 174; through *Abbott Abstract Service*, (1938), No. 318. (F. J. S.)

**Sulfanilamide and Diaminodiphenylsulfone and Their Diacetyl Derivatives in the Treatment of Experimental Intradermal Streptococcus Infections of Rabbits.** Sulfanilamide by oral administration to rabbits showed curative effects on local intradermal streptococcus lesions but did not result in complete bactericidal effects in the dosage employed. The acetyl derivative was practically without effect. 4, 4'-Diaminodiphenylsulfone was more curative than sulfanilamide and produced complete bactericidal effect in the larger doses. The acetyl derivative of the latter compound was less active than sulfanilamide, but it had some effect. The results in intradermal infection in rabbits were not quite as good as are reported after parenteral infection in mice.—JOHN A. KOLMER, GEORGE W. RAIZISS and ANNA M. RULE. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 95 (A. E. M.)

**Sulfanilamide—Ineffectiveness of, in the Treatment of Canine Filariasis.** Sulfanilamide had no influence on *Dirofilaria immitis*.—HAROLD W. BROWN. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 100. (A. E. M.)

**Sulfanilamide—Mode of Action of, in Treatment of Gonorrhea.** The mode of action of sulfanilamide in 25 cases of gonorrhea was studied by carefully measuring the fate and distribution of the drug in the body during periods of regular dosage. The urinary output and the blood level were studied with reference both to free sulfanilamide and to the acetylated form. After the data had been assembled, some effort was made to correlate the laboratory findings with the progress of the disease. The clinical response was found not to be correlated with the relative amounts of free and acetylated sulfanilamide, nor with the concentration of the drug in the urine. Little clinical benefit was observed unless the blood concentration reached a certain level, but the minimum effective blood level varied from one patient to another. There was no increase in phagocytosis observed in the urethral discharge to account for the disappearance of the invading organism. The study, like many others, was unable to solve the problem of how sulfanilamide acts.—S. A. VEST, J. H. HILL, H. C. HARRILL and A. C. PITTS. *J. Urol.*, 40 (1938), 698; through *Abbott Abstract Service*, (1939), No. 422. (F. J. S.)

**Sulfanilamide—Mode of Action of, on Pneumococcus.** Both the pneumococcus and the hemolytic streptococcus have the property of being able to produce peroxide without being able to prevent peroxide accumulation. Both are sensitive to injury by peroxide and depend for life on the presence of catalase in the medium supporting their growth. Catalase will decompose peroxide and thus permit the organisms to continue growing as long as the action of this enzyme

persists. Catalase is inactivated by hydroxylamine and by substances related to hydroxylamine in structure or properties. Substances related to hydroxylamine are produced when dilute solutions of sulfanilamide are exposed to ultraviolet radiation. These facts give rise to the theory that sulfanilamide may act upon these two organisms by inhibiting the action of catalase and thus allowing the peroxide to injure them. Supporting this is the observation that the drug is more effective in catalase-poor fluids than in catalase-rich ones.—A. LOCKE, E. R. MAIN and R. B. MELLON. *Science*, 88 (1938), 621; through *Abbott Abstract Service*, (1938), No. 430.

(F. J. S.)

**Sulfanilamide Therapy of Friedlænder Bacillus Infections in Mice.** Sulfanilamide has no significant therapeutic activity in mice infected with less than 10 M. L. D. of 2 strains of Friedlaender bacillus. No therapeutic effect was observed with sulfanilamide, 4, 4'-di-(acetylamino)-diphenylsulfone or 4, 4'-diaminobenzenesulfonalide in mice injected with one M. L. D. of killed Friedlænder bacilli.—PAUL GROSS, GRANK B. COOPER and MARION LEWIS. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 12. (A. E. M.)

**Sulfanilamide Therapy in Meningococcic Meningitis.** Report of 5 cases and 1 recurrence of meningococcic meningitis treated with sulfanilamide. Clinical observations paralleled laboratory findings. Treatment by following method: (1) Initial subcutaneous injection of 0.05 Gm. per Kg. of 0.8% solution. (2) Oral administration every 4 hours day and night. (3) Dosage graduated down from 1 Gm., depending on size and age of patient. (4) Drug continued 10 days after laboratory findings and clinical observation indicated normal, since drug is bacteriostatic rather than bactericidal. (5) Sodium bicarbonate given grain for grain to combat acidosis. (6) Magnesium or sodium sulfate not given to prevent sulfhemoglobinemia. Clinical response satisfactory in every case.—LEON J. WILLIEN. *J. Am. Med. Assoc.*, 110 (1938), 630. (G. S. G.)

**2-Sulfanilylaminopyridine—Chemotherapy of Gonorrhea with.** The results of treatment of acute gonorrhea in male out-patients with 2-sulfanilylaminopyridine, are superior to those obtained with sulfanilamide and other sulfonamide compounds. The employment of this compound immediately upon diagnosis leads to the rapid cessation of symptoms and the almost complete absence of complications due to the extension of the disease. Minor toxic effects are common, but serious toxic manifestations are rare. Slight granulocytopenia is caused by 2-sulfanilylaminopyridine, as by other sulfanilamide compounds, but cyanosis is much less frequent.—V. E. LLOYD, D. ERSKINE and A. G. JOHNSON. *Lancet*, 235 (1938), 1160. (W. H. H.)

**2-Sulfanilylaminopyridine in Treatment of Gonorrhea.** 2-Sulfanilylaminopyridine can effect clinical cure within a week in a large majority of cases of gonoccal infection, whether of short or long duration and whether occurring in men or in women. Complications originally present, such as epididymitis, arthritis or iritis, improve rapidly. In the cases quoted there was complete absence of complications or spread of the disease after the start of the drug therapy. No irrigation or other adjuvant treatments are necessary. Toxic effects may occur in less than one-third of the cases, but where normal dosage is employed these are usually mild, requiring only a reduction of the dose. Toxic symptoms are quickly recovered from, and no lasting ill effects have been encountered. Vulvovaginitis also responds well to 2-sulfanilylaminopyridine. It is the conclusion of the authors that 2-sulfanilylaminopyridine is the most potent anti-gonococcal agent available at present.—R. C. L. BATCHELOR, R. LEES, M. MURRELL and G. I. H. BRAINE. *Brit. Med. J.*, 4065 (1938), 1142. (W. H. H.)

**2-Sulfanilylaminopyridine—Treatment of Acute Gonorrhea with.** Chemotherapy by 2-sulfanilylaminopyridine definitely shortens the time required to cure an acute case of gonorrhea. Chemotherapy combined with irrigation is rather more efficacious than chemotherapy alone. Relapse after clinical cure is fairly common but the patient usually responds quite rapidly to other methods of treatment following chemotherapy. Complications are extremely rare, and since these are always responsible for materially lengthened period of treatment, the advantages of chemotherapy are obvious. The drug is relatively non-toxic in the dosage advocated and is very much less toxic than sulfonamide. It appears to be slightly more toxic than Uleron (Bayer) but more certain in its action than this drug.—E. E. PREBBLE. *Lancet*, 235 (1938), 1163.

(W. H. H.)

**Sulfapyridine—Absorption and Excretion of.** Sulfapyridine, 2-sulfanilylaminopyridine, is less readily and more irregularly absorbed by human beings than is sulfanilamide. It is found in purulent pleural exudates and spinal fluids in concentrations of a half to two-thirds of those in

the blood. In the blood of human beings a considerable fraction of the drug is frequently found in conjugated form. Because of the irregular absorption and its tendency toward conjugation, accurate therapy with sulfapyridine is more difficult than with sulfanilamide.—PERRIN H. LONG and W. HARRY FEINSTONE. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 486. (A. E. M.)

**Testosterone—Inhibition of Lactation by.** In twenty-one successive patients it was necessary to terminate lactation. Each patient was given two doses a day of testosterone propionate for one or more days. No other therapy was instituted. The total dose in each case ranged from 50 to 150 mg. The treatment was successful in all except two cases, and the symptoms of pain, tenderness and engorgement were almost always relieved within twenty-four hours. The puerperium was not otherwise affected, and there were no unpleasant after-effects.—R. KURZROK and C. P. O'CONNELL. *Endocrinology*, 23 (1938), 476; through *Brit. Med. J.*, 4063 (1938), 1070F. (W. H. H.)

**Therapy—Survey of Modern.** Organotherapy, vaccine and serum therapy, vitamin therapy, chemotherapy and liver therapy are briefly discussed.—A. R. G. CHAMINGS. *Chemist and Druggist*, 130 (1939), 279. (A. C. DeD.)

**Thyroid Extract—Use of, in Treatment of Menstrual Disorders.** Part of an article dealing with the disorders of menstruation, this section considers the use of thyroid extract in treating certain forms of menorrhagia. A specific form of this symptom occurs in adolescent girls, where it is accompanied by a slightly lowered basal metabolic rate. The administration of thyroid in these cases has a specific action in controlling the hemorrhage. The author states that little trouble need be anticipated from the toxic effect of thyroid extract if dosage is kept small at first and gradually increased to the limit of the patient's tolerance; 1/4 gr. three times each day is recommended as a starting dose. Thyroid extract is also of value, employed empirically, as an adjuvant in therapy, because it raises the metabolism of all cells in the body. It is this "cellular catalytic action" which leads one to use thyroid extract in the treatment of certain menstrual disorders even in occasional cases where the basal metabolic rate is found to be normal.—S. L. ISRAEL. *Endocrinology*, 22 (1938), 253; through *Abbott Abstract Service*, (1938), No. 294. (F. J. S.)

**Urinary Infections in the Puerperium—Treatment of.** This paper reports on the treatment of one hundred and six cases of puerperal urinary infection, most of which were complicated by a genital tract infection, and many by injuries. Sulfanilamide was given to seventy-nine of these patients, the dosage depending on whether a genital infection coexisted and whether it was streptococcal. In twenty-five out of thirty-seven pure *B. coli* infections, the urine became sterile within a week and in a further six it was sterile within a fortnight. Of nine hemolytic streptococcal urinary infections six were sterile in a week and two more within fourteen days. Mandelic acid was given in twenty-one cases. Of twelve pure *B. coli* infections, eight were sterile within a week and a further three within a fortnight; of eight *Streptococcus fæcalis* infections, six were rendered sterile within a week and one within a fortnight. In mixed urinary infections mandelic acid was sometimes employed to attack a residual bacteriuria after initial treatment by sulfanilamide. In thirteen cases neither drug was given, by reason of concurrent anemia or impaired function of liver or kidneys. Sulfanilamide and mandelic acid have both proved effective in the treatment of puerperal *B. coli* infections of the urinary tract. Sulfanilamide was useful in hemolytic streptococcal urinary infections, and mandelic acid overcame *Streptococcus fæcalis* infections that appeared to resist sulfanilamide.—J. C. CUTHBERT. *Lancet*, 235 (1938), 730. (W. H. H.)

**Vaginitis—Gonococcal, Use of Estrogenic Substances in Treatment of.** TeLinde reported the work done with Brawner in treating children with gonorrheal vaginitis by the use of vaginal suppositories containing estrogenic substances. The routine treatment at the present time consists in the insertion of one 1000-International unit suppository into the vagina each day at bedtime. In an average of 13 days there is profuse shedding of vaginal epithelium, and the mucosa changes to the adult type, as shown by biopsies. The average time for the first persistently negative smear is 17 days. Treatment is continued for two weeks following this, making an average duration for the whole treatment of about one month. A recent follow-up study of the first 100 patients in a recent series of 140 showed 98 to be well after a period from three months to one and one-half years after cessation of treatment. No harmful results were noted either during the treatment of after the check-up; the stimulated epithelium quickly reverted to its usual normal state.—TELINDE and REICHERT. (Round Table Discussion), *J. Pediatrics*, 12 (1938), 539; through *Abbott Abstract Service*, (1938), No. 310. (F. J. S.)

**Vitamin B Therapy—Effects of, on Polyneuritis of Alcohol Addicts.** Polyneuritis in alcoholics at one time attributed to toxic action of alcohol. Since alcoholics are usually undernourished, and since polyneuritis of alcoholism and of beriberi show similar clinical and pathological manifestations, possibly polyneuritis is due to lack of vitamin B especially since addicts improve on diets containing antineuritic vitamin. Study of diets over long period demonstrated lack of vitamin B in diets of addicts with polyneuritis, and that addicts free of polyneuritis had adequate quantities of vitamin B in diets. Study was made of patients with recently developed polyneuritis to avoid misinterpretation of etiology of complications of long duration. Signs limited to lower extremities. Subjects treated with four times their predicted requirement of vitamin B. Record was made of changes at end of ten days. Report of several cases so treated with notable improvement; justifies conclusions that vitamin B deficiency is primary cause of polyneuritis in alcohol addict, and improvement in objective signs of polyneuritis varies directly with vitamin B intake up to point of optimum dosage, which is definitely more than four times predicted maintenance requirement.—ROBERT GOODHEART and NORMAN JOLLIFFE. *J. Am. Med. Assoc.*, 110 (1938), 414. (G. S. G.)

## NEW REMEDIES

### SYNTHETICS

**Anacardone** is a 25% aqueous solution of diethylnicotinamide (pyridine-β-carboxylic diethylamide) $C_5H_4N.3O.N(C_2H_5)_2$, for oral use or parenteral injection. Anacardone is completely non-irritant and non-toxic in the ordinary dosage, and is one of the most powerful analeptics known, acting by stimulating the respiratory centers and the spinal reflexes. Anacardone is of value in infective conditions such as pneumonia and in hypotension following influenza and other debilitating conditions; it may also be given in respiratory depression during anesthesia, in collapse and shock, and in cases of poisoning, particularly those resulting from barbiturates or gases, narcotics or disinfectants. The dose in adults is 1 to 4 cc. parenterally or orally in chronic or mild conditions, but in acute cases 5 to 15 cc. should be given intravenously. Children from 7 years of age may be given half and infants a quarter of the adult dose, while infants under one year may receive up to 1 cc. subcutaneously; but in emergencies these doses may be considerably increased without risk of untoward results. Anacardone is issued in boxes of 6 and 12, 2-cc. ampuls, and 3 and 12, 5-cc. ampuls for parenteral use and in bottles of 15 and 100 cc. suitably flavored for oral administration.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 164. (S. W. G.)

**Chemocoll** (Chem. Pharm. Fabriek Curta & Co., Berlin) is a medicament for skin affections and contains a bromated tannin compound.—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**Collumina** is a colloidal aluminum hydroxide preparation for the treatment of hyperchlorhydria. The treatment of such conditions with alkalis frequently produces a condition of hypoacidity which impairs normal gastric function, but collumina being merely a neutral preparation which adsorbs excessive acid without the formation of carbon dioxide, has not this disadvantage, particularly as it has little action on the small amount of free acid which is present in normal gastric secretion. Collumina is also mildly astringent and deodorant, and is useful in the relief of congestion of the mucous linings of the mouth, pharynx and stomach. For cases associated with intestinal colic and diarrhoea a special preparation is available containing bismuth carbonate in addition. The dose of collumina is 1 to 4 teaspoonfuls in water, half an hour before and one hour after meals; and of collumina with bismuth, 1 to 2 teaspoonfuls in water three times daily. Both preparations are supplied in bottles containing 4, 8, 16 , 40 and 80 fluidounces.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 165. (S. W. G.)

**Crysto-Vibex** is pure crystalline vitamin $B_1$ supplied in solution for parenteral administration, and as tablets for oral use. It is biologically standardized, being assayed on both young albino rats and on pigeons. The tablets are recommended for prophylaxis and for the treatment of all but severe cases of vitamin $B_1$ deficiency. Injections should be used for the treatment of severe cases. Estimates of the optimum daily requirement of vitamin $B_1$ differ, but it is suggested that 1 mg. is adequate for the average needs of both children and adults. The daily dosage recommended is: for children, 75 to 150 International units ($^1/_2$ to 1 tablet); for pregnant and lactating women 300 to 450 units (2 to 3 tablets); in constipation anemia and anorexia, 2 or more tablets

to supplement a diet poor in vitamin $B_1$. By subcutaneous injection 300 units is an average dose for prophylaxis or cure of mild cases; 600 to 2000 units may be given daily in cases of marked deficiency such as beri-beri, polyneuritis and vomiting of pregnancy, the dose being reduced as the condition improves. Crysto-vibex solution is supplied in 1-cc. ampuls each containing 1 mg. of vitamin $B_1$ (300 units) in boxes of 6 ampuls. It is also supplied in ampuls containing 6.7 mg. (2000 units). Crysto-vibex tablets contain 0.5 mg. (150 units) of crystalline vitamin $B_1$, and are supplied in bottles of 25, 100 and 500 tablets.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 165. (S. W. G.)

**Cycliton** (Hoffmann LaRoche, Basel) is a 2,4-dimethyl-isoxazol-3-carbonic acid-diethylamide. The preparation is found on the market in 25% solution for intravenous and intramuscular injection. It is used in circulatory weakness and in poisoning.—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**Dermoseptazine** (Poulenc, Usines du Rhone) is an ointment containing the amino-phenylsulfamide of septazine.—*Pharm. Weekblad*, 75 (1938). 1202.

**Dilantin** (Parke, Davis and Co., London and Sydney) is sodium 5,5-diphenyl-hydantoinate. It is an anti-confulsant, for the treatment of epilepsy. It is supplied in bottles of 100 capsules, each containing 0.1 Gm.—*Australasian J. Pharm.*, 20 (1939), 525. (A. C. DeD.)

**Dormovit** is a new hypnotic and a barbituric acid derivative; furfuryl-isopropylbarbituric acid. It differs from the rest of the barbituric acid derivatives in its rapid absorption, whereby it does not remain in the unaltered state for any length of time; the action begins promptly and danger from cumulative effect is small.—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**Eggopurine** found on the market in granules and in solution in ampuls is calcium mandelate (calcium amygdalate).—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**Emetine-Camphor Sulfonate** (Dr. E. Caserio, Paris) is used in doses of 0.06 Gm. in amœbic dysentery.—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**Epanutin** is the sodium salt of 5:5-diphenylhydantoin. It is an odorless, white or cream-colored powder, soluble in water, and has a bitter taste. The aqueous solution hydrolyzes giving a silky precipitate of diphenylhydantoin, which redissolves when the alkalinity is adjusted to $p_H$ 11.7. Epanutin is recommended as an anticonvulsant for the control of epilepsy. It is as effective as phenobarbital, but produces considerably less narcosis. No serious toxic symptoms have been observed, but all patients receiving epanutin treatment should be under close observation. The daily dose is from 3 to 6 grs., the minimum effective dose, being continued in the absence of untoward reactions. If favorable results are not obtained at the end of 2 to 3 weeks, experience indicates that the treatment will not be effective. Changes from bromide or phenobarbital should be made gradually. Epanutin is supplied in capsules containing 0.1 Gm. (1.5 gr.) in bottles of 100.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 166. (S. W. G.)

**Jucundal** (Schering A. G., Berlin) is a tri-*n*-butylacetamide. It forms white, odorless crystals which melt at 62–63°. It is found on the market in cachets of 0.4 Gm. It is used in gastritis spasms, for ulcer pains and in dysmenorrhea.—*Pharm. Weekblad*, 75 (1938), 1178, 1203. (E. H. W.)

**Liquoid** (Roche Products Ltd., Welwyn Garden City, Herts, Eng.) is sodium polyanethol-sulfonate. It is used in pharmacology and animal experiments for the inhibition of blood coagulation, hemocultures, etc. It is supplied in packings of 0.1 Gm. and 10 Gm.—*Australasian J. Pharm.* 20 (1939), 525. (A. C. DeD.)

**Neo-Oestranol I** is stilboestrol. Injections are supplied in 0.5-cc. ampuls containing 0.5 mg., and in 1-cc. ampuls containing 1 or 5 mg. of stilboestrol in boxes of 6; and for oral use in tablets of 1 mg. and 5 mg. in tubes of 25. (See Ovendosyn, page 405 and Synthoestrin, page 406.)—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 167. (S. W. G.)

**Neo-Solganal** (Schering A. G., Berlin) is a gold-calcium keratinate that contains 14% gold and 7% calcium. It is found on the market in ampuls of seven different concentrations. It must be dissolved in physiological salt solution, and as such occurs in ampuls of the desired strength.—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**New Remedies.** The following new remedies have made their appearance recently: **O-R-95**, lozenges containing the active principle of a synthesized compound ($C_{50}H_{53}N_6O_9$), the ethyl butyl ester of diamido-diethylamidoethyl carbamido dicarboxydiphenylmethane-acridonioxyquinoline. **Siblin**, a granular substance largely made up of water-absorbent fiber derived

from certain species of *Plantago* and containing in each heaped teaspoonful 50 internatinal units of crystalline vitamin $B_1$. **Uleron,** a sulfanilamide derivative. **Vacagen,** mixed vaccine for oral administration standardized on the basis of complement fixation.—ANON. *Pharm. J.*, 141 (1938), 546. (W. B. B.)

**Optalidon** (Sandoz Products, London) is an association of amidopyrin, sandoptal (isobutyl-allyl-barbituric acid) and caffeine. It is an analgesic. For use in the relief of pain and nervousness, and as a hypnotic, the dose is 1–2 tablets. It is supplied in packages of 10, 25, 100 and 250 tablets.—*Australasian J. Pharm.*, 20 (1939), 323. (A. C. DeD.)

**Ostelin** (Glaxo Laboratories Ltd., Greenford, Middlesex) is a tasteless, inodorous suspension of the pure crystalline vitamin D, containing 5000 International units in each cc. It is miscible with water and can be prescribed with other therapeutic agents. It is supplied in $^1/_2$-ounce vials, 2-ounce, 4-ounce and 8-ounce bottles. (Also available: *Ostelin Tablets* and *Ostelin Emulsion.*)—*Australasian J. Pharm.*, 20 (1939), 525. (A. C. DeD.)

**Ovendosyn Tablets** contain stilboestrol intended for the oral treatment of ovarian deficiency disorders, in combination with calcium, the metabolism of which becomes disturbed at the menopause. The tablets contain 0.5 mg. of stilboestrol and 227 mg. of calcium phosphate, and the dose is one or more three times a day. Ovendosyn tablets are supplied in bottles of 30. See Neo-oestranol I, page 404 and Synthoestrin, page 406.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 167. (S. W. G.)

**Ovocyclin P** is a solution of oestradiol dipropionate in oil for intramuscular injection, the action of which is qualitatively the same as that of oestrone and oestradiol and esters such as the benzoate, but which differs quantitatively in its greater intensity and duration of effect, due to its more gradual absorption from the site of injection. It is indicated in anomalies of menstruation and sexual development due to inadequate ovarian function and allied conditions. It is available in 1-cc. ampuls containing 1 mg. in boxes of 5, and 5 mg. in boxes of 1 and 5. Ovocyclin is available also in tablet form, each tablet containing 0.02 mg. of oestradiol for supplementary use with ovocyclin P injections or as a maintenance treatment, and is supplied in packages of 50 tablets.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 167. (S. W. G.)

**Pervitin** (Coates and Cooper Ltd., London) contains in one tablet, 0.003 Gm. of 1-phenyl-2-methylamino propan. In all cases of hypotony; convalescence; psychiatry; treatments for dishabituation of narcomaniacs. The dose is 1–3 tablets, one or more times a day. It is supplied in tubes of 30 tablets.—*Australasian J. Pharm.*, 20 (1939), 323. (A. C. DeD.)

**Rodilone** (Société parisienne d'expansion chimique "Specia") is di-*p*-acetylaminophenyl-sulfon which was obtained by Fourneau and his co-workers at the Pasteur Institute and which is manufactured by Usines du Rhône and Poulenc fréres. It has the formula $CH_3CONH\langle\bigcirc\rangle SO\langle\bigcirc\rangle NHCOCH_3$. It is a white crystalline powder almost insoluble in water and is tasteless. It is sold in tablets of 0.5 Gm. Rodilone is very active in streptococcus infections. The dose given is only about $^1/_{10}$ of the usual dose of aminobenzolsulfamide. It has also an antibacterial action against pneumococcus and has met with success in gonococcus and staphylococcus infections.—*Pharm. Weekblad*, 75 (1938), 1179. (E. H. W.)

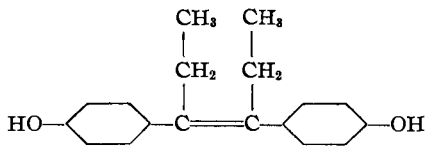
**Sangostop Forte** (Kon. Fabrieken Brocades en Stheeman & Pharmacia) is twice as strong as the ordinary Sangostop. One ampul contains 10 cc. of a 3% solution, in place of the ordinary Sangostop which contains 20 cc. of a $1^1/_2$% solution. It is therefore more useful as a styptic.—*Pharm. Weekblad*, 75 (1938), 1203. (E. H. W.)

**Saridone** (Roche Products Ltd., Welwyn Garden City, Herts., Eng.) is obtained in 5-gr. tablets, each containing: phenyldimethyl-isopropyl pyrazolon, $1^3/_4$ gr.; phenacetin, $2^1/_8$ grs.; caffeine, $^3/_8$ gr. It is used in cases of headache, neuralgia, migraine, toothache, dysmenorrhea, herpes, carbuncle, lumbago, sciatica, rheumatism; antipyretic in influenza; afterpains. The dose for adults is 1–3 tablets; for children, $^1/_2$ to 2 tablets. It is supplied in tubes of 10 and bottles of 50 and 200.—*Australasian J. Pharm.*, 20 (1939), 323. (A. C. DeD.)

**Sterandryl** is a solution of testosterone propionate in oil intended for intramuscular injection. The first male sex hormone described was androsterone, a sterol closely related to the oestrogenic hormones, but recent work has shown that this substance is a derivative of the true testicular hormone, testosterone, which is six times as active as androsterone. Testosterone is prepared synthetically, and is employed as the propionic ester, since esters of this substance pos-

sess a greater activity than the unesterified sterol. There is no standard preparation, since the pure substance is employed, and the dosage is therefore always expressed in weight. Sterandryl is indicated in conditions of sexual underdevelopment, impotence, mental and physical atony, and urinary disturbances in men; in retarded puberty, hypogenitalism and adiposo-genitalis in youths; and in mastodynia, mastitis, menorrhagia and dysmenorrhea in women. The dosage is variable, depending upon the condition to be influenced, but in general 5 to 25 mg. are given daily or three times weekly. Sterandryl is supplied in 1-cc. ampuls containing 5, 10 or 25 mg. per cc.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 168. (S. W. G.)

**Synthoestrin Tablets** contain stilboestrol, a synthetic product which has recently been shown to possess oestrogenic activity. It does not contain the cyclopentenophenanthrene nucleus, which is a characteristic feature of the natural sex hormones, and the chemical structure differs entirely from the carcinogenetic substances. The following structural formula has been given:




The biological action of stilboestrol has been found to be identical to that of oestrone in all cases which have been examined, and from the vaginal smear test on ovariectomized mice 1 mg. of this substance is equivalent to about 25,000 International units. Synthoestrin is indicated in all cases of ovarian deficiency. It is issued in 1-cc. ampuls containing 1 mg. of stilboestrol, in boxes of 6 and 50, and in bottles of 50 and 150 tablets each containing 1 mg. of stilboestrol. See Neo-oestranol I, page 404 and Ovendosyn, page 405.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 168. (S. W. G.)

## Specialties

**Antostat** (Boots Pure Drug Co., Ltd., Nottingham, England) is a preparation of the gonad-stimulating hormone made from pregnant mares' serum, containing 100 mouse-units per ampul. It is used in the treatment of conditions associated with anterior-pituitary andovarian disfunction. It is administered by deep intramuscular injection into the upper arm. It is supplied in packages of single ampul, with one ampul of solvent (0.9% sodium chloride solution) and six ampuls with six ampuls of solvent.—*Australasian J. Pharm.*, 20 (1939), 525. (A. C. DeD.)

**Bufox** is a solution of the purified secretion of the parotid glands of a tropical toad (*Bufo Bufo*) prepared by the Laboratoires du Bufox at Paris. It is found on the market in ampuls. Pelletier and Claude Bernard studied the toxin from the toad and in 1837 Casali and Fornera isolated a poisonous substance which they named phrynin and which exhibited properties similar to those of digitalin. Dr. Césaire and M. Phisalix studied the action of toad poison on the heart, respiration and the nervous system. The activity is expressed in mouse-units (four mouse-units per cc. or $^1/_2$ mouse-unit per ampul). Bufox injections are used in cancer. The contents of one ampul are used every two days; this continues for two months and then a break of 14 days is made.—*Pharm. Weekblad*, 75 (1938), 1202. (E. H. W.)

**Ceferro** is a ferrous iron preparation stabilized with vitamin C and sulfhydril compounds which is effective in all conditions entailing a deficiency of iron, such as achylic chlorotic anemia, hemorrhagic anemia, chronic infectious anemia, and anemias due to tumors and chlorosis. In many cases digestive disorders and pain compel treatment by mouth to be discontinued and therefore ceferro is also available for intravenous injection. For use intravenously, every care must be taken to see that the injections are given over a period of three to five minutes very slowly and preferably before the patient has taken food or drink, the amount to be injected being 5 cc. daily. For oral treatment, which may usefully reinforce parenteral therapy, 2 to 4 ceferro pills should be taken three times daily. Ceferro pills are packed in containers of 50 and 100, and the injections in 5-cc. ampuls in boxes of 2, 5 or 10.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 164. (S. W. G.)

**Cefonin Tablets** contain phenylsemicarbazide, 4 grs.; matheine, $^3/_4$ gr. and lactose, 5 grs. in each tablet. They are recommended as an effective antipyretic, analgesic and antirheumatic, indicated in the treatment of headaches, migraine, neuralgia, periodontitis, rheumatism, influenza, menstrual pains and colds. The dosage is 1 to 3 tablets daily taken with water. Cefonin tablets are sold in tubes of 12.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 164. (S. W. G.)

**Citro-Thiocol** (Roche Products Ltd., Welwyn Garden City, Herts., Eng.) contains in each fluidounce thiocol, 24 grs.; codeine phosphate, 1/2 gr.; sodium and citric acid, 20 grs.; chloroform, 3/4 minim; alcohol, 7 minims; ext. glycyrrh. glycerin. (Roche), 124 minims. It is used for catarrh, bronchitis, influenza, coughs, whooping cough, coughs after measles, phthisis and broncho-pneumonia. The dose is one to two teaspoonfuls every two or three hours. It is supplied in bottles of four and forty fluidounces.—*Australasian J. Pharm.*, 20 (1939), 322.
(A. C. DeD.)

**Coagulen-Ciba** (Ciba Ltd., London) contains the natural coagulating elements of animal blood. It is used as a hemostatic in surgery, medicine, gynecology, obstetrics, pediatrics, oto-rhino-laryngology, urology and dental practice. It is given orally, subcutaneously, intramuscularly and as intravenous injection. It is supplied in ampuls: sterile and stable 3% solution; (*a*) 20 cc. in boxes of one and twelve; (*b*) 5 cc. in boxes of 5; (*c*) 1.5 cc. in boxes of 5 and 20. Powder: in bottles of 2 1/2, 5 and 10 Gm.—*Australasian J. Pharm.*, 20 (1939), 323.
(A. C. DeD.)

**Collumina with Bismuth** (Evans, Sons, Lescher and Webb Ltd., Liverpool, England) is used for intestinal colic and diarrhoea. The dose is one to two fluidrachms in water three times a day after meals. It is supplied in 4, 8, 16, 40 and 80 fluidounce bottles.—*Australasian J. Pharm.*, 20 (1939), 322. (A. C. DeD.)

**Corphyllamine** (N. V. Syngala at Weenen now Dr. Wander G.m.b.H. at Weenen) consists of theophylline-ethylenediamine. The preparation is found on the market in ampuls, tablets and suppositories. It is used as a cardio-diuretic and a diuretic. Corphyllamine is obtainable as a crystalline powder, in usual tablets of 0.1 Gm. and in strong tablets of 0.2 Gm., suppositories containing 0.36 and 0.6 Gm., ampuls of 2.2 cc. containing 0.48 Gm. and ampuls of 10 cc. containing 0.24 Gm.—*Pharm. Weekblad*, 75 (1938), 1202. (E. H. W.)

**Dettol** (N. V. Handelmaatschappij Reckitts, de Bilt) is an antiseptic prepared from a halogen compound of xylenol with a mixture of volatile oils, dissolved in a neutral liquid soap. Emulsions result upon dilution with water, such as with lysol, creolin, etc. Pettol is a clear, light yellow liquid with a pleasant odor. The Rideal-Walker coefficient is 3, that is to say, it is three times as powerful on *B. typhosus* as phenol. It is painless when applied to the skin and may be applied in a thin layer. It is used in 3–20% solution in the treatment of wounds, in erysipelas, dandruff, in obstetrics, etc.—*Pharm. Weekblad*, 75 (1938), 1203. (E. H. W.)

**Dolomo Dragees** (Labopharma, Berlin) contain, according to the label, quinine, caffeine, amidopyrine, phenacetine and vitamins C and A. They are employed in dysmenorrhea, influenza, migraine, etc.—*Pharm. Weekblad*, 75 (1938), 1203. (E. H. W.)

**Emmal Oil Emulsion** contains olive oil, 5%; sodium bicarbonate, 0.5%; sodium oleate, 0.2% in water, and is intended for the treatment of skin infections by local application. In an emulsion such as this the sodium oleate forms an interface between the oil and water phases, and toxins are adsorbed on this interface and held there, as a result of which they are deprived of their power to destroy tissue. Emmal, being also bactericidal, performs the dual function of neutralizing the poison existing in an infected area and at the same time destroying the cause of the poison. For skin infections, burns and infected wounds, lint should be soaked in the emulsion and applied to the affected area, it being essential that the dressing be kept wet; for conjunctivitis a few drops of the emulsion warmed to body temperature should be instilled into the eye at frequent intervals; and for throat and nasal infections the nose and throat may be sprayed at frequent intervals with an atomizer. Emmal oil emulsion is supplied in bottles containing about 4, 8 and 32 ounces.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 165. (S. W. G.)

**Febridesine** (C. F. Boehringer & Sons, Mannheim) is a solution of 0.02 Gm. of cinnamic acid and 0.08 Gm. of oil of turpentine in 2 Gm. of fatty oil. It is sold in ampuls of 2 cc. and is used in the treatment of septic illnesses.—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**Hepar-Ra Forte** (N. V. Roxane, Arnhem) is an injectible liver extract obtained from the fresh livers of sound slaughter-house animals. The histamine content of this extract that is in part a cause of certain accompanying phenomena is determined biologically. Danger from anaphylaxsis is also determined biologically. The purification is thus directed solely toward the elimination of substances exerting unfavorable influences. Hepar-Ra is a dark brown liquid. It appears on the market in ampuls of 2.2-cc. and in 5-cc. flacons.—*Pharm. Weekblad*, 75 (1938), 1178. (E. H. W.)

**Idozan** (Coates and Copper Ltd., London) is a colloidal iron solution, neutral and containing 5% of iron. It is used in cases of anemias, particularly those calling for large doses of iron. The dose is up to one tablespoonful three times a day. It is supplied in bottles of 8, 40 and 80 ounces.—*Australasian J. Pharm.*, 20 (1939), 323. (A. C. DeD.)

**Kombetin** (Coates and Cooper Ltd., London) is strophanthin from *Strophanthus Kombé*. It is used for acute circulatory failure, chronic heart insufficiency. The initial dose is 1/4 to 1/2 mg.; average dose for following injections 1/2 mg. It is supplied in ampuls containing 1/2 mg. in 1 cc.—*Australasian J. Pharm.*, 20 (1939), 323. (A. C. DeD.)

**Lupocid Ointments** (Deutsche Lupocid Gesellschaft, Karlsruhe) are obtainable in various strengths (20, 27, 33 and 40%), contain carvacrol, chlorcarvacrol, salicylic acid, resorcine, naphthol and bismuth. They are used in lupus.—*Pharm. Weekblad*, 75 (1938), 1203. (E. H. W.)

**Lutocyclin** is a preparation of a pure crystalline substance having the same chemical composition and physiological action as the corpus luteum hormone. It is employed together with ovocyclin P to ensure a true menstruation from a progestational endometrium, and alone in conditions attributable to excessive production of follicular homone with the object of opposing this excess, and at the same time transforming the hyperproliferated endometrium to the progestational phase. Lutocylcin is issued in 1-cc. ampuls in boxes of three containing 2, 5 and 10 mg., respectively, in oil solution.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 166. (S. W. G.)

**Metanium Ointment** contains the following titanium salts: tannate, 0.1; salicylate, 3.0; peroxide, 5.0; borate, 5.0; oxide, 12.0; and excipient to 100. **Metanium Powder** contains the following titanium salts: tannate, 0.2; salicylate, 1.0; peroxide, 10.0; borate, 9.0; oxide, 25.0; and aluminum osmosilicate and talc to 100. The uses of titanium salts in dermatology have been known for some time, and metanium is a harmless preparation which nearly always exerts a beneficial effect upon erythematous symptoms, pruritus, hemorrhoids, chilblains and many other skin conditions. The action is said to be due partly to the titanium itself, which is believed to modify mineral metabolism, and partly to the acid radicals of the salts or to the nascent oxygen liberated by the peroxide in contact with tissues. Metanium ointment contains 25% of titanium salts in a base which is readily absorbed, and thus is used when the specific effect of titanium is required upon the protoplasm of the cells; the powder contains 45% of titanium salts and is more suitable for use in cases of "weeping" lesions and as a dusting powder for infants.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 166. (S. W. G.)

**New Remedies. Aplona** is a product obtained from a particular species of apple at a certain stage of maturation. It is used for the adsorption of toxic substances in the intestines. **Diuromil,** containing pip. tart. 3.321, pip. cit. 2.223, hexamine 3.500, lith. sal. 0.800, lith. benz. 0.725, disod. phos. 2.325, effervescent base *q. s.* 100, used in acute attacks of rheumatism, gout, sciatica, urinary lithiasis, cystitis. **Estivin,** a local remedy for the relief of hay fever. **Glanfel,** which is sodium glycocholate with sodium taurocholate, in tablet form. **Thionaiodine,** a solution of stabilized sodium iodide and magnesium tetrathionate in two forms: (*a*) for intramuscular injection, (*b*) for intravenous injection.—*Pharm. J.*, 141 (1938). 68. (W. B. B.)

**Novutox** (Chemische Fabriek Amsterdam) is, according to the manufacturer, a local anesthetic, for which the formula is not given, other than that it possesses definite advantages over novocaine. These are: that no heat is necessary for sterilization, that it is autogenically sterile, that it imparts a deep and satisfactorily sustained anesthesia, prevents pain after operations and is not toxic in therapeutic doses. It is found on the market in combination with adrenaline in ampuls, cylinder ampuls and in flacons of various sizes.—*Pharm. Weekblad*, 75 (1938), 1203. (E. H. W.)

**Omnadin** (Bayer Products Ltd., London) is a non-specific vaccine to increase the natural defensive forces of the system. It is used in all infectious conditions accompanied by high temperature, *e. g.*, sepsis, puerperal fever, pneumonia, typhoid, influenza. It is supplied in 2-cc. ampuls in boxes of 3 and 12 and in bottles of 10 cc.—*Australasian J. Pharm.*, 20 (1939), 525. (A. C. DeD.)

**Picragol** (John Wyeth and Brother Ltd., London) is silver picrate, 1% in kaolin. The pessaries contain 2 grs. silver picrate in each in a boro-glyceride base. It is used in vaginitis. The powder is applied by an insufflator, with insertion during the first and second weeks of a Picragol pessary. The powder is supplied in vials of five Gm., the pessaries in a box of one dozen.—*Australasian J. Pharm.*, 20 (1939), 525. (A. C. DeD.)

**Placental Globulins (Human)** are intended for injection after exposure to infection by measles, in order to modify the attack. Such a modified attack is indicated in children who are otherwise in good health. The disease is attenuated and the incidence of complications is reduced, and it is believed that in such a case subsequent immunity is permanent. Complete protection from measles can be relied upon for only about two weeks, but such immunity is invaluable in preventing the spread of infection in an institution, or for the protection of acutely or chronically ill, debilitated or very young children. It is also claimed that placental globulins have been used with some success to alleviate the symptoms of the disease. For the modification of an attack and the subsequent production of permanent immunity 5 cc. should be given five to nine days after exposure, and, for prevention, 10 cc. not more than five days after exposure. This dose must be injected intramuscularly into the buttock, and some children may exhibit slight reactions accompanied with slight rise of temperature which usually passes off within twenty-four hours. Placental globulins is available in 2-, 5- and 10-cc. vials.—*Quart. J. Pharm. Pharmacol.*, 12 (1939), 167. (S. W. G.)

**Sanostol Longetten** (Promonta, G.m.b.H., Hamburg) are oval tablets which have a pleasant taste and may be chewed. According to the manufacturer, a box of these tablets has the same vitamin content as a bottle of Sanostol.—*Pharm Weekblad*, 75 (1938), 1179. (E. H. W.)

**Siran Drops** (Temmlerwerke, Berlin) contain ammonium sulfoguaiacolate, methylephedrine, Extract of Thyme and saponins. They are used in coughs.—*Pharm. Weekblad*, 75 (1938), 1179. (E. H. W.)

## BACTERIOLOGY

**Acridine Series—Chemotherapeutic Studies in.** Ten new acridine derivatives have been synthesized and their properties have been described. These have been submitted to tests of bacteriostatic action and certain of them to tests of bactericidal action, proflavine being used as the control substance. In the bacteriostatic tests sets of tubes of broth containing varying concentrations of the antiseptic were inoculated with a twenty-four-hour broth culture of each of 5 bacteria and incubated for forty-eight hours, after which the presence or absence of visible growth was noted. Parallel observations on tubes containing broth plus 10% sterile sheep's serum gave little support to the belief that serum enhances the action of acridine compounds on bacteria. Toxicities were tested by determining the lethal dose for mice and the maximum concentration tolerated by leucocytes. The following relationships between chemical structure and biological action were established: 1-aminoacridines were all devoid of antiseptic activity; 2-aminoacridines showed considerable activity which was enhanced by the introduction (into another ring) of a 2-, 3-, 4- or 5-amino group; 5-aminoacridines showed high antiseptic activity, 5-amino-2-chloroacridine being the most active of all the compounds so far investigated, although this had also a high mammalian toxicity; the acridone nucleus did not share the antiseptic properties of the acridine nucleus. 2:7-Diaminoacridine possessed a bactericidal capacity approximately equal, and a bacteriostatic capacity scarcely inferior, to that of proflavine and acroflavine, and emerges from these tests as the most likely of the new compounds to prove useful therapeutically.—A. ALBERT, A. E. FRANCIS, L. P. GARROD and W. H. LINNELL. *Brit. J. Exp. Path.*, 19 (1938), 41; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 647. (S. W. G.)

**Acridine Series—Chemotherapeutic Studies in. VI. Acridanes.** Certain amino derivatives of 5:10-dihydroacridine (acridane or "carbazine") and of iminodihydroacridine ("carbazime") have been prepared and tested bacteriologically. Their complete inactivity against four types of bacteria, their great instability and difficult accessibility have led to the conclusion that this field is unlikely to yield useful antiseptics. Attention is drawn to a convenient method of preparing 2-chloro-4-nitrotoluene, and the following compounds have been prepared and characterized for the first time: 4-nitro-4'-acetaminodiphenylamine-2-carboxylic acid; 4:4'-diaminodiphenylamine-2-carboxylic acid methyl ester monohydrate; 5-nitrodiphenylamine-2-carboxylic acid methyl ester; 5 aminodiphenylamine-2-carboxylic acid methyl ester, its hydrochloride and acetyl derivative.—F. R. BRADBURY and W. H. LINNELL. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 240–251. (S. W. G.)

**Adrenaline—Autoxidation of, Effect of Diphtheria Toxin on.** The rate of oxygen consumption by adrenaline in sodium-potassium phosphate buffer at $p_H$ 7.2–7.4 is depressed to a considerable degree by the addition of purified diptheria toxin. The effect is dependent to a cer-

tain extent on the presence of sodium and potassium ions. Absence of either of these, particularly of sodium, depresses the oxidation considerably even when no toxin is present; toxin enhances the depression still further in presence of sodium alone, but with potassium the effect varies, being either a further depression or an acceleration. Toxin inactivated by heating usually accelerates the autoxidation. The effect is distinctly different from the inhibitions that occur with serum and other protein solutions, the rate with toxin always falling off to values below those with other proteins. Diphtheria antitoxin alone usually lowers the rate of oxidation, but if the toxin and antitoxin are mixed and allowed time to react, the retardation produced by the mixture is generally of a much lesser order than that from either.—R. N. CUNNINGHAM and B. A. I. PETERS. *Chemistry and Industry*, 57 (1938), 601. (E. G. V.)

**Alcohols—Germicidal Power of Some, for Bacterium Typhosum and Staphylococcus Aureus and Its Relation to Surface Tension.** A study of the germicidal power of various primary, secondary and tertiary alcohols shows that the dilutions lethal to staphylococcus give values of about 30°/cm., while for typhoid bacillus the values are about 36°/cm. There is an apparent close relation between germicidal action and surface tension.—P. B. COWLES. *Yale J. Biol. Med.*, 11 (1938), 127–35; through *Chem. Abstr.*, 33 (1939), 1878. (F. J. S.)

**Anterior Poliomyelitis—Acute, Does an Attack of, Confer Adequate Immunity?** Second attacks of poliomyelitis recorded infrequently. Report of four cases of second attacks of poliomyelitis occurring within 5 years of first attack, both paralytic and non-paralytic. Non-paralytic may either precede or follow paralytic attack. Neutralizing effects of serum taken at intervals during second attack failed to protect monkeys inoculated with Fl poliomyelitis virus. Number of second attacks within expected statistical rate if one attack confers no immunity. Seems evident that one attack of poliomyelitis might not confer immunity.—ALFRED E. FISCHER and MAXWELL STILLERMAN. *J. Am. Med. Assoc.*, 110 (1938), 569. (G. S. G.)

**Antiseptic Properties of Official Preparations—Comparative Study of. A Modification of the Reddish Cup Method for Volatile Substances.** Inhibitory properties of several official preparations were studied by the original method of Reddish. Inorganic acids and bases show high penetration. Organic preparations show variation as do essential oils. Iodine tinctures show best results. In general substitution of *B. subtilis* for *S. aureus* showed increased penetration. Effect of serous material on penetration values was studied. A modified procedure for determination of penetration values of volatile antiseptics was devised. Some may act equally well as vapors and by penetration, tincture of iron is better by penetration, oil of almond acts only as a vapor.—LEONARD J. PICCOLI and MORRIS HECHT. *J. Am. Pharm. Assoc.*, 28 (1939), 156. (Z. M. C.)

**Antiseptics—Experimental Study of Factors Involved in the Use of Surface.** Report is made of a series of experiments which attempted to correlate factors related to the healing rate and to measure others. Antiseptics were studied in the forms ordinarily used in clinical practice. Those studied were tincture of iodine, compound solution of iodine, aqueous solution of phenol, 1 to 500 aqueous Metaphen, 1 to 1000 aqueous Merthiolate, glycerin solution of Igol and 50% alcohol solution of Igol. The following determinations were made: toxicity to bacteria, toxicity to tissue cells, irritant action, maintenance of bactericidal action after application, healing rate. Method of procedure is described and results are tabulated and discussed. No antiseptic was found to be outstanding in all respects. Where maintenance of a sterile area is important, tincture of iodine is the best of the group. Organic mercurials are best for immediate sterilization or moist pack or repeated sterilization and they avoid irritation.—LEO T. SAMUELS. *J. Am. Pharm. Assoc.*, 27 (1938), 1224. (Z. M. C.)

**Ascorbic Acid—Decomposition of, by Certain Bacteria.** By repeated subculture in a broth containing ascorbic acid, many strains of bacteria, mainly of coliform type, were isolated from feces or gastric contents, which decomposed ascorbic acid. Some strains were also found which under the same conditions retarded its decomposition. The rate of disappearance of ascorbic acid in cultures of these various bacteria was studied under different conditions. It is considered possible that bacterial action in the bowel may be a factor in vitamin C deficiency.—A. I. KENDALL and H. CHINN. *J. Infect. Diseases*, 62 (May–June, 1938); through *Brit. Med. J.*, 4050 (1938), 436F. (W. H. H.)

**Bactericidal Azo Compounds.** Numerous examples are given of the preparation of azo compounds suitable for combating infectious diseases and which have the general formula $R^1$ —

$N = N - R^2$, where $R^1$ stands for a cyclic radical of the benzene series containing a sulfamide group in the *p*-position to the azo group or a disulfamide-substituted radical of the benzene series or the corresponding *N*-alkyl and *N*-alkylene substituted products, both free valences of the alkylene radical being attached to the nitrogen atom, which radicals are free from acid groups, and wherein $R^2$ stands for a cyclic radical containing nitrogen selected from the group consisting of aminobenzene and aminonaphthalene radicals and their *N*-acyl derivatives, which radicals contain at least one further substituent amino, alkylamino or hydroxyl group and further contain at least one acid radical which is bound to the cyclic radical by nuclear carbon or oxygen atoms, amino-, alkylamino- and alkylene groups, which azo compounds are in the form of their alkali and alkaline-earth metal-, ammonium- and amine-salts in general soluble in water.—FRITZ MIETZSCH and JOSEF KLARER, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,123,634, July 12, 1938. (A. P.-C.)

**Bioluminescence.** The term "bioluminescence" is applied to the production of light when oxygen and luciferin, synthesized by living cells, react in the presence of an enzyme, luciferase. The properties of luciferin are described and its oxidation products studied. The order of magnitude of the quantum yield is reported as 50 molecules of oxygen absorbed per quantum. Considering luminous bacteria as power plants for light, the overall efficiency is low, *i. e.*, the energy in light emitted divided by energy in the food utilized by the bacterium in producing that light is about 0.0015 for bacteria under normal conditions.—E. N. HARVEY. *Trans. Faraday Soc.*, 35 (1939), 233–235; through *Chem. Abstr.*, 33 (1939), 2917. (F. J. S.)

**Chemotherapeutic Agents—Two New.** Dageman (2-(*p*-aminobenzene-sulfonamide)pyridine) has been used in the treatment of lobar pneumonia. The mechanism of its action is believed to involve a direct bacteriostatic action coupled with the production of degenerative changes in the protective capsule of the pneumococcus. Stimulation of cell proliferations makes allantoin of value in the treatment of obstinate ulcers and other slow-healing wounds.—W. C. MACAULAY. *Can. Pharm. J.*, 72 (1939), 5–6; through *Chem. Abstr.*, 33 (1939), 3073. (F. J. S.)

**Chemotherapy—Researches in.** On the chemical side, researches in chemotherapy start from the discovery that some drug, whose constitution is wholly or partly known, is of clinical benefit in a given disease or is toxic to certain organisms. The introduction of phenol or carbolic acid for the prevention of sepsis by Lister in 1867 formed the starting point in research on bactericides. Research on amebicides was greatly facilitated by the technic developed by Dobell and Laidlow (1926), and Laidlow, Dobell and Bishop (1928) for testing amebicides *in vitro*. In a search for substances having the amebicidal action of emetine without its nauseating effect, a number of alkaloids very closely related to emetine in chemical structure were made at an earlier period. Researches on bactericides and amebicides have determined that 4-*n*-amyl-*m*-cresol is suitable for use as an antiseptic in the oral cavity, but that it gives disappointing results as a urinary antiseptic; that $\alpha\kappa$-tetra-*n*-amyldiaminodecane is three to five times as efficient as emetine for its amebicidal activity.—F. L. PYMAN. *Pharm. J.*, 139 (1937), 274. (W. B. B.)

**Corynebacterium Diphtheriæ—Typing and Isolation of, with a Simple Chocolate Tellurite Medium.** A medium is described which gives excellent differentiation of the *gravis*, *mitis* and intermediate forms of *C. diphtheriæ* on the basis of colony morphology. The medium is also superior to Loeffler's for the isolation of *C. diphtheriæ* since 4% of 1375 throat swabs examined were negative on Loeffler's medium and positive on the author's medium. The composition and preparation of the medium are described as follows: *Broth.*—Lemco Beef extract, 20 Gm.; Difco proteose peptone, 20 Gm.; sodium chloride, 10 Gm., and distilled water, 1000 cc. The broth is adjusted to $p_H$ 7.6. *Agar.*—Difco agar, 30 Gm. and distilled water 1000 cc. Potassium tellurite, 1% aqueous solution. *Laked Blood Mixture.*—A liter flask containing sodium citrate, 10 Gm., dissolved in 10 cc. of water is autoclaved. At the abattoir, one liter of ox blood is collected in the flask and formalin, 1.25 cc., and methyl ether, 30 cc., are added. The blood mixture is stored in the ice-box until used. When the medium is to be prepared, 100 cc. of broth are heated to 55° C. and 10 cc. of laked blood and 4 cc. of potassium tellurite solution are added. One hundred cc. of the agar base are melted and cooled to 55° C. when the blood-broth mixture is added to it and heated at 75° C. for 15 minutes. Plates are then poured in the usual manner.—G. A. W. NEILL. *J. Hyg.*, 37 (1937), 552. (T. C. G.)

**Dagenan (M. and B. 693)—Discovery of.** Dagenan, better known as M. and B. 693, was first prepared by Dr. A. J. Ewins and Mr. M. A. Phillips. It is one of a large number of new

compounds, the preparation of which was undertaken with a view to find one having a sufficient degree of activity against the pneumococcus to justify its use in the treatment of acute lobar pneumonia. When sufficient biological data were available to show that the new substances were relatively safe to use, they were examined comparatively for antipneumococcal activity by tests in mice inoculated with virulent strains of pneumococci. The chemical having the test number 693 was found to have antipneumococcal properties far superior to any of the others examined, and to have a toxicity notably less than most. Its therapeutic efficiency, as indicated by the ratio between its activity and its toxicity, was the highest of any drug in the several series considered, and it was therefore decided to submit it to chemical trial in acute lobar pneumonia in human beings under the designation M. and B. 693. Dr. G. Mary Evans and Dr. Wilfred Gaisford undertook these first clinical trials. The results obtained in the first few cases treated were so promising that it was decided to conduct an extended trial in as large a series of cases as possible, using an equivalent number of controls. The blood and peritoneal fluid from infected mice were examined by Dr. L. E. H. Whitby. Pneumococci developed in the peritoneal cavity for at least four hours, but shortly the organisms showed degenerative capsular changes. The capsules became swollen and crenated and eventually disappeared. The mechanism of the action of M. and B. 693 in pneumonia is at present presumed to involve a direct bacteriostatic action coupled with the production of degenerative changes in the pneumococcus, either, or both, enabling the leucocytes to complete their destruction of the invading microörganisms. ANON. *Chemist and Druggist*, 129 (1938), 107. (A. C. DeD.)

**Dihydroxyacetone—Note on the Biological Production of.** Dihydroxyacetone, difficult to prepare by chemical methods, is comparatively easy to obtain by the biological oxidation of glycerol, using *Bact. suboxydans*. Hitherto, low concentrations of glycerol (2–8%) have been used. It is shown that with strong aeration and control of $p_H$ a 25% glycerol solution can be almost quantitatively transformed into dihydroxyacetone in 12 days. Lower concentrations give more rapid fermentations, 15% glycerol giving a 95% yield in 3–4 days. The fermentation period should be considerably decreased by employing aeration under pressure.—K. R. BUTLIN. *J. Soc. Chem. Ind.*, 57 (1938), 463. (E. G. V.)

**Diphtheria Toxin Protein—Molecular Weight of.** A study of the sedimentation, diffusion and electrophoresis behavior of the purified toxin has revealed that the toxin behaves as a homogeneous substance. The molecular weight was obtained from the sedimentation and diffusion constant and was found to be 72,000.—PHYSICAL CHEMISTRY LABORATORY, UNIVERSITY OF WISCONSIN. *J. Am. Chem. Soc.*, 61 (1939), 533. (E. B. S.)

**Diphtheria Toxoid—Diluted and Undiluted, as Immunizing Agents in Man.** No differences were observed either in rapidity of response or in amount of antitoxin produced between a group of young adults treated with undiluted diphtheria toxoid and a comparable group given the same toxoid diluted 10 times with normal saline. The rate of loss of antitoxin from the blood was about the same in both groups although individuals varied greatly in that respect.—HORTENSE B. SCHMITZ. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 430. (A. E. M.)

**Disinfectants—Mercury-Nitrogen Compounds Suitable as.** Alkoxyalkyl mercury compounds such as methoxyethyl mercury acetate, methoxypropyl mercury nitrate, hydroxyethyloxyethyl mercury sulfate, chloroethyloxyethyl mercury chloride, benzyloxyethyl mercury nitrate, methoxycyclohexyl mercury acetate and 2-methoxypropane-3-carboxylic acid 1-mercury nitrate, are treated with a nitrogen compound containing, attached to the nitrogen atom, hydrogen atoms at least one of which is replaceable or is replaced by a compound such as potassium phthalimide, *p*-toluene sulfochloro amide sodium, sodium 5,5-diethylbarbiturate or the sodium salts of 5-phenyl-5-ethyl barbituric acid, 5-tolyl-5-ethyl barbituric acid, 5-hydroxyphenyl-5-ethyl barbituric acid, 5-ethyl-5-methyl barbituric acid, 5-hexyl-5-ethyl barbituric acid, 5-phenyl-5-butyl barbituric acid, 1-ethyl-3-nitrobenzene-4-sulfochloroamide sodium, etc., with production of bactericidal and insecticidal products which are relatively free from irritating effect upon the human skin. Numerous examples with details are given.—JÜRGEN CALLSEN, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,119,701, June 7, 1938. (A. P.-C.)

**Disinfection, Sterilization and Preservation.** A review. Fifteen references are given.—TH. SABALITSCHKA. *Scientia Pharm.*, 9 (1938), 107–110. (H. M. B.)

**Distemper Vaccine and Method of Preparing the Same.** The virus of typical canine distemper is passed serially through ferrets for a sufficient number of passages to materially reduce the

normal distemper death rate of foxes injected therewith.—ROBERT G. GREEN. U. S. pat. 2,136,-131, Nov. 8, 1938. (A. P.-C.)

**Enteric Fever. Serological Diagnosis in Inoculated Subjects.** Since it is generally believed that the Widal test on the sera of those who have been recently vaccinated is unreliable for the diagnosis of thyphoid fever, a study was made to determine the value of the O agglutination test for distinguishing between inoculation and infection agglutinins. The O agglutinin content in those who had been vaccinated from one month to two years previously was determined. The titers thus obtained were compared with the titers found in cases of typhoid fever reported by various authors in the literature. Since the O titers found in the inoculated were frequently as high and often higher than those found in actual cases of enteric fever, it was concluded that the simple O agglutination test on a single specimen of serum could not be relied upon to distinguish inoculation from infection agglutinins. The only reliable procedure is to perform quantitative H and O agglutination tests on repeated specimens, and if there is a rise in titer with successive samples, a diagnosis of typhoid fever may be established with considerable certainty.—C. P. BEATTIE and J. S. ELLIOT. *J. Hyg.*, 37 (1937), 36. (T. C. G.)

**Fermentation—Irregularities in.** A summary of the bacteria producing side reactions in alcoholic fermentation. To minimize loss of ethyl alcohol, the temperature should be less than 30°, the vessels sterilized with steam, castor oil added to prevent frothing, and sulfuric acid added to inhibit the action of the bacteria. Addition of an emulsion of colophony effects a 50% economy in yeast by precipitation on the bacteria.—L. M. BAETA NEVES. *Rev. Chim. Ind.*, No. 77, 7 (1938), 27–29; through *J. Soc. Chem. Ind.*, 57 (1938), 1481. (E. G. V.)

**Filterable Viruses in Infection of Upper Respiratory Tract.** The existence of filterable virus as etiologic factor in infections of upper respiratory tract, beginning with common cold, was shown. Virus evidently activates bacteria of tract and assists in dissemination, even increasing their essential virulence. Virus can be kept, if frozen and desiccated, in high vacuum. Virus cultivated in tissue culture medium plus acacia, frozen and dried, will remain active for a long period. Evidence that uncomplicated cold is pure virus disease. Technic of colds applied to study of influenza. Transmission tests with human volunteers, ferrets, mice. Object of study development of means of prophylaxis. Preliminary trial with vaccination of chimpanzees, then subcutaneous injections to human volunteers. Results negative for colds, but more successful with mouse strain of influenza. Problem still being studied.—A. R. DOCHEZ, *et al.* *J. Am. Med. Assoc.*, 110 (1938), 177. (G. S. G.)

**Germanin—Contribution as to Its Mode of Action.** In a preliminary report H. stated he was able to show by the use of splenectomized rats that germanin (Bayer 205) acts as a trypanocide by sensitizing the trypanosomes to phagocytosis by the reticulo-endothelial system. This accounts for the difference between the action *in vivo* and *in vitro* of germanin and trivalent arsenic compounds. It is also in agreement with the Reiner-Koveskuty explanation advanced in 1927 for the same phenomenon.—FRANK HAWKING. *Ann. Trop. Med. Paras.*, 33 (1939), 13. (W. T. S.)

**Germicides and Antiseptics—Efficiency of Several, on the Oral Mucosa.** Of the fifteen preparations studied, tincture of 4-nitro-5-hydroxymercuri-*o*-cresol (Metaphen 1 to 200) was found to be the most effective agent both in its germicidal action of the oral mucous membrane and in the duration of antiseptic action.—E. MEYER and L. ARNOLD. *Am. J. Digestive Diseases Nutrition*, 5 (1938), 418–450; through *Chem. Abstr.*, 33 (1939), 2282. (F. J. S.)

**Germicides—Increase of Bactericidal Action of, by Variation of $p_H$.** The influence of organic and inorganic acids has been studied in order to determine the following: whether all types of common germicides are influenced by lowering $p_H$ and whether a direct proportion exists; whether $p_H$ alone is the deciding factor; how far the germicidal action of the acid is responsible for change in efficiency; whether the increased action is restricted to one type of organism or applies to all of those commonly found. The F. D. A. phenol coefficient technic was used. Details of procedure are given and results are shown by charts. The following conclusions were reached: (1) Commonly used types of germicides respond with an increased germicidal effect when their $p_H$ is lowered by the addition of acid or acid salts. (2) This effect is not in a direct proportion to the $p_H$ of the germicidal solutions and varies with the chemical structure and quantity of the used acids or acid salts. (3) The increased action of low $p_H$ solutions of germicides is not restricted to any specific type or kind of organism. (4) At a constant $p_H$ and a constant

concentration of a germicide, different acids show a different degree of activation of the germ-killing effect which seems to be independent of the ionization of the used acids. (5) Acids or acid salts possess an activating effect on germicides which is far out of proportion to the action of the used acids or germicides alone. (6) Solutions of germicides, especially in the presence of colloids, are not rendered more destructive to the skin by even a considerable lowering of their $p_H$. (7) Neutral salts added to germicides of lowered $p_H$ show an appreciable activating influence on the germicidal effect.—PAUL GOEDRICH. *J. Am. Pharm. Assoc.*, 27 (1938), 1233. (Z. M. C.)

**Leprotic Nodules—Chemical Formation of. I. Isolation of the Lipid Fractions.** In human leprosy, the skin lesion known as the leprotic nodule is of such a unique nature and heavily laden with *Mycobacterium lepræ* that it is an ideal source of material for biologic and chemical study. Because of the complex nature of the nodules, removed from living cases, the author subjected them to a systematic fractionation into the major lipid components; 105.2 Gm. of the nodules were washed, cut and dried, reducing the weight to 20.4 Gm. showing 80.6% water content. The dried material was ground and the lipid fractions were isolated in the form of a phosphatide, an active soluble fat, and a wax, according to the method of Anderson (*J. Biol. Chem.*, 74, 525). These fractions were insoluble in aqueous solutions. The acetone-soluble fat and wax were soluble in olive oil. The isolated fractions were subjected to preliminary skin tests on a few leprosy cases. The wax elicited a definite skin reaction simulating, but not as intense or as distinctive as, that from an ordinary leprolin preparation, with respect to the neural and cutaneous types of leprosy. The acetone-soluble fat and the phosphatide, at the concentration employed, gave practically negative results.—ERNESTO M. PARAS. *Philippine J. Sci.*, 66 (1938), 155. (P. A. F.)

**Mandelic Acid—Further Clinical and Laboratory Observations of.** Mandelic acid is bactericidal for *E. coli* and *B. proteus*. Staphylococci, *Æerobacter ærogenes* and Pseudomonas are less susceptible. Bacteriostatic and bactericidal effects are more pronounced the more acid the medium.—G. CARROLL, B. LEWIS and L. KAPPEL. *J. Urol.*, 39 (1938), 710–713; through *Chem. Abstr.*, 33 (1939), 3070. (F. J. S.)

**Mandelic Acids—Preparation of Substituted, and Their Bacteriological Effects.** Alkyl substituted mandelic acids can be prepared readily from alkyl benzenes and ethyl oxomalonate when treated in the presence of anhydrous stannic chloride or certain other condensing agents. The intermediate condensation products are hydrolyzed and decarboxylated to form the corresponding mandelic acids. Nine such acids have been prepared and compared with mandelic acid with regard to bacteriological activity. Only the bromo- and *p*-iodomandelic acids show any promise as medicinals. This synthesis of substituted mandelic acids has been extended for alkyl derivatives and has been shown to work poorly for halogen derivatives. Boron trifluoride is not satisfactory to use in the place of anhydrous stannic chloride as the condensing agent.—J. L. RIEBSOMER, R. BALDWIN, J. BUCHANAN and H. BURKETT. *J. Am. Chem. Soc.*, 60 (1938), 2974. (E. B. S.)

**Negri Bodies—Comparison of Mesencephalon and Hippocampus Sites for Detection of.** Recent contributions by several authors have indicated that the mesencephalon may be a better site for the detection of Negri bodies than the hippocampus. The authors examined sections of the midbrain and hippocampus of 35 animals suspected of having rabies. In eight cases Negri bodies were found in the hippocampus and not in the midbrain, while in no case were Negri bodies found in the midbrain and not in the hippocampus. Hence the authors conclude that the hippocampus is still the site of choice for the examination of animals suspected of having rabies.—E. S. HORGAN and R. M. MCKINNON. *J. Hyg.*, 37 (1937), 340. (T. C. G.)

**Pantothenic Acid as a Growth Factor for Diphtheria Bacillus.** It has been demonstrated that the growth of certain strains of diphtheria bacillus require *p*-alanine and nicotinic acid as essentials. Upon hydrolysis of pantothenic acid, β-alanine is obtained. It is believed that the pantothenic acid is the essential in promoting growth and the β-alanine serves only as a stepping-stone for the production of the acid. Experiments show a smooth, gradual increase in the growth of diphtheria bacillus with the addition of pantothenic acid, whereas with β-alanine there is no definite increase over controls until a definite concentration is reached supporting the view that β-alanine must first be built up into a more complex material before it can be utilized. Pantothenic acid requires no such preliminary synthesis.—J. H. MUELLER and A. W. KLOTZ. *J. Am. Chem. Soc.*, 60 (1938), 3087. (E. B. S.)

**Para-Amino Benzene Sulfonamide—Effect of.** The effect of para-amino benzene sulfonamide on the oxygen consumption of rat liver and diaphragm, human blood, beta hemolytic stryptococcus, gonococcus, pneumococci, types I and III and meningococcus groups I–III, was studied with the direct Warburg technic. With the exception of meningococcus, the drug at a concentration of 0.0132 Gm. per cent produced no effect. Increasing the drug concentration up to 0.660 Gm. per cent invariably reduced the oxygen uptake of the tissue as well as the bacteria. The effect of 0.132 Gm. per cent of the drug was variable.—H. I. CHU and A. B. HASTINGS. *J. Pharm. and Exp. Therap.*, 63 (1938), 407. (A. C. DeD.)

**Pectin—Bactericidal Action of, Containing Nickel.** Pectin containing 0.22% or more nickel, after being subjected to certain thermal conditions and in a certain $p_H$ range, was found to have a slow bactericidal action when tested with *E. coli* and certain other bacteria. Other pectins which contained no nickel failed to show this activity.—EDITH HAYNES, CHARLES A. TOMPKINS, GRACE W. CROOK and MATTHEW WINTERS. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 478. (A. E. M.)

**Phenylmercuric Compounds and Merfen (Phenylmercuric Borate)—Comparison of the Bacteriological Properties of.** Tables cite the growth checking and killing action in 24 hours of nine preparations for *B. coli, proteus, pyocyaneus, anthracis* and *subtilis* and for *Micrococcus aureus* and streptococci. Disinfectant power for the ordinary flora of the hands was also studied. In the 24-hour tests there was not much difference in the action of the various preparations. In the study of the sterilization of the hands all but the solutions of phenylmercuric acetate containing various molar strengths of thiosulfate, sterilized the back of the hands in $1^1/_2$ minutes.—E. JENSEN. *Arch. Pharm. Chemi*, 45 (1938), 407. (C. S. L.)

**Pneumococci—Adsorption of Heterophile Antibody by, of Different Types.** Heterophile antigen has a wide distribution in the various types of pneumococci. It is logical to assume, therefore, that heterophile antigen is at least part of the complex species-antigenic structure of most pneumococci.—H. M. POWELL and W. A. JAMIESON. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 248. (A. E. M.)

**Precipitinogin—Existence of, on the Skin of Vaccinated Animals.** Ascoli's thermoprecipitin is always negative not only with extracts of fresh, dry or salted skins of slaughtered cattle, or of cattle that died from other causes than anthrax after ten days from vaccination, but also with those of animals (the authors have only been able to carry out their tests with goat skins) that have recovered from attacks of natural or experimental anthrax. On the other hand, this reaction is nearly always positive with extracts of the skins of animals that have died after anthrax vaccinal accidents, or from other causes, in the first week after vaccination. The bacteriological and biological tests (guinea-pig inoculation) confirm the positive results of Ascoli's reaction in almost all cases (13 on 14) with skins of cattle that have died of natural anthrax.—G. PEGREFFI and I. MAMELI. *Biochim. terap. sper.*, 16 (1938), 107. (A. C. DeD.)

**Prontosil and Related Compounds.** A review of the literature on.—C. G. VAN ARKEL. *Pharm. Weekblad*, 75 (1938), 389. (E. H. W.)

**Propionic Acid Bacteria—Utilization of Carbon Dioxide by.** Previous experiments showing the utilization of carbon dioxide by propionic acid bacteria fermenting glycerol were confirmed and extended. The carbon utilized was found in the products which were succinic (I), propionic (II) and acetic acids. Total carbon determinations before and after the fermentation showed that there was an increase in the total organic carbon in the medium equivalent to the decrease in inorganic $C(CO_2)$. The amount of I formed and carbon dioxide used were approximately equimolar. The formation of I by synthesis from a 3-carbon compound through the addition of carbon dioxide was suggested. In the absence of carbon dioxide, little or no I was formed. The relative proportions of the products varied with the time and the carbon dioxide utilized. The amount of I formed increased while the amount of II decreased.—H. G. WOOD and C. H. WERKMAN. *Biochem. J.*, 32 (1938), 1262–1271; through *Chem. Abstr.*, 33 (1939), 2168. (F. J. S.)

**Pyridines—2-Amino-6-Piperidyl.** By treating a 2,6-dihalopyridine with ammonia or a primary or secondary alkyl amine to form the corresponding 2-amino-6-halopyridine, and thereafter treating the latter with piperidine in the presence of pyridine, there is formed a 2-amino-6-piperidyl pyridine product. If desired, the order in which these two reactions are carried out may be reversed. The resulting products have therapeutic, germicidal and insecticidal properties.—

JOHAN P. WIBAUT and HERMAN J. DEN HERTOG, JR., assignors to THE DOW CHEMICAL CO. U. S. pat. 2,129,294, Sept. 6, 1938. (A. P.-C.)

**Serological Cancer Reaction—Method of Preparing and Using Urinary Extracts for.** The alcoholic precipitate from urine is dried in vacuum, taken up in physiological salt solution, shaken for a long time and filtered. Ammonia is added to the filtrate, and after precipitation of the phosphates the solution is filtered again. Acetic acid is added to the filtrate to a $p_H$ of slightly less than 6.8, and the solution is used directly for the serological reaction. Generally, 2 cc. of the extract are used for 0.7 to 0.8 cc. of blood serum previously heated to 56° C. for 20 minutes; the mixture is allowed to stand for about 16 hours at 38° C. and then for 24 hours at room temperature. When extract of cancerous urine is mixed under these conditions with cancerous blood serum, flocculation is produced.—M. ARON. *Compt. rend. soc. biol.*, 126 (1937), 470-472; through *Chimie & Industrie*, 40 (1938), 242. (A. P.-C.)

**Somatic and Flagellar Agglutination—Relation of, to Opsonization in Vaccinated Individuals.** Forty-five students were immunized with a vaccine containing *E. typhi, S. paratyphi, S. schottmulleri, S. hirschfeldii, S. enteritidis* and *S. suipestifer.* Blood specimens were collected before, 28 days after and six months after immunization. H and O agglutination tests and phagocytic indices were carried out on each specimen of sera. The results indicated that there was no correlation between the appearance of H agglutinins and the phagocytic index; while there was a marked parallelism between the O agglutinin titers and the behavior of opsonins. In many cases opsonins were present in the absence of agglutinins, suggesting that the former are a better index of immunity than the latter.—E. W. DENNIS and H. SENEKJIAN. *Am. J. Hyg.*, 26 (1937), 11. (T. C. G.)

**Spirochætes and Trypanosomes—Chemotherapeutic Reaction of.** The author compared the chemotherapeutic reaction of relapsing fewer spirochætes to that of trypanosomes when these microörganisms are exposed *in vitro* to a series of organic trivalent arsenicals, sodium arsenite, tartar emetic and an acriflavine dye. Excepting reduced stovarsol and parosan the spirochætes were much more resistant to the compounds used than were the trypanosomes. Solganal was without effect on either spirochætes or trypanosomes *in vitro* and a solganal-fast strain of spirochætes was obtained only with difficulty. Spirochætes like trypanosomes became photosensitive on exposure to diamino-methyl-acridine. In examining new chemotherapeutic compounds, the author suggested that tests on trypanosomes be supplemented with tests on relapsing fever spirochætes since the latter resemble the pathogens of syphilis more than trypanosomes do.—FRANK HAWKING, *Ann. Trop. Med. Paras.*, 33 (1939), 1. (W. T. S.)

**Staphylococcic Anatoxin.** Only three strains out of 250 gave an anatoxin with more than 10 Ramon-units per cc. The anatoxin obtained was purified by precipitation with trichloroacetic acid. The prophylactic effect of immunization with staphyloanatoxin in guinea pigs was observed and compared with vaccine and toxovaccine.—O. FELSENFELD. *Bratislav. Lekarske Listy*, 18 (1938), 578–581; through *Chem. Abstr.*, 33 (1939), 2171. (F. J. S.)

**Staphylococcus Toxin.** An experimental study in rabbits injected with ten different strains isolated from cases of conjuctival inflammation. The pathogenic action of these ocular strains of staphylotoxin is similar to that of general strains, with the exception of the action on the gastrointestinal tract.—J. H. ALLEN and A. E. BRALEY. *Am. J. Ophthalmol.*, 22 (1939), 11–15; through *Chem. Abstr.*, 33 (1939), 2169. (F. J. S.)

**Streptococcic Infection—Therapeutic Effect of 4,4'-Diamino-Diphenyl-Sulfone, Corresponding Sulfide and Acetyl Derivatives in.** 4,4'-Diamino-diphenyl-sulfone is about 3 times as toxic for the rabbit as is sulfanilamide; the sulfide is 5 times as toxic. The corresponding diacetyl derivatives of sulfone and sulfide are less toxic than sulfanilamide. The minimum therapeutic doses given daily for 5 consecutive days are as follows: for sulfanilamide 0.005 Gm., diamino-diphenyl-sulfone 0.0005, diamino-diphenyl-sulfide 0.003, the diacetyl-sulfone 0.001 and for the diacetyl-sulfide 0.002. In mice infected with *beta*-Streptococcus hemolyticus the sulfone is active in a dose 10 times smaller than that required of sulfanilamide. This indicates a considerably higher therapeutic index.—GEORGE W. RAIZISS, M. SEVERAC, J. C. MOETSCH and L. W. CLEMENCE. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 339. (A. E. M.)

**Sulfanilamide and Sulfapyridine—Comparison of Bacteriostatic Effects of, on Bacteria in Broth Cultures.** Sulfapyridine (2-sulfanilylaminopyridine) was somewhat more effective than sulfanilamide in broth cultures of *E. coli, E. typhii* and Group B beta hemolytic streptococci.

The two compounds were approximately equally active against Group C beta hemolytic streptococci and alpha streptococci, and they were equally inactive against Group D beta hemolytic streptococci and *Staphylococcus aureus*.—ELEANOR A. BLISS and PERRIN H. LONG. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 483. (A. E. M.)

**Sulfanilamide—Effect of, on Experimental Tuberculosis in the Guinea Pig.** Sulfanilamide had an inhibiting effect on the development of tuberculosis in the guinea pig if the drug was administered before the infection was given. When the infection had been present for 17 to 24 days, treatment with sulfanilamide did not alter the macroscopic appearance of the tubercular process. The development of sensitivity to tuberculin was unaltered by sulfanilamide therapy.—P. H. GREEY, H. H. CAMPBELL and A. W. CULLEY. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 22. (A. E. M.)

**Sulfanilamide—Effect of, upon the Viability of Meningococci in Spinal Fluid.** In the presence of sulfanilamide, the growth of meningococci may be inhibited. Previous treatment of meningococci with sulfanilamide may result in their growth on subculture or in the loss of their viability, depending on the concentration of the drug as well as on the period allowed for its action.—ERWIN NETER. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 84. (A. E. M.)

**Sulfanilamide—Mechanism of Action of.** Taking up the perplexing problem of the action of sulfanilamide and its related compounds, Bürghers performed some experiments on the bacteriostatic and other properties of the compounds both in culture media and in fluids derived from blood. As a result, he concludes that the action of the complex compounds containing sulfanilamide is not due to the liberation of sulfanilamide. The action of these compounds is thought by him to consist of a direct damaging effect upon the bacterial cell itself, whereby the cell may become less able to produce deleterious toxins, or may be less capable of producing a protective capsule for itself. He thinks it possible that either through these two actions, or through a combination of these with a mobilizing effect upon the defensive mechanism of the body, the response to infection is altered with resulting therapeutic benefit. How much cellular and bacterial respiration is influenced remains unanswered.—BÜRGHERS. *Deut. Med. Wochschr.*, 54 (1938), 598; through *Abbott Abstract Service*, (1938), No. 315. (F. J. S.)

**Sulfanilamide Solution for Intravenous Injection in Veterinary Practice.** For intravenous injection in large domestic animals in strangles or septicemic fever the following formula is recommended: sulfanilamide 4 Gm., sodium dihydrogen phosphate 0.50 Gm., glucose 5 Gm., warm distilled water, sterilized by boiling, *q. s. ad* 250 Gm. The solution is aseptically prepared in a stream of $CO_2$ into a sterile bottle closed with a rubber stopper or needle puncture removal of the solution; then sterilized one hour in the steam bath. If air is not excluded the solution takes on a yellow color.—A. LANNUNG. *Arch. Pharm. Chemi*, 45 (1938), 615. (C. S. L.)

**Sulfanilamide—Uses and Misuses of.** The latest of the thirteen derivatives of sulfanilamide is the pyridine derivative, M. and B. 693, or T. 693, as it is sometimes called. Sulfanilamide is of great value in all acute infections due to hemolytic streptococci, and recent work suggests that T. 693 has a definite anti-bacterial effect on pneumococci. In regard to the misuses of sulfanilamide, it is said that toxic symptoms of a mild type occur in about half the cases in which sulfanilamide is taken. Symptoms of such gravity as to threaten death are infrequent, but idiosyncrasy always has to be remembered. Experiments show that T. 693 has a very powerful action in inhibiting microbes, but is comparatively poor in killing them, which means that the actual killing of the microbe has to be done by the natural defenses of the body. To accomplish the destruction of harmful organisms, it is shown that there must be leucocytes, T. 693 and immune serum.—ANON. *Pharm. J.*, 141 (1938), 469. (W. B. B.)

**2-Sulfonilylaminopyridine, Sulfonamide-P, Soluseptasine—Bacteriostatic Effects of.** The bacteriostatic effect of these compounds has been examined. All three drugs inhibit the growth of *Str. viridans* at a dilution of 1 in 2000 in the presence of defibrinated human blood, 2-sulfonilylaminopyridine doing so at a dilution as high as 1 in 10,000. None of these drugs is effective in the absence of leucocytes. None of the drugs exhibits any bacteriostatic effect on *Staph. aureus*. The growth of *N. gonorrhoeæ* is retarded by all three drugs in the presence of leucocytes. In deleucocyted blood soluseptasine still exerts a strong bacteriostatic effect on the organism. All the drugs are effective against *N. meningitidis* in the presence of corpuscles—in the case of 2-sulfonilylaminopyridine at a dilution of 1 in 60,000. That drug is active at a dilution of 1 in 60,000 even in the absence of blood. The dependence of these drugs on the presence of

leucocytes is in agreement with the findings of Fleming (1938). From the evidence set forth above it appears that 2-sulfonilylaminopyridine may prove the most useful therapeutic agent in cerebrospinal fever and in conditions arising from infection with *Str. viridans*. Soluseptasine seems the most satisfactory for dealing with *N. gonorrhoeæ*.—B. G. MAEGRAITH and R. L. VOLLUM. *Brit. Med. J.*, 4062 (1938), 985. (W. H. H.)

**Sulfur-Containing Chemotherapeutic Substances—Comparison of in Vivo and in Vitro Properties of.** Experiments were devised to compare the chemotherapeutic action of certain compounds related to *para*-aminobenzenesulfonamide on mouse infections and on the same organisms *in vitro*. Ten such compounds were given to four groups of mice, infected intraperitoneally with 100 M. L. D. of four different organisms: *Streptococcus, Pneumococcus, Staphylococcus* and *Bacillus œrtryche*. The therapeutic agent was given orally in a dose of 10 mg. immediately after infection, five hours later and thereafter twice daily for two to three days. The chief results recorded were the complete recovery in four days of all the mice receiving *para*-aminobenzenesulfonamide, and 75% recovery of the mice suffering from streptococcal infection after administration of 3-nitro-4-hydroxybenzenesulfonamide. The low toxicity of this compound should encourage further investigation of its chemotherapeutic value, especially as it was found to be active in pneumococcal septicemia. The other compounds examined were found to be almost inactive, although 4:4′-diacetyldiaminodiphenylsulfide delayed the death of mice infected with *Staphylococci*. Under the conditions of experiment, it is concluded that there was no obvious connection between the antibacterial actions *in vivo* and *in vitro*, and that the specific action of this group is not one of simple inhibition of growth but of special damage to the capsule or other defense mechanism of the organism.—M. MCLEOD. *Biochem. J.*, 32 (1938), 1770; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 147. (F. J. S.)

**T. A. B. C. Vaccine—Sterilization of.** The T. A. B. C. vaccine for typhoid and paratyphoid fevers is prepared at the Royal Medical School, Greenwich, England, by heating a suspension of the organisms at 58° C. for one and one-half hours and adding 0.5% phenol to the finished product. Since Felix has shown that the essential immunizing agent in a typhoid vaccine is the Vi antigen content, and since he has also shown that heating at 58° C. for one and one-half hours and 0.5% phenol both destroy the Vi antigen in organisms, it is apparent that the Royal Medical School vaccine must be markedly deficient in Vi antigen. Attempts were therefore made to develop another method of sterilizing the vaccine which would preserve its Vi antigen content. The "Katadyne" method, based on the oligodynamic action of silver, was employed as follows: Katadyne beads were added to a suspension of *E. typhi* which was then placed in the refrigerator at 4° C. and sterility tests were made daily. The suspension became sterile after nine days of this treatment. This suspension was agglutinated by anti-Vi rabbit serum to a titer of 1:1280, indicating that the Vi antigen has not been destroyed. Since Katadyne beads required a considerable time to sterilize concentrated suspensions, an Electro-Katadyne, consisting of two silver electrodes connected to a dry cell, was employed. Distilled water containing 0.0004% NaCl was treated with the Electro-Katadyne for twenty minutes and this water sterilized a suspension of $5 \times 10^9$ *E. typhi* per cc. in four hours. Sufficient NaCl was added to the finished vaccine to give a concentration of 0.85%, but enough active silver remained to inhibit the growth of accidental contaminants such as *Staphylococcus aureus*. Rabbit antiserum, produced by injecting Electro-Katadyne treated bacilli, was inoculated into mice which were subsequently given 10 M. L. D.'s of living typhoid bacilli. This antiserum gave complete passive protection to mice, while antisera, produced with heat- or alcohol-killed organisms, gave considerably less passive protection.—S. G. RAINSFORD. *J. Hyg.*, 37 (1937), 539. (T. C. G.)

**Tetanus Immunity. Resistance to Tetanus Spores Induced in Guinea Pigs by Active and Passive Immunization.** The infecting suspension was prepared by growing *Cl. tetani* in a semisolid medium, heating the culture for thirty minutes in the Arnold to destroy the vegetative cells and toxin, and counting the number of viable spores by growing serial dilutions of the spore suspension in tubes containing the semisolid medium. The spore suspension was mixed with an equal volume of 50% $CaCl_2$ and various dilutions injected intramuscularly into guinea pigs to determine the L. S. D. (lethal spore dose). To test the value of tetanus antitoxin, 1500 units were injected into one group of guinea pigs previously injected with 150,000 spores, and into another group previously injected with 21 spores. Since this amount of antitoxin gave almost complete protection to the group injected with 21 spores, while the majority of animals in the other group

died, it was concluded that a dose of 21 spores was probably comparable to the dose of an accidental infection in man. Three groups of guina pigs were actively immunized as follows: Group A received three doses of plain tetanus toxoid at two-week intervals, Group B received a single 1-cc. dose of tetanus alum-precipitated toxoid, and Group C received two 0.5-cc. doses of alum-precipitated toxoid at a four-week interval. These animals were later injected with lethal spore doses and the number of surviving animals indicated the degree of protection conferred by each immunizing agent. Titrations of the tetanus antitoxin in the animals' blood before and after the immunizations were also made. It was concluded that 0.01 of a unit of antitoxin per cc. of blood was the critical level of immunity in guinea pigs. That is, with less than this amount of antitoxin, infection was likely to occur following the injection of a lethal spore dose. One dose of alum-precipitated toxoid gave better protection than three doses of plain toxoid.—P. A. T. SNEATH, E. G. KERSLAKE and F. SCRUBY. *Am. J. Hyg.*, 25 (1937), 464. (T. C. G.)

**Trichomonas Fœtus—Cultivation of, in the Chick Embryo.** Trichomonas fœtus has been grown successfully in chick embryos through 14 generations when the parasites were inoculated beneath the chorio-allantoic membrane.—PHYLLIS M. NELSON. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 258. (A. E. M.)

**Tubercle Bacilli in Gastric Juice.** Inoculation of guinea pigs with gastric lavage of fasting patients proved of diagnostic value in discovering early tuberculosis, and also in verifying results on patients treated with gold salts and artificial pneumothorax.—J. LOPEZ BONILLA. *Prensa Medica*, 24 (1937), 2482; through *J. Am. Med. Assoc.*, 110 (1938), 616. (G. S. G.)

**Tuberculin—Standardization of Diluted.** A skin test for determining the potency of diluted tuberculin is described. It can be used to standardize accurately tuberculin already diluted to the 1–10,000 level with an accuracy of 20%.—W. E. BUNNEY and R. Y. GOTTSCHALL. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 71. (A. E. M.)

**Typhoid Carriers—Agglutinins of.** The authors have found that most typhoid carriers have an O agglutinin titer of 1–100 or above, while H agglutinins may or may not be present. In tracing the source of typhoid epidemics, all implicated persons are blood-tested and stool and urine examinations are made on only those having O agglutinins in a titer of 1:100 or above. This method requires much less time and labor than examining the stools and urine of all suspected carriers. Since there is an increasing number of persons who have received typhoid vaccine and thus their blood contains O agglutinins, the value of the O agglutination test for detecting carriers is becoming less valuable. However, it was found that many typhoid carriers have Vi agglutinins while these agglutinins are rarely found in normal or vaccinated persons. Thus a search for Vi agglutinins rather than O agglutinins may prove more fruitful in detecting typhoid carriers in the future.—A. PIJPER and C. G. CROCKER. *J. Hyg.*, 37 (1937), 332. (T. C. G.)

**Typhoid H and O Agglutinins—Comparison of the Agglutinin Responses of, Following Intracutaneous and Subcutaneous Vaccination.** Sixty-one students were divided into two groups, one group receiving 0.05, 0.1 and 0.1 cc. of T. A. B. vaccine intracutaneously at weekly intervals, and the other group receiving 0.5, 0.8 and 1.0 cc. of the same vaccine subcutaneously at weekly intervals. Blood samples were collected five weeks and one year after the last injection. H and O agglutination tests were carried out on the sera by the usual technic. The following conclusions were drawn from this study: Although the amount of vaccine injected intracutaneously was only one-ninth the quantity given subcutaneously, the agglutinin titers resulting from both types of injection were practically the same. H and O agglutinin titers ran quite parallel with both types of vaccination. The subcutaneous method produced more local and general reactions than the intracutaneous method.—R. M. PERRY. *Am. J. Hyg.*, 26 (1937), 388. (T. C. G.)

**Vitamin C—Influence of, on Shick Test.** After reviewing recent literature on the influence of vitamin C on diphtheria toxin, the authors describe tests carried out on a group of children known to react positively to the Schick test. These children were given vitamin C in varying amounts by all routes—oral, intravenous, intramuscular, subcutaneous and intracutaneous—to determine whether vitamin C would interfere with the specificity of the test. In every case the vitamin failed to alter the response to the test. A slight neutralizing effect was noted when vitamin C was mixed with diphtheria toxin *in vitro* and then injected intracutaneously, but the authors consider that this action was probably a non-specific one, due to changes in $p_H$ or to oxidation, or both. The results may be interpreted as casting some doubt on the ability of vitamin C to neutralize diphtheria toxin in the body, as has been suggested by some workers, although

the experiment is not designed to test this point critically.—J. PAKTER and B. SCHICK. *Am. J. Dis. Child.*, 55 (1938), 14; through *Abbott Abstract Service*, (1938), No. 281. (F. J. S.)

**Widal Reaction—International Experiment on.** In order to determine the variations encountered in performing the Widal test in different laboratories, the following laboratories cooperated in an international experiment: Institute des Serums et Vaccines, Bucarest; Statens Seruminstitut, Copenhagen; Standards Laboratory, School of Pathology, Oxford and L'Institut d'Hygiene de l'Etat, Warsaw. Sixty-four human sera from typhoid cases were each divided into four portions and sent to each of the participating laboratories. The Widal test in each laboratory was done by two methods: (1) using the Oxford Standards Laboratory H and O antigens and standard incubation times and temperatures; and (2) using the locally prepared antigens and incubation times and temperatures customarily employed in the local laboratory. In comparing the results of the test from each laboratory, the geometric mean titer for each serum was calculated and the percentage deviation from this mean found by each laboratory was determined. In general, the results, even when identical antigens and methods were employed, differed as much as 4900% from the geometric mean titer of some sera. When local methods were used, the results were even more widely divergent. H titers were generally more consistent than O titers. Better agreement among laboratories was found when killed rather than living antigens were used.—A. D. GARDNER. *J. Hyg.*, 37 (1937), 124. (T. C. G.)

**Wine Bacteria—Transformations Brought About by Them.** Literature relating to wine bacteria and wine diseases is critically reviewed. Certain of the bacterial changes produced are of benefit to the quality of the wine, and steps (increase of acidity, addition of sulfur dioxide) taken to prevent bacterial development, though leading to avoidance of wine diseases, prevent the production of the finest quality wines, which are always of low acidity and are not usually produced by a purely alcoholic fermentation. There are, however, numerous bacterial wine diseases.—J. RIBEREAU-GAYON. *Bull. assoc. chim. sucr.*, 55 (1938), 601–656; through *J. Soc. Chem. Ind.*, 11 (1938), 1351. (E. G. V.)

**Yellow Fever. Experience in Vaccinating with Immune Human Serum and Virus Fixed for Mice.** The experimental work in the development of a yellow fever vaccine has progressed in three successive steps: *first*, the injection of human immune serum and dried virus fixed for mice; *second*, the injection of tissue culture virus plus immune serum; and *third*, the injection of tissue culture virus, so completely attenuated that immune serum need not be injected. The degree of protection afforded by active immunization is measured by the mouse protection test in which active virus and serum of the immunized person in various dilutions are injected into a number of mice. The dilution of the serum which protects the mouse from death, indicates the concentration of antiviral substances in the blood. By taking samples of blood from 45 persons before and at various intervals up to four years after immunization, it has been found that antibodies appear about one week after the first injection, rise in titer for the next six weeks, maintain this level for about two and one-half months and then gradually reach a very low level by the end of two to three years. Revaccination is therefore desirable for those constantly exposed to the infection over long periods of time. Mild reactions including fever, headache, chills, etc., may occur one to two days after vaccination.—W. A. SAWYER. *Am. J. Hyg.*, 25 (1937), 221. (T. C. G.)

## BOTANY

**Ascorbic Acid Content—Fluctuations in, in Several Leaves of Bryophyllum Calycinum at Various Temperatures.** The ascorbic acid content of leaf tissues of *Crassulaceæ* was determined by the methods of Tillmans-Harris (dichlorophenolindophenol titration), Shinohara (*Chem. Abstr.*, 30, 2216) (phosphotungstic acid), and iodine titration, to determine the relationship of its content with temperature. At 20° it decreases rapidly, while at 7° and 37° it scarcely changes during 48 hours in the dark. These changes could not be shown to be directly related to the sulfur metabolism (glutathione) because with this material difficulties were encountered with the methods for determining ratio of cystine to cysteine sulfur.—J. WOLF. *Planta*, 28 (1938), 725–729; through *Chem. Abstr.*, 33 (1939), 2179. (F. J. S.)

**Drug Plants—Action of Traces of Elements in.** *Phytolacca decandra* was placed in Martin's nutrient solution ($p_H$ 4.8) and *Aconitum napellus* in that of Merkenschlager ($p_H$ 6.2) and of Hoagland ($p_H$ 4.51) in which traces of copper as copper sulfate (1:10,000 to 1:10,000,000), manganese as manganese sulfate (1:1000 to 1:100,000) and boron as boric acid (1:1000 to 1:1,000,000) were

added. Plants grown in the copper and manganese solutions finally died. Aconite plants in boron solutions (1:100,000) in 70 days were as large as the control plants. Mint plants grown in the solution of Mevius to which has been added *A–Z* solution of Hoagland showed slight differences from the control, being somewhat smaller in size.—H. OPITZ. *Deut. Apoth. Ztg.*, 53 (1938), 1278. (H. M. B.)

**Chlorates in Soils and Plant Material—Detection of Minute Quantities of.** Koremman's indigo-carmine test is more sensitive than are those using methyl orange or methyl red. Suitable technic for determining chlorates is described.—I. V. HUNT. *J. Southeastern Agri. Coll. Wye*, No. 42, (1938), 119–125; through *J. Soc. Chem. Ind.*, 57 (1938), 1466. (E. G. V.)

**Chlorophyll—Loss of, of Drying Foliage and the Extraction of Chlorophyll.** When exposed to the light at 34–8°, fully developed leaves lose 4.5% of chlorophyll in three hours, 9.4% in six hours and 43% in 120 hours. The loss of chlorophyll in the shade is considerably less. The question of the method for extraction of chlorophyll is discussed.—N. T. DELEANO and J. DICK. *Biochem. Z.*, 300 (1938), 37–41; through *Chem. Abstr.*, 33 (1939), 2558. (F. J. S.)

**Elements—Minor, Agricultural Significance of.** Aluminum, arsenic, manganese, selenium and rare earth content of some plants and soils are reported.—W. O. ROBINSON. *Am. Fertilizer*, No. 8, 89 (1938), 24–26; through *J. Soc. Chem. Ind.*, 57 (1938), 1464. (E. G. V.)

**Ethylene—Action of, on Plant Growth.** Ethylene decreases longitudinal growth but the effect does not resemble auxin and is not caused by the action of ethylene on auxin or the action of auxin in *Pisum sativum* and *Avena sativa*. Ethylene may influence destruction of auxin in the plant but does not influence auxin production or transport. Stem enlargements resembling those caused by auxin are produced by ethylene only in the presence of roots. Such swellings are not induced unless auxin is present at low concentration.—H. D. MICHENER. *Am. J. Botany*, 25 (1938), 711–720; through *Chem. Abstr.*, 33 (1939), 1368. (F. J. S.)

**Gluconic Acid Production on Pilot-Plant Scale. Effect of Variables on Production by Submerged Mold Growths.** The results of studies on the large scale production of gluconic acid from glucose by submerged growths of *Aspergillus niger* are presented. The optimum conditions for acid production in the large scale rotary drum fermentation equipment were essentially the same as those found previously for similar laboratory scale apparatus. The necessary neutralization of the acid produced was best accomplished by adding 26 Gm. of calcium carbonate per liter of culture solution. The most efficient glucose concentration for gluconic acid production was between 15 and 20%. Fermentations made with ungerminated fungus spores were satisfactory, although a somewhat longer period of time was required as compared to fermentations made with germinated spore preparations. The same mycelial growth could be used for several successive fermentations; this eliminated a number of preliminary operations and resulted in an overall economy of time. The maximum charge capacity of the large scale rotary fermenter, consistent with economy of time, was between 40 and 48% of the total capacity. Under the best conditions, with 15% glucose solutions, yields of gluconic acid in excess of 95%, based on the sugar present, were obtained in a 24-hour fermentation period.—E. A. GASTROCK, N. PORGES, P. A. WELLS and A. J. MOYER. *Ind. Eng. Chem.*, 30 (1938), 782–789. (E. G. V.)

**Hormones—Plant Growth, and Their Uses.** It is thought that in addition to nutrient materials, plant growth is controlled internally by the activity of certain substances known as plant hormones. Many workers in the plant hormone field have utilized the coleoptile of the oat (*Avena*), or other member of the *Graminæ*, as their experimental object. By the Avena test, growth substances have been shown to be present in practically all plant organs, these growth substances being hormones. These growth substances find practical application in their use in treatment of plant cuttings. The response to treatment of cuttings with plant hormones is found in an increased number of cuttings which root, an increased number of roots and amount of root per cutting, and an acceleration of the rooting process.—W. G. TEMPLEMAN. *Pharm. J.*, 141 (1938), 627. (W. B. B.)

**Horticultural Spray Oil.** A hydrocarbon oil is used with an admixture of about 5% of an oil-soluble reaction product of an unsaturated fatty oil such as hempseed, soybean or sardine oil and thiodiphenylamine.—FRANK F. LINDSTAEDT. U. S. pat. 2,127,039, Aug. 16, 1938. (A. P.-C.)

**Lemon and Olive—Biology of.** Chemical and physiological characteristics of suitable soils and of healthy and diseased plant tissue is given.—G. AJON. *Riv. ital. essenze*, 18 (1936), 127–131; through *J. Soc. Chem. Ind.*, 57 (1938), 1472. (E. G. V.)

**Mint Plant—Nutritional Physiology of.** The growth and oil content of the plant were studied when six important elements such as N, P, K, Ca, Mg and S were applied insufficiently.—K. MIYAKE and Y. ISIZUKA. *J. Sci. Soil Manure, Japan*, 12 (1938), 541–566; through *Chem. Abstr.*, 33 (1939), 1367. (F. J. S.)

**Sileniferous Soils—Nontoxic.** Widespread occurrence of selenium in soils has been reported. The presence of selenium in plants grown on these soils gives rise to a problem of both agricultural and industrial importance in that both animal and human food products are made toxic. In view of this, extensive investigations have been carried on in the Department of Agriculture and other institutions. In all this work it has been tacitly assumed that the presence of any considerable amount of selenium in the soil is tantamount to injury to the normal function of the soil. This paper presents a phase of the larger question of the agricultural significance of selenium in soils. It is shown that areas exist where highly seleniferous soils do not produce toxic vegetation. These results in Puerto Rico and Hawaii bring out the important fact that selenium content in soils does not necessarily indicate a dangerous or even slightly harmful situation. The data serve to emphasize the previously known fact that no quantitative relation exists between the quantity of selenium in the plants and that present in the soil.—H. W. LAKIN, K. T. WILLIAMS and H. G. BYERS. *Ind. Eng. Chem.*, 30 (1938), 599–600. (E. G. V.)

**Sugar—Application of the Scales Method to the Determination of, in Plant Juices and Tissues.** The Scales method for the determination of reducing and non-reducing sugars was studied in comparison with the Munson and Walker method from the standpoint of its adaptability to the analysis of plant juices and tissues. The method was verified statistically and modified in certain particulars (modified technic described in detail). The sodium thiosulfate-sugar equivalent was determined by means of regression lines of volumes of sodium thiosulfate on dextrose and sucrose, covering the range considered; a statistical study of these ratios showed them to be linear. A method for the determination of the blank, based on the fact that linear regression lines were obtained, is presented. A study of effect of period of boiling on amount of sugar recovered showed that the optimum time of actual boiling is 3 minutes. A source of error due to back oxidation was controlled during cooling by minimum agitation of the flask in which the determination was being made. A statistical study of the error in the amount of sugar, estimated at various concentrations, and covering the entire range of the method, showed that the method is reliable between the limits of 4–18 mg. of sugar. A statistical comparison of the Scales method as modified and the standard Munson and Walker method, utilizing both pure sugar solution and fruit juices, showed the same degree of accuracy for both methods.—W. R. ROY and A. E. HUGHES. *J. Assoc. Official Agr. Chem.*, 21 (1938), 636–645; through *Chem. Abstr.*, 33 (1939), 1238. (F. J. S.)

**Thiocyanate Content of Plants.** Examination of a large number of species showed that thiocyanate occurs in all plants. The amounts found varied from 30 to 950$\gamma$ %, expressed as HSCN. Especially large amounts were found in plants belonging to the *Cruciferæ* and *Umbelliferæ*. Rye, wheat and lentil seeds germinated better in the presence of 50 to 400$\gamma$ % HSCN than in media to which no thiocyanate had been added. In freshly expressed beet and cabbage juice thiocyanate was produced from added $Na_2S_2O_3$ and NaCN.—K. GEMEINHARDT. *Ber. deut. botan Ges.*, 56 (1938), 275–297; through *Chem. Abstr.*, 33 (1939), 2181. (F. J. S.)

**Toxicity—Measure of, in Plant Studies.** Toxicity of chemical substances to plants may be measured with accuracy by the amount of concentration necessary to reduce plant growth by 50%. Data for calcium arsenite, sodium selenate and sodium selenite are given.—P. L. GILE. *J. Agric. Res.*, 56 (1938), 787–789; through *J. Soc. Chem. Ind.*, 11 (1938), 1344. (E. G. V.)

**Triturations of Fresh Plants—Preparation of.** The plants are triturated with polysaccharides or difficultly crystallizable sugars, and the product is formed into vermicelli-like threads and dried in that form in air. The trituration may then be repeated.—G., F. and H. MAUDAUS. Brit. pat. 488,998; through *J. Soc. Chem. Ind.*, 11 (1938), 1366. (E. G. V.)

**Vine Diseases—New Remedies against.** With a view to reducing the quantity of copper sulfate entering into the composition of Bordeaux mixture, a study was made of the comparative action of certain substances capable of holding in colloidal suspension the copper hydroxide formed by neutralization of the soluble copper salts, and hence of increasing the amount of available copper present in the mixture. To this end, mixtures were prepared containing per 100 liters of water, 100 or 200 Gm. of copper sulfate together with variable amounts of sodium nitrate,

pyrophosphate or oxalate; the variable mixtures were brought to the suitable $p_H$ value by addition of the requisite amount of sodium hydroxide or of sodium carbonate. The determination of the available copper (suspended copper) in these mixtures showed that the use of sodium citrate increased considerably the degree of dispersion of the copper; the diffusion of the latter is still further increased in presence of an iron salt. Practical field tests confirmed the results obtained in the laboratory; by neutralizing the copper sulfate with sodium carbonate in presence of sodium citrate (copper sulfate 100 Gm., ferrous sulfate 100 Gm., citric acid 50 Gm., for 100 liters of water) the same effects are obtained as with ordinary Bordeaux mixture, and with only one-tenth the amount of copper sulfate.—L. CASALE. *Ricerca sci.*, 2 (1936), 604–609; through *Chimie & Industrie*, 39 (1938), 787–788. (A. P.-C.)

**Vitamin $B_1$ and the Germination of Pollen.** Pollen from *Carica quercifolia* and from the Orlando, Fairchild and Florida varieties of *Carica papaya* was tested for germination percentage in Van Tiegham cells. A medium containing 4% sucrose and 0.75% agar, with and without the addition of crystalline thiamine (0.1–200$\gamma$/cc.), was used. With the exception of the Orlando variety, an addition of 100$\gamma$ thiamine/cc. significantly increased the germination percentage over controls. The increase was greater during the first two hours than after a four-hour period, which suggests that the main effect of thiamine treatment is to speed up germination. Indoleacetic acid had no beneficial effects.—W. B. DANDLIKER, W. C. COOPER and H. P. TRAUB. *Science* 88 (1938), 622; through *Chem. Abstr.*, 33 (1939), 2181. (F. J. S.)

**Yeast—Effect of Composition of Medium upon Growth of, in Presence of Bios Preparations. II. Response of Several Strains of Saccharomyces Cerevisiæ.** On the basis of a study of the effect of Bios II, inositol (Bios I) and magnesium sulfate alone and in combinations on the growth of thirteen strains of *Saccharomyces cerevisiæ*, the various yeast strains are divided into three groups. *Group I.*—Growth does not increase by the addition of magnesium sulfate with Bios II. *Group II.*—Growth not increased by addition of inositol with Bios II. *Group III.*—Growth is increased under the conditions given for Groups I and II.—JAMES B. LESH, L. A. UNDERKOFLER and ELLIS I. FULMER. *J. Am. Chem. Soc.*, 60 (1938), 2505. (E. B. S.)

**Yeast Cells—Respiration and Fermentation of.** For all the species of yeast studied, metabolism of carbohydrates, as well as that which concerns respiration, fermentation is strongly inhibited by oxygen under pressure. It appears that respiration is reached first. The inhibition of respiration is also manifested when the substrate is glucose, hexosediphosphate or lactate. The fermentation of Lubedew juice is not influenced by oxygen under pressure. It seems that oxygen is toxic in all the cases where the respiration requires the Warbourg-Keilin activating oxygen system. This view is confirmed by the fact that by the measure of activity of succinodehydrate the author has shown that this system is greatly inhibited by oxygen under pressure, also that other dehydrates, such as uricase and aminoaciddehydrate (the system which activates the optical isomers, nevertheless, of the natural forms), which utilizes molecular oxygen does not inhibit but on the contrary stimulates. The author has seen these latter facts demonstrated by the apparatus that he has described in this article. Independently, the author has verified that phosphorylization is not attained by oxygen under pressure; in extract of muscle, by the method of Meyerhof, the phosphorylization progresses more quickly under a pressure of 10 atmospheres of oxygen than in the air.—L. MASSART. *Arch. intern. pharmacodynamie*, 60 (1938), 48. (W. H. H.)

**Zea Albino—Starch Content of.** Pure white leaves of *Zea mays* do not contain starch even if the leaves are perfused with a nutrient medium which contains sugar.—L. REUTER. *Protoplasma*, 31 (1938), 147–150 (in German); through *Chem. Abstr.*, 33 (1939), 2940. (F. J. S.)

## CHEMISTRY

### GENERAL AND PHYSICAL

**Cataphoretic Velocity of Silver Halides—Variation of, in Presence of Different Dyestuffs.** Measurements of cataphoretic velocities in the presence of increasing concentrations of different dyestuffs have been made, which show that there is, in general, an increment of the velocity values with increasing concentrations of the dye. There is also observed a time effect.—M. K. INDRA. *J. Indian Chem. Soc.*, 16 (1939), 15. (F. J. S.)

**Diethyl Ether—Thermal Decomposition of.** Thermal decomposition of diethyl ether has previously been shown to be essentially a one-stage unimolecular reaction yielding hydrocarbons and acetaldehyde with the latter quickly breaking down to carbon monoxide and methane. New studies indicated that previously determined velocity constants should be increased in absolute value but confirmed the general deductions about the kinetics of the reaction.—J. G. DAVOUD and C. N. HINSHELWOOD. *Proc. Roy. Soc.* (London), B, 127 (1939), S 26. (W. T. S.)

**Distillation—Molecular.** Molecular distillation involves the use of pressures sufficiently low that the majority of distillate molecules do not collide with gas molecules in their passage from evaporating to condensing surface. Molecular distillation has played a part in advancing wireless transmission, cancer therapy, experiments on atomic nuclei, and in the production of enriched sources of vitamins. Though the method has been experimentally applied to the production of concentrates of vitamins D and E, the chemical production of these vitamins has reached such a promising stage that molecular distillation is unlikely to become of commercial importance in these cases.—ANON. *Pharm. J.*, 141 (1938), 498. (W. B. B.)

**Emulsification and Chemical Reaction.** In heterogeneous reactions between two immiscible liquids, the velocity may be increased by enlarging the area of interface between the liquids, by stirring, etc. A more efficient method of increasing the interface is to emulsify one liquid in the other. The effect of emulsification of amyl acetate in solutions of alkali on its rate of hydrolysis has been studied, using a variety of emulsifying agents. Size frequency analyses of the emulsions have been made and the area of interface per unit weight of ester calculated in each instance. It is found that the rate of reaction is not quite proportional to the area of interface, if different emulsifying agents have been used; the specific effects of these agents have been calculated. A number of other reactions between immiscible liquids have been carried out and in each case the emulsified system has been found to react more quickly than the corresponding unemulsified but agitated system.—A. KING and L. N. MUKERJEE. *J. Soc. Chem. Ind.*, 57 (1938), 431–433. (E. G. V.)

**Emulsions—Refractive Power of Oil-Bound and Oil-Free.** As direct determination of the refractive index of aqueous emulsions is not possible, advantage is taken of the fact that Milori Blue when added to media of lower and higher refractive index gives red- and green-bronze, respectively. If the emulsion contains sufficient oil to envelop the pigment particles and produce phase reversal during drying, a compact, glossy, oil-resembling film is obtained and Milori Blue produces green-bronze; with insufficient oil for such a film red-bronze is obtained. Photometric data for a series of emulsions with increasing dilutions are tabulated and discussed. Strongest red was given by a product which did not resist rubbing and the refractive index of which was almost that of the pigment in air. Change from oil type to water type was observable in one case with increasing dilution; it is thus possible to determine the oil concentration necessary for demarcation. Data for various binders did not permit any conclusion as to the value for the refractive index of the system. Possible variations in the composition of oil-bound emulsions are also discussed.—H. WAGNER. *Farben-Ztg.*, 43 (1938), 1035–1037; through *J. Soc. Chem. Ind.*, 11 (1938), 1327. (E. G. V.)

**Ethylene—Limit Density and Molecular Weight of. Atomic Weight of Carbon.** Deduced from actual determinations at pressures of 1, $^3/_4$, $^2/_3$, $^1/_2$, $^1/_3$ and $^1/_4$ atmospheres the density of ethylene at pressure $p$ is $1.25122 \pm 0.000003 + 0.009133\ p$, and the limit density is 1.251214; this gives as molecular weight $28.046 \pm 0.001$, whence with H 1.0081, C $12.007 \pm 0.000$.—E. MOLES, T. TORAL and A. ESCRIBANO. *Compt. rend.*, 207 (1938), 1044–1046; through *Chem. Abstr.*, 33 (1939), 1189. (E. G. V.)

**Gelatin and Amino Acids—Isoelectric Point of Mixtures of.** The color ring phenomena, observed on allowing sodium hydroxide or hydrochloric acid to diffuse into gelatin gels containing a universal indicator, were changed in such a way by incorporation into the gels of aspartic or *p*-aminobenzoic acids, as to indicate that the latter entered into compound formation with the gelatin.—R. E. LIESEGANG. *Kolloid-Z.*, 84 (1938), 24; through *Chem. Abstr.*, 33 (1939), 915. (E. G. V.)

**Gels—Inorganic, Effect of the Addition of Non-Electrolytes and of Temperature on the Times of Setting of Some Transparent.** The addition of increasing quantities of non-electrolytes increases the time of setting of all gels, manganese arsenate gels being an exception. Increase in temperature decreases the time of setting of all gels, excepting those of sodium arsenate. The

heat of activation is not found to be a characteristic property of a gel. The heats of activation have been calculated by using Arrhenius' equation.—MATA PRASAD and D. M. DESA. *J. Indian Chem. Soc.*, 16 (1939), 117. (F. J. S.)

**Glass Electrode—Effect of the Solubility of Glass on the Behavior of the.** Application of an interferometer method previously used for determining the relative solubility of optical glasses, to a glass which is commonly used for making glass electrodes, gave results leading to the following conclusions: (1) The solubility increases rapidly as the $p_H$ of the most solutions increases above 8.5 or 9. (2) At all values below $p_H$ 7 for the solutions investigated (except 10*N* sulfuric acid) this glass exhibits a slight swelling. (3) The rate of swelling is repressed in the acid region beyond $p_H$ 2. (4) At intermediate $p_H$ values 3.1 to 4.0 the rate of swelling is repressed by high concentrations of magnesium sulfate. Considering these conclusions in connection with the performance of glass electrodes, these regions of marked solubility change correspond to the regions of pronounced voltage departures exhibited by electrodes made from this glass. That the anomalies of the glass electrode are definitely associated with the solubility of the glass has been further demonstrated both by the use of glasses which do not exhibit swelling in the acid range (and hence no detectable change of swelling in the "super-acid region") and by measurements made in alkaline solutions, such as aqueous ammonia, in which soluble silicates are not formed. Under these circumstances the voltage departures are greatly decreased or completely eliminated. For every case investigated, voltage departures of the glass electrode have been found to be accompanied by changes in the solubility of the glass.—D. HUBBARD, E. H. HAMILTON and A. N. FINN. *J. Research Natl. Bur. Standards*, 22 (1939), 339. (F. J. S.)

***p*-Hydroxybenzoic Acid Esters—Aminoethers of, Relative Lipoid Solubility, Surface Tension and Colloidal Precipitation of.** The diethylaminoethyl ethers of *p*-hydroxybenzoic acid esters prepared in an earlier paper (cf. *Arch. Pharm.*, 276 (1938), 154) were examined for their oil solubility. The distribution coefficients for the compounds between acid-free olive oil and water were determined. The distribution coefficients for both the normal and iso-series increase with increasing molecular weight and thus parallel the anesthetic activity. The allyl ester, while showing the highest distribution coefficient, has only a weak anesthetic activity. For comparison, novocaine, tutocaine, cocaine and pantocaine were similarly investigated but a correlation between action and distribution coefficient was not possible. The concentration of esters causing precipitation of albumin is in the inverse ratio of the activity, the concentration decreasing with increased activity. In addition to a comparison of lipoid solubility and colloidal precipitation, the effect of surface tension on activity was studied. In these series of compounds the activity increased with a falling relative surface tension, that is, with an increased surface activity. The investigation has shown that for homologous series of compounds and for closely related compounds, there is the possibility of approximately predicting the activity from the above methods. For compounds not closely related chemically, but acting similarly physiologically, the method has little practical value. The determination of lipoid solubility is described in detail.—C. ROHMANN and A. KOCH. *Arch. Pharm.*, 276 (1938), 189. (M. F. W. D.)

**Microchemical Analysis by Means of a Photoelectric Cell.** An increased length and decreased volume of the sample chamber of the photocolorimeter increased the sensitivity of the apparatus. Thus, it was possible to determine 0.002 gamma of iron. Selective determination of pigments is discussed. In this case color filters were used. Eight references.—G. V. TROITSKII. *J. Applied Chem.* (U. S. S. R.), 11 (1938), 1005–1011; through *Chem. Abstr.*, 33 (1939), 1178. (E. G. V.)

**Molecular and Atomic Weights—Revision of, by Physical Chemical Methods. New Results.** The limiting-density and limiting-pressure methods are compared. The most recent values obtained by the former method are N = 14.0083, C = 12.007, S = 32.062 and 32.065 and F = 18.995. In determining F the value for Si was assumed to be 28.105, as found by Honigschmid, *et al.*, and by Weatherill, *et al.*—E. MOLES. *Bull. soc. chim. Belg.*, 47 (1938), 405–428; through *Chem. Abstr.*, 33 (1939), 1187. (E. G. V.)

**Pycnometer—New.** The pycnometer has a sealed-in thermometer (0–25°) with bulb projecting into the center. The neck, containing the reference mark for filling, is at the highest point and is made of capillary tubing to add strength and prevent heating by the hand during handling. The cover is ground on the outside to leave a smooth inside surface for cleaning. A

capillary funnel and tube are provided for filling and drawing out cleaning solution.—J. WESTBERG. *Tek. Fören. Finland Förh.*, 58 (1938), 314–315; through *Chem. Abstr.*, 33 (1939), 1180. (E. G. V.)

**Refractive Indexes—Measurement of, in the Ultraviolet.** The refractomer is a modification of that of Terquem and Tramin, the monochromatic source of light being replaced by a hydrogen lamp, and the glass disks by quartz. The method of observation, depending on total reflection, is described in detail.—A. GOLDET. *Compt. rend.*, 207 (1938), 1040–1042; through *Chem. Abstr.*, 33 (1939), 1190. (E. G. V.)

**Silver-Silver Halide Electrodes—Reproducibility of.** Tests of the reproducibility in potential of the electrolytic, thermal-electrolytic and thermal types of silver-silver chloride, silver-silver bromide, and silver-silver iodide electrodes in both acid and neutral solutions are reported. All of these silver-silver halide electrodes show an aging effect, such that freshly prepared electrodes behave as cathodes toward electrodes previously aged in the solution. They are not affected in potential by exposure to light, but the presence of oxygen disturbs the potentials of the silver-silver chloride and silver-silver bromide electrodes in acid solutions, and of the silver-silver iodide electrodes in both acid and neutral solutions. Except in the case of the silver-silver iodide electrodes, of which the thermal-electrolytic type seems more reliable than the electrolytic or the thermal type, the equilibrium potential is independent of the type, within about 0.02 mv.—J. K. TAYLOR and E. R. SMITH. *J. Research Natl. Bur. Standards*, 22 (1939), 307. (F. J. S.)

**Thermo-Analytical Investigation of Medicinal Combinations.** The author has determined melting-point curves on combinations of medicinal chemicals. Among the combinations given are: veronal-adaline; veronal-bromural; veronal-phenacetine; luminal-adaline; luminal-bromural; luminal-phenacetine; dial-adaline; dial-bromural; dial-phenacetine; rutonal-adaline; rutonal-bromural; rutonal-phenacetine; bromural-adaline and phenacetine-adaline.—J. MEIJER. *Pharm. Weekblad*, 75 (1938), 842. (E. H. W.)

**Thermometer Scales. Calibration of Instruments.** A review of the methods of measuring temperatures covering the platinum resistance thermometer, the Pt-Pt, Rh thermocouple and thermostats for calibration.—G. A. BOUTRY. *Documentation sci.*, 7 (1938), 157–172; through *Chem. Abstr.*, 33 (1939), 1178. (E. G. V.)

**Water—Determination of, in Alcohol.** The method depends upon the fact that in the presence of organic liquids such as kerosene, carbon tetrachloride, xylene, etc., water and alcohol are only partially miscible. Previous methods have been based on the measurement of the temperature at which cloudiness, caused by phase separation, occurred but the present method is based on the amount of water required to titrate a given volume of liquid. If absolute alcohol is mixed with an equal volume of carbon tetrachloride and the mixture is titrated with water, an appreciable quantity must be added before cloudiness appears. If the alcohol contained some water at the start, less is used in the titration. A calibration curve was prepared by adding 10 cc. of carbon tetrachloride to 10-cc. portions of alcohol containing known amounts of water. If more than 15% of water is present, less carbon tetrachloride will have to be used. Curves were drawn for values obtained at 20°, 25° and 30° from which the amount of water can be determined in an unknown sample. The method is accurate to within about 2% of the actual water content.—H. G. BOTSET. *Ind. Eng. Chem., Anal. Ed.*, 10 (1938), 517–518. (E. G. V.)

**Zinc White—Determination of Particle Fineness of.** The zinc oxide (1 Gm.) is ground for one-fourth hour with 1 cc. of Igepon solution (2, 3 or 4% concentration) and is then washed with distilled water into a special 100-cc. burette. The proportion of unwetted zinc oxide which, after shaking, sediments in one-fourth hour is noted. The experiment is repeated with different proportions of Igepon solution until the minimum proportion for complete wetting is found. This proportion is an index to the fineness of the zinc oxide.—H. J. MULLER. *Gummi-Ztg.*, 52 (1938), 995; through *J. Soc. Chem. Ind.*, 11 (1938), 1326. (E. G. V.)

## INORGANIC

**Calcium Arsenate—Production of, by Oxidation of Arsenious Oxide with Bleaching Powder.** The $p_H$ of the reaction medium is an important factor in the oxidation of arsenious oxide; it is equally important to avoid free acidity and excessive alkalinity. The optimum temperature is 25° to 30° C; it is necessary to cool the mixture during the reaction, as the latter is exothermic. Oxidation is effected with a suspension of bleaching powder containing 30% available chlorine.

The arsenate is precipitated with milk of lime. The oxidation and precipitation are carried out in two stages.—S. A. KATZ and A. I. STRELTSOVA. *J. khim. prom.*, 14 (1937), 435–438; through *Chimie & Industrie*, 40 (1938), 155. (A. P.-C.)

**Calcium Carbonate. A Contribution to Its History, Preparation and Properties.** A detailed review.—WALTER MEYER. *Scientia Pharm.*, 9 (1938), 76–80. (H. M. B.)

**Hydrogen Peroxide—Estimation of.** Hydrogen peroxide, as stabilized for pharmaceutical and surgical use, has been found to vary in its efficacy. Eight stabilized and three unstabilized peroxides were titrated with permanganate thiosulfate (after liberation of iodine) and titanous chloride. Titrations correlated well for the unstabilized peroxides, but the titanous chloride figures were low for all the stabilized peroxides, even when the stabilizer present was sulfuric acid. This may be taken as an indication of the formation of addition compounds between the peroxide and the stabilizer, which are not easily reducible by titanous chloride, but which can be oxidized by permanganate. It was found that the titanous chloride titration could be completed with permanganate. A method employing catalase was evolved for estimating ease of decomposition of hydrogen peroxide. If the stabilizer present has catalase-inhibiting properties or produces a $p_H$ unfavorable to catalase, the efficacy of the hydrogen peroxide will be seriously impaired.—MRS. S. M. L. TRITTON. *Chemist and Druggist*, 130 (1939), 421. (A. C. DeD.)

**Inorganic Chromatography.** Factors which determine the length of cation zones are reported. The amounts of anions adsorbed from salt solutions of bivalent ions together with the cation are parallel to the adsorptiveness of these ions on the acid column. The cation adsorptiveness increases in density with the increased adsorptiveness of the anion adsorbed with it. With univalent cations the additional adsorption of anions does not take place. The anion adsorption is based on a double-salt-like bond. The amine complexes do not give reproducible zone lengths. Examples of determinations are given which show that best results are obtained when working with one anion only, particularly sulfate.—G.-M. SCHWAB and G. DATTLER. *Angew. Chem.*, 51 (1938), 709–711; through *Chem. Abstr.*, 33 (1939), 941. (E. G. V.)

**Nitrous Acid—Tautomerism of.** A tautomeric constitution for nitrous acid, $\begin{matrix} H \\ | \\ O{-}N{=}O \end{matrix}$ acids $\rightleftharpoons$ $\begin{matrix} H \\ | \\ O{=}N{=}O \end{matrix}$ explains many otherwise obscure observations. The hydroxy form predominates. bases
Mineral acids favor the nitro form and the change proceeds rapidly; the reverse change is slow. It is the nitro form which acts as an oxidizing agent.—H. KRALL. *J. Indian Chem. Soc.*, 16 (1939), 9. (F. J. S.)

**Oxidation-Reduction Reactions—Potentiometric Studies in. IV. Oxidation with Potassium Chlorate.** Potassium iodide, ferrous ammonium sulfate, thallous chloride, arsenious oxide and potassium antimonyl tartrate were titrated potentiometrically against standard potassium chlorate in the presence of a large excess of hydrochloric acid. With the addition of potassium chlorate, the E. M. F. was found to rise steadily except in arsenious oxide where it did not change but near the equivalence point. At the equivalence point there was a sharp jump in potential followed by a steady rise in each case.—BALWANT SINGH and SOHAN SINGH. *J. Indian Chem. Soc.*, 16 (1939), 27. (F. J. S.)

**Oxygen—Preparation of, of High Purity.** Oxygen, which contained no significant amounts of lower- or higher-boiling impurities, was prepared by a method whose essential feature was the elimination of nitrogen. This oxygen is one of several reference samples being used in connection with the maintenance of the International Temperature Scale at the National Bureau of Standards.—M. SHEPHERD, E. R. WEAVER and S. F. PICKERING. *J. Research Natl. Bur. Standards*, 22 (1939), 301. (F. J. S.)

**Silver Iodate—Note on Tests for Purity of Solid, Prepared for Chloride Determination.** In the preparation of silver iodate for use in the determination of chlorine, the directions given in the original paper must be followed precisely, and every preparation of silver iodate, whether made in the laboratory or purchased commercially, must be tested quantitatively for the presence of potassium iodate, either by measuring the solubility of the silver iodate in water or by using it in analyses of standard chloride solutions of exactly known chlorine content. For the slight amounts of iodate measured, the titration technic will usually be found more convenient and reliable than

the gasometric measurement. A modification of the gasometric analysis is described.—J. SENDROY, JR. *J. Biol. Chem.*, 127 (1939), 483–5; through *Chem. Abstr.*, 33 (1939), 2554. (F. J. S.)

**Sodium Hyposulfite—Reducing Power of.** A solution of sodium hyposulfite which reduces copper, lead, mercury and silver salts in the cold, after three days loses the power to reduce lead, while copper and mercury salts are reduced only on heating. Silver is still reduced. The observed color changes indicate that intermediate steps are involved.—R. N. COSTEANU. *Bul. Facultat. Stiinte Cernăuti* (in French), 11 (1937), 269–270; through *Chem. Abstr.*, 33 (1939), 1232. (E. G. V.)

**Water—Laboratory Preparation of Pure.** A 5-liter flask is half filled with tap water, 2.5 Gm. of potassium dichromate and 25 cc. of concentrated sulfuric acid are added, and the water is distilled at the rate of about 750 cc. per hour. The condensed water flows into a smaller Pyrex flask containing 500 cc. of saturated barium hydroxide solution from which it is continuously redistilled through a Pyrex condenser. After a small first portion is discarded, water of conductivity $1.2 \times 10^{-6}$ is obtained.—F. F. RIMATTEI and J. PETIT. *Bull. soc. chim. biol.*, 19 (1937), 1129–1133; through *Chimie & Industrie*, 40 (1938), 40–41. (A. P.-C.)

## ORGANIC CHEMISTRY

### *Alkaloids*

**Alkaloids—Certain Salts of.** The following salts were prepared by interaction of the appropriate organic acids and bases. Emetine-*d*-camphor-β-sulfonate, $C_{29}H_{40}O_4N_2.2C_{10}H_{16}O_4S$, crystals from alcoholic ethyl oxide, melting at 203–4°, has a $p_H$ 4.9 in 9.04% solution; it possesses the specific action of emetine in amebic dysentery and is much less toxic and better tolerated than emetine hydrochloride. Ephedrine camphorsulfonate, $C_{10}H_{15}ON.C_{10}H_{16}O_4S$, crystals from AcOEt, melting at 173–4°, has a $p_H$ 5.4 in 6.4% solution. Quinine camphorsulfonate, $C_{20}H_{24}O_2N_2.2C_{10}H_{16}O_4S$, crystals from AcOEt or alcoholic ethyl oxide, melting at 218–19°; quinine mandelate, $C_{20}H_{24}O_2N_2.C_8H_8O_3$, melting at 189–90°; quinine 2-hydroxynaphthoate, crystals from $CHCl_3$-$Et_2O$, melting at 149–50°; quinine 1,1′-methylene-2,2′-dinaphthyl-3,3′-dicarboxylate, $C_{20}H_{24}O_2N_2.C_{23}H_{16}O_6$, crystals from absolute alcohol, melting at 199–200°.—U. P. BASU. *J. Indian Chem. Soc.*, 15 (1938), 513–15; through *Chem. Abstr.*, 33 (1939), 2281. (F. J. S.)

**Alkaloids—Fundamentals of the Quantitative Determination of, in Drugs and Pharmaceutical Preparations.** An extensive survey of the relationship of the chemical characteristics of alkaloids to their quantitative determination, isolation and titration methods.—W. POETHKE. *Pharm. Zentralhalle*, 79 (1938), 601–609. (N. L.)

**Alkaloids—Microchemical Tests for.** Collaborative study of microchemical tests for apomorphine (with gold chloride, 5% hydrochloric acid), hydrastinine (1% potassium permanganate solution, mercuric chloride solution, freshly prepared 5% potassium ferrocyanide + 1 drop of 5% hydrochloric acid), ethylmorphine (dionine) (Wagner's reagent, mercuric chloride solution) and benzylmorphine (peronine) (potassium iodide solution, 5% ammonium thiocyanate solution, 5% hydrochloric acid) gave entirely satisfactory results, and adoption of the tests as tentative is recommended. The technic of the tests and description of the crystals are given in detail in *J. Assoc. Official Agr. Chem.*, 21 (1938), 91–93.—CHRIS K. GLYCART. *J. Assoc. Official Agr. Chem.*, 21 (1938), 525–527. (A. P.-C.)

**Alkaloids—Separation of the, from the Sound Leaves of the Solanaceæ.** A detailed discussion of M.'s experiments using the method of Rasmussen. The optimum $p_H$ for extraction is 3.5–4.—K. MATHES. *Deut. Apoth. Ztg.*, 53 (1938), 1271–1273. (H. M. B.)

**Alkaloids—Spectrographic Determination of, in Viscera and Organs.** Vegetable poisons of different groups were used for the experimental determination of alkaloids by means of their absorption spectra in ultraviolet light, a quartz spectrograph being used for the purpose. Alkaloids extracted from sections of organs were then tested, and the spectrographic method was found to be as satisfactory as chemical determination—even more so with pure poisons. Another advantage of the method is that it enables putrefactive alkaloidal substances to be distinguished from pure vegetable alkaloids. Experiments showed that alkaloids contaminated with foreign material could also be accurately determined by the spectrographic method, and thus it is probable that the composition of heterogeneous mixtures can be quantitatively calculated from the absorption curves. The method will also be useful for studying the way in which alkaloids are concentrated and de-

composed in the organs of the body.—H. SCHELLER. *Deut. Z. ges. gerichtl. Med.*, 29 (1937), 104; through *Medico-Legal Criminol. Rev.*, 6 (1938), 209. (A. P.-C.)

**Cinchona Bark—Improved Method for the Determination of Total Alkaloids in.** *Apparatus.*—The extractor recommended in the British Pharmacopœia 1932 is supplemented by a reservoir with an attached capillary tip through which the flow of acidified alcohol may be controlled by means of a screw clamp. The top of the reservoir is fitted with a rubber stopper through which is inserted a tube that extends to the bottom of the reservoir, and another tube which extends just below the stopper and is fitted with a piece of rubber tubing and a pinch clamp to serve as a pressure release. The acidified alcohol is added through the top of the condenser. *Method.*—Dilute 12 cc. of concentrated hydrochloric acid (AnalaR grade, approximately 36% HCl) to 50 cc. with alcohol (95%) and cool. Draw a portion of the alcoholic acid solution through the jet of the supplemental apparatus, until the level of the liquid is well above the capillary portion, by applying suction to the pressure release tube; introduce the remainder of the acid solution into the reservoir through the constant head tube and then apply gentle suction to the pressure release tube, and when bubbles arise from the bottom of the inner tube, replace the pinch clamp. Adjust the apparatus to deliver 15 cc. of the alcoholic solution of acid in fifty minutes; if necessary, charge with a further supply of the solution and clamp into position above the refluxing condenser. Weigh accurately 5 Gm. of cinchona bark, in No. 60 powder, transfer to a conical flask containing 25 cc. of approximately $N/1$ alcoholic potassium hydroxide, mix and allow to stand with occasional shaking for 15 minutes. Transfer to the continuous extractor and rinse the flask with alcohol, using 75 cc. in divided portions, and commence the extraction. After 25 minutes, start the addition of the alcoholic solution of hydrochloric acid; after a further 50 minutes, cut off the supply of acid and continue the extraction for another 15 minutes. Disconnect the flask from the extraction apparatus and distil off about two-thirds of the alcohol. Transfer the extract to a separator and wash the flask with several portions of approximately $N/10$ hydrochloric acid, using 50 cc. altogether. Render alkaline with a mixture composed of equal volumes of strong solution of ammonia and 20% solution of sodium hydroxide; add 70 cc. of chloroform, shake, allow to stand for about half an hour, then assist separation of the chloroform by agitation with a stout wire and, if necessary, by the addition of alcohol. Transfer the chloroformic layer to a second separator and extract with three further portions of chloroform; after each shaking allow to stand for half an hour as above. Evaporate a small portion of the last chloroformic extract to dryness on a water bath, dissolve any residue in a few drops of dilute sulfuric acid and test for alkaloid with Mayer's reagent. If necessary, continue the extraction with further portions of chloroform. Separate from the combined chloroformic extract any aqueous liquid, which may have been mechanically removed, by transferring the chloroform layer to a second separator; add 20 cc. of dilute sulfuric acid, shake, allow to separate, draw off the lower layer into another separator and repeat the extraction with dilute sulfuric acid three times. Mix the acid extracts, render alkaline with a mixture composed of equal volumes of strong solution of ammonia and 20% solution of sodium hydroxide and shake with successive portions of chloroform until complete extraction of the alkaloids is effected. Wash the chloroformic solution of the alkaloids with a little water, remove the chloroform as completely as possible by distillation, add about 5 cc. of alcohol (95%), evaporate, dry at 100° C. and weigh.—N. L. ALLPORT and D. FRIEND. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 450–457. (S. W. G.)

**Cocaine—Detection of Small Quantities of, in Anesthetics.** The authors show that cocaine can be identified in 0.1% concentration in novocaine, anesthesine and orthoform, 0.2% in stovaine and 0.5% in alypine. In the case of preparations of novocaine or alypine the latter are first precipitated by zinc chloride and cocaine is extracted as its chloroform-soluble dichromate. From preparations of stovaine, cocaine can be extracted after precipitation of the stovaine by sodium bicarbonate and removal of the last traces of stovaine with zinc chloride. In the case of anesthesine and orthoform the hydrochloride of cocaine can be extracted by a small amount of water and purified by ether extraction. The cocaine is finally identified microscopically by its reactions with platinum chloride, potassium permanganate and picric acid.—C. STAINIER and A. DENOEL. *Bull. acad. roy. méd. Belg.*, 2 (1937), 335–352; through *Chimie & Industrie*, 40 (1938), 105. (A. P.-C.)

**Cocaine—Manufacture of, in Huanuco.** The dried leaves are extracted with water acidulated with sulfuric acid; from the extract the free cocaine is precipitated with sodium carbonate

and extracted with kerosene. All operations are countercurrent; flow diagrams are given.—F. Luzio A. *Agronomia*, 3, No. 15 (1938), 44–55; through *Chem. Abstr.*, 33 (1939), 3075. (F. J. S.)

**Emetine—New Salt of.** A solution of emetine hydrochloride in distilled water was made alkaline with sodium hydroxide and extracted with ether; the extract was added while stirring to an aqueous solution of camphosulfonic acid (2 molecules per molecule of anhydrous emetine); the aqueous layer was filtered through a sterile Chamberland filter in an atmosphere of carbon dioxide into 2-cc. amber ampuls. The solutions are adjusted to a final content of 2% of emetine camphosulfonate, each ampul containing 0.04 Gm. of the salt. It melts at 134° to 135° C., is readily soluble in water, soluble in alcohol, almost insoluble in ether; it is dextrorotatory and has a $p_H$ of 6.9. Its aqueous solution is more stable to light and heat and conserves its antiamebic action longer than the corresponding emetine solution.—E. Caserio. *Boll. chim. farm.*, 76 (1937), 365–368; through *Chimie & Industrie*, 40 (1938), 305. (A. P.-C.)

**Ephedrine—Natural and Synthetic.** Natural ephedrine prepared by two reliable pharmaceutical houses was compared with synthetic ephedrine prepared by Knoll A.-G., Ludwigshafen. The free base, the hydrochloride and the sulfate from all three sources showed identical behavior in determination of melting point, specific rotation, ash and alkaloidal content. The synthetic ephedrine showed exactly the same pharmacologic activity as natural ephedrine. Protocols for ephedrine base and ephedrine sulfate for inclusion in the German Pharmacopœia are suggested.—B. Bleyer. *Arch. pharm.*, 276 (1938), 164. (M. F. W. D.)

**Ergometrine—Acidimetric Titration of.** Precipitation with picric acid can be used for demonstrating the presence of alkaloids of the ergotoxine group in ergometrine if the sample contains less than 4 mg. of ergometrine. The content of ergometrine base in commercial supplies of ergometrine can be determined by titration with hydrochloric acid with bromophenol blue as indicator. The titration is performed without difficulty as a micro-titration as follows: The ergometrine is mixed thoroughly in a mortar and weighed directly in a small test-tube (*e. g.*, measuring 10 x 70 mm.), in which it is dissolved in a quantity of $N/50$ hydrochloric acid which is insufficient to neutralize, by heating on a water bath and shaking. If the titration is expected to require, for instance, 1 cc. of standard acid, the ergometrine is dissolved in 0.8 cc. After cooling and adding a fraction of a drop of bromophenol blue solution the titration is continued with $N/50$ hydrochloric acid, using a 2-cc. burette, until a bluish-green color appears. The titration must be performed by daylight, because the indicator change is not distinctly visible in artificial light. In order to prevent the marked blue fluorescence, which ergometrine solutions present by daylight, rendering the observation of the indicator change difficult, the test-tube is held between the fingers so that it is not directly illuminated by the light from the window, and the liquid is looked at lengthways against a white ground. By measurement with a glass electrode at about 22° C., the acidity constant of ergometrine was determined to be $10^{-6.80}$ and its dissociation constant $10^{-7.28}$.—F. Reimers. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 252–259. (S. W. G.)

**Ergot Alkaloids and Their Quantitative Estimation. I. Chemistry.** A review of the chemistry of the secale alkaloids, citing 18 references.—H. Schwan. *Farm. Revy*, 37 (1938), 717. (C. S. L.)

**Ergot Alkaloids—Determination of.** In the method previously described (*Pharm. Abs.* (1938), 215) use of separators instead of a continuous extractor for the isolation of the total alkaloids was found inadequate, since the partition coefficient of ergometrine in ether and water is about 8 to 1 in favor of water. With the continuous extractor the alkaloids were removed completely in 5 hours; but the process also removes considerable pigment matter, which interferes with the colorimetric reading. Colorimetric results obtained by artificial light differ from those obtained by daylight. It is believed that these difficulties may be overcome by the use of the Clifford wedge photometer and suitable filters.—C. K. Glycart. *J. Assoc. Official Agr. Chem.*, 21 (1938), 538–541. (A. P.-C.)

**Ergot Alkaloids. Further Studies of the Synthesis of Substances Related to Lysergic Acid.** Ergoline melts 201–203° instead of 175-183° as previously reported. 3-Amino-5,6-benzoquinoline-7-carboxylic lactam and methyl iodide in a sealed tube at 100° for 18 hours gave the corresponding quinoline-MeI (I), melting 291–292° (decomposition). Catalytic hydrogenation of I gives 1-methyl-2,3,4-trihydro-3′-amino-5,6-benzoquinoline-7-carboxylic lactam, melting 220–221°. Reduction of this with sodium and butyl alcohol gives 6-methylergoline (II), melting 210–

212°. When 3-amino-1-naphthoic acid is refluxed with paraldehyde it gives 5,6-benzoquinaldine-7-carboxylic acid (III), melting 313–315° (decomposition); hydrochloric acid salt, melting 314–316°; methyl ester, melting 114–116°; ethyl ester (IV), melting 103–104°; methyl iodide of IV, melting 201–203°. Oxidation of III with selenium dioxide gives 5,6 benzoquinoline-2,7-dicarboxylic acid (V), melting 258° with loss of carbon dioxide and formation of the monobasic 7-carboxylic acid. Nitration of V gives the 3′-nitro compound which is reduced to 3′-amino-5,6-benzoquinoline-2,7-dicarboxylic lactam (VI), melting 270–271° with loss of carbon dioxide; ammonium salt, melting 273–276° (decomposition); methyl ester, melting 305–307°; ethyl ester (VII), melting 275–277°. Catalytic hydrogenation of VI gives its 1,2,3,4-tetrahydro derivative melting 237–239°, very unstable in air. Its methyl ester (VIII) melting 234–236°; ethyl ester, melting 240–242°. Complete hydrogenation of VII gives 1,2,3,4,5,6,7,8,9,10-octahydro-3′-amino-5,6-benzoquinoline-2,7-dicarboxylic lactam ethyl ester, melting 232–236°. When VIII is treated with sodium in butyl alcohol, it gives ergoline-7-carboxylic acid, which, like II gives the Keller reaction. Methyl iodide will not add to VI or its derivatives.—W. A. JACOBS and R. G. GOULD, JR. *J. Biol. Chem.*, 126 (1938), 67–76; through *Chem. Abstr.*, 33 (1939), 1332.

(F. J. S.)

**Ergot Preparations. I. Colorimetric Determination of Ergometrine and Ergotoxine Ethanesulfonate.** Absorption curves for the blue color reaction of ergot alkaloids with the B. P. reagent and the Alport-Cocking reagent are compared, also the absorption curve obtained on using ergometrine with the Alport-Cocking reagent. Measurement curves in the Pulfrich step photometer using filter S 57 are given and show that there is a straight line relationship only up to 8 mg. alkaloid per 100 cc. Above this figure the curves deviate increasingly from the straight line relationship. Distribution of ergotoxine and ergometrine between ether and water and chloroform and water was studied at various $p_H$'s. At $p_H$ 6, ergotoxine may be separated from ergometrine by shaking with ether. All the ergotoxine and 10% of the ergometrine dissolve in the ether. By shaking the ether layer with an aqueous buffer at $p_H$ 6, 90% of the ergometrine contained in the ether phase may be transferred to the aqueous phase, so that 99% of the ergometrine may be recovered. This is held to constitute a sufficient separation for analysis.—S. A. SCHOU and I. BENNEKOU. *Dansk Tids. Farm.*, 12 (1938), 257. (C. S. L.)

**Fluidextractum Ipecacuanhæ—Determination of Alkaloid Content of.** A method for estimation of the alkaloid content of Fluidextract of Ipecac is described. This is considered superior to the method of Swed. Phar. X. Method: Six Gm. of extract are weighed into a 200-cc. flask and 5 cc. of 2*N* sodium carbonate and 90 cc. of peroxide-free ether are added. The mixture is shaken vigorously for ten minutes. Seventy-five grams. of the ether layer are poured off through a filter, and the ether distilled. The residue is dissolved in 5 cc. of alcohol and 10 cc. of 0.1*N* hydrochloric acid, then diluted with 50 cc. of water. Five drops of methyl red indicator and two drops of methylene blue indicator are added. The excess hydrochloric acid is back titrated with 0.1*N* sodium hydroxide. The results, while they represent only 96% of the total alkaloid content, are reproducible within a maximum deviation of 0.05%.—A. AGREN. *Farm. Revy*, 37 (1938), 665.

(C. S. L.)

**Medicinals—Orientation of Some of the Recent.** A review in which the constitutive relationships of such compounds as adrenalin, ephedrine or benzedrine are nicely arranged.—E. KALLERSTROM. *Svensk. Farm. Tids.*, 33 (1938), 581–589, 605–610; through *Chem. Abstr.*, 33 (1939), 1445. (F. J. S.)

**Morphine Derivatives.** Derivatives of morphine alkaloids, alkalated, aralkalated or arylated in the ring, are prepared by causing dihydrothebaine to react with organo-magnesium halides in solution in anhydrous benzene. The products are dihydrothebainones and iso-dihydrothebainones, alkalated, aralkalated or arylated in the ring.—RESEARCH CORP. (L. F. SMALL and H. M. FITCH). Fr. pat. 829,229; through *Chem. Abstr.*, 33 (1939), 994. (E. G. V.)

**Pseudotropine—Benzilic Acid Ester of.** For the production of the benzilic ester of pseudotropine, the latter is treated with benzilic acid in the presence of an acid such as hydrochloric (suitably at 150° C. for 10 hours). The benzilic ester melts at about 156° to 158° C. and its hydrochloride melts about 232° C. They may be used as therapeutic or local anesthetic agents. —OTTO WOLFES and OTTO HROMATKA, assignors to MERCK & CO., U. S. pat. 2,127,547, Aug. 23, 1938. (A. P.-C.)

**Quinine and Quinidine—Transformations of.** A comprehensive review of the physical and chemical properties and reactions of quinidine and quinine and their derivatives. A bibliography is appended.—E. LEGER. *J. pharm. chim.* 29 (1939), 12–32. (S. W. G.)

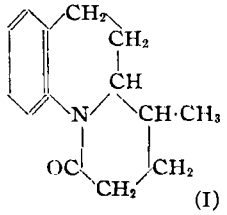
**Solanaceæ—Extract and Alkaloidal Contents in the Leaves of.** Samples of belladonna leaves contained (on the dry basis) 6.79, 13.21, 14.68, 15.79 and 15.20% extract and 0.39, 0.12, 0.22, 0.07 and 0.67% alkaloids. Stramonium leaves contained 15.97, 18.12, 15.49, 13.78 and 18.87% extract and 0.33, 0.44, 0.27, 0.22 and 0.86% alkaloids. Hyoscyamus leaves contained 20.60, 9.30, 16.74, 13.68 and 13.58% extract and 0.03, 0.05, 0.04, 0.04 and 0.06% alkaloids. A relation between extract content and alkaloids content could be observed only in hyoscyamus leaves.—I. SZENTGALI. *Magyar Gyogyszereszt Tars. Ert.*, 13 (1937), 619–630; through *Chimie & Industrie*, 40 (1938), 106. (A. P.-C.)

**Sparteine—Highly Sensitive and Specific Microchemical Reaction of, with Cobalt and Iron Salts.** By means of a strong solution of cobalt thiocyanate it is possible to detect 1γ of sparteine. A blue precipitate is obtained which shows strong double refraction in the polarization microscope with crossed nicols and the same color with parallel nicols. This is the most sensitive test yet found for this alkaloid. Nicotine reacts with the reagent but there is no danger of mistaking the precipitate and the same is true of quinine. A reagent prepared by dissolving 40 Gm. of ammonium thiocyanate and 5 Gm. of sparteine sulfate in 100 cc. of water is a very sensitive reagent for divalent cobalt and for ferric iron. A blue color is obtained with cobalt and a red with iron.—A. MARTINI. *Mikrochim. Acta*, 1 (1937), 164–167; through *Chimie & Industrie*, 40 (1938), 110. (A. P.-C.)

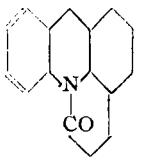
**Strychnine and Brucine—Structure of.** With 18 references the authors gave a comprehensive review of the recent investigation concerned with the structure of the strychnos bases. New experimental data were reported which remove most of the ambiguity surrounding the constitution of these alkaloids. The result of the action of bromine on diketonucidine with reference to the structure of the hydroindole nucleus in strychnine was given a different interpretation from that of Leuchs (*Ber.*, 65 (1937)).—H. L. HOLMES and SIR ROBERT ROBINSON. *J. Chem. Soc.* (London) (1939), 603. (W. T. S.)

**Strychnine—Oxidation of, to Monohydroxystrychnine.** Oxidation of strychnine by atmospheric oxygen into pseudo-strychnine (monohydroxystrychnine) requires the presence of a metallic catalyst such as copper. Good results are obtained by using 2 Gm. of copper sulfate and 60 cc. of normal ammonia solution for 5 Gm. of strychnine in chloroform solution. It is probable that the pseudo-base does not constitute a secondary alkaloid naturally present in the plant, but rather that it is formed during technical extraction as a result of atmospheric oxidation.—H. LEUCHS. *Ber.*, 70 (1937), 1543–1547; through *Chimie & Industrie*, 40 (1938), 106. (A. P.-C.)

**Strychnine—Synthetic Substances Allied to.** The formula accepted for strychnine at the present time contains a piperidone ring, and this paper describes some preliminary experiments designed to synthesize derivatives of dihydroindole and tetrahydroquinoline containing this structure, carried out some years ago. The cyclic lactam (I) derived from 1:2:3:4-tetrahydroquinoline-2-γ-valeric acid and that (II) derived from octahydroacridine-1-β-propionic acid were prepared,



(I)



(II)

and both resembled strychnine in giving an Otto reaction with sulfuric acid and potassium dichromate. When the phenylhydrazone of cyclohexanone-2-β-propionic acid ethyl ester was treated with boiling glacial acetic acid, 1:2:3:4-tetrahydrocarbazolenine-11-β-propionic acid ethyl ester was the only product, whereas Openshaw and Robinson have reported the lactam of 1:2:3:4-tetrahydrocarbazole-1-β-propionic acid to be the main product when the same phenylhydrazone was treated with dilute sulfuric acid.—F. LIONS. *J. Proc. Roy. Soc. N. S. W.*, 71 (1938), 192; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 624. (S. W. G.)

**Valerian—New Alkaloid of.** Previous work on valerian was done on the fresh root and investigations into the dried root were therefore suggested. Examination of an alcoholic extract showed, by alkaloidal reagents, the presence of a base. Five kilos of the dried powdered Scottish grown root were percolated with petroleum ether to remove oil and resin. The root was then percolated with 90% alcohol until thoroughly exhausted. The alcohol was recovered by distillation *in vacuo* and the residual extract taken up in water containing 2% HCl. The acid solution, after being well shaken with ether to remove further traces of oil, was filtered and made alkaline with ammonia. The extract was then shaken with amyl alcohol and after repeated extractions and recovery of the amyl alcohol about 10 Gm. of a brown syrupy mass were obtained, which dried to a semisolid in a desiccator. Three kilos of the root were macerated with ten liters of water containing 0.1% acetic acid for one week. The mixture was put into a filter bag and pressed and the extraction repeated with more water. The combined aqueous extracts were filtered and the filtrate further clarified by the addition of lead acetate solution. The precipitate was filtered out and the excess of lead removed with dilute sulfuric acid. The base was then precipitated with a solution of phosphotungstic acid and the precipitate was collected and dried. The phosphotungstate of the base was then decomposed by grinding it up with barium hydroxide and extracting it with water. The excess of barium hydroxide was removed from the solution with sulfuric acid and the excess of sulfuric acid neutralized with lead carbonate. The filtrate contained a solution of the base which was evaporated *in vacuo*. A syrupy mass remained which dried to a semi-solid in the desiccator.—J. J. BLACKIE and D. RITCHIE. *Chemist and Druggist*, 130 (1939), 402. (A. C. DeD.)

**Veratrum Album—Amorphous Alkaloids of.** The alkaloids, germerine (*A*), protoveratridine (*B*) and proveratrine (*C*) are shown to be hydrolyzed while Jervine (*F*), pseudojervine and rubijervine (*G*) are not. *A* yields germine (*H*), 1-methyl-ethyl-acetic acid (*D*) and methyl-ethyl-glycollic acid (*E*); *B* produces *H* and *D*; *C* gives protoverine, acetic acid, *D* and *E*. Fifty grams of crude alkaloids from the drug obtained from Jugoslavia contained 7 Gm. *A*, 0.7 Gm. *C*, 0.25 Gm. *F*, 0.2 Gm. *G* and 25 Gm. amorphous alkaloids. Warming the amorphous alkaloids with alcoholic (methyl) potassium hydroxide gradually yielded *H* (4 Gm. from 10 Gm.) 2 Gm. amorphous base, 3 acid products, veratric acid, acetic acid and *D*. Other theoretical aspects are discussed.—W. POETHKE. *Scientia Pharm.*, 9 (1938), 110–111. (H. M. B.)

**Vitali's Reaction for Alkaloids.** No violet color appears with the esters of phenylglycolic acid in the test of Vitali. However, with concentrated sulfuric acid, potassium nitrate and alcoholic potassium hydroxide under continuous agitation, the violet color can be observed even with homatropine, novatropine and euphthalmine.—L. EKKERT. *Magyar Gyógyszerésztud. Társaság Értesitöje*, 14 (1938), 640–645; through *Chem. Abstr.*, 33 (1939), 1877. (F. J. S.)

*Essential Oils and Related Products*

**Essential Oil from Flowers of Kewda (Pandanus Odoratissimus).** Extraction of 15 Kg. of the outer part of flowers of Kewda (*Pandanus odoratissimus*) with chloroform yields 10 cc. of crude oil, 70% of which is $PhCH_2CH_2OMe$ (I). Oxidation of I by potassium permanganate gives BzOH. I reacts with hydrogen iodide to give $PhCH_2CH_2I$ which is identified by its $C_6H_5N$ addition compound and by conversion to the 3,5-dinitrobenzoate. I is best synthesized from $PhCH_2$-$CH_2OH$ (one molecule), methyl iodide (three molecules) and silver oxide (1.5 molecules); yield is quantitative. The fragrance of Kewda flowers is due to I.—S. S. DESHAPANDE. *J. Indian Chem. Soc.*, 15 (1938), 509–512; through *Chem. Abstr.*, 33 (1939), 2281. (F. J. S.)

**Essential Oils—Analytical Methods for.** Analytical methods given in the United States (U. S. P. XI), British (B. P. 1932), German (D. A. B. VI) and Swiss (Ph. H. V.) Pharmacopœias for some essential oils used for medicinal purposes are compared and criticized and modifications proposed by Dr. K. Koch.—ANON. *Süddeut. Apoth.-Ztg.*, 78 (1938), 365; through *Perfumery Essent. Oil Record*, 29 (1938), 333. (A. C. DeD.)

**Essential Oils—Australian.** The author describes a new class of compounds found in certain Australian essential oils. Macropone is a liquid keto-phenol present in oil of *Eucalyptus cineorifolia*. It has the formula $C_{10}H_{12}O_2$; semicartazone m. p. 215°, phenylhydrazone m. p. 85°. A second ketone, whose semicartazone melts at 188° is present in the same oil. The oil from *Eucalyptus polytractea* also contains keto-phenols.—ANON. *J. Proceedings of the Australian Chem. Inst.*, (1938), 289; through *Chemist and Druggist*, 129 (1938), 716. (A. C. DeD.)

**Essential Oils—Catalytic Hydrogenation of.** Experiments to stabilize easily oxidized and resinified oils by hydrogenating in presence of nickel under varied conditions (95–246° and greater than 1 atmosphere) and to eliminate irritating constituents by a selective process were followed analytically. Hydrogenation was associated with dehydration, racemization, fission, reduction of ester groups in the Bouveault-Blanc sense, change in odor and more deep-seated changes. Mild dehydrogenation of citrus oils, etc., was possible with retention of its desirable properties.—L. PALFRAY and S. SABETAY. *Congr. chim. ind. Bruxelles*, II (1935), 762–770; through *J. Soc. Chem. Ind.*, 11 (1938), 1362. (E. G. V.)

**Essential Oils—Preparation of, from Roots of Hemidescus Indicus and Sarsparilla.** By steam distillation, followed by solvent extraction of the roots, 0.43–0.46% of an oil was obtained. It is semisolid, the liquid portion of which has $d_{30}^{30}$ 0.9553, $n_D^{30}$ 1.5342.—B. S. RAO, K. S. SUBRAMANIAN and N. C. KELKAR. *Proc. Soc. Biol. Chem. India*, 3 (1938), 35; through *J. Soc. Chem. Ind.*, 11 (1938), 1362. (E. G. V.)

**Eucalyptus Australiana—Essential Oils of, and Its Physiological Forms.** Seven samples of oil distilled from the foliage of *E. australiana* (yield 0.4–1.6%) collected in different districts in Victoria had $d_{15}^{15}$ 0.8713–0.9167, $\alpha_D^{20}$ +5.2° to −68.5°, $n_D^{20}$ 1.4653–1.4830, cineole nil to 50%, piperitone nil to 52%, phellandrene nil to abundance, thus indicating a number of varieties giving oils different in chemical composition from the oil from *E. australiana* growing in New South Wales. Simplification in nomenclature is suggested by correlating all species of *E. australiania* and its varieties with *E. amygdalina* of Tasminia. At Lilydale and Healesville the oil from one tree contained 32–36% of piperitone, while from an adjoining tree in each locality this was replaced by piperitol when the yield of oil was doubled.—A. R. PENFOLD and F. R. MORRISON. *J. Proc. Roy. Soc. N. S. W.*, 71 (1938), 357–361; through *J. Soc. Chem. Ind.*, 57 (1938), 1500. (E. G. V.)

**Eucalyptus Oils—α-Phellandrene Fraction of.** Hitherto it has not been possible to determine with accuracy the proportions of *dl*-α-phellandrene and the optically active substance in these fractions. The author has found that admixture of the maleic anhydride addition compounds from *d*- and *l*-α-phellandrene lowered the melting point as follows:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *d*, per cent..... | 0 | 20 | 40 | 50 | 60 | 80 | 100 |
| *l*, per cent..... | 100 | 80 | 60 | 50 | 40 | 20 | 0 |
| Melting point..... | 127 | 113 | 100 | 93 | 100 | 113 | 127 |

The method was applied to a commercial sample of α-phellandrene and to fractions of the oils of *E. dives*, *E. radiata*, *E. risdoni* and *E. amygdalina*. The commercial sample contained no *dl*-α-phellandrene but was a mixture of the *l*-isomer with *p*-cymene and small amounts of a *l*-terpene and origanine. The first three oils contained a large percentage of *p*-cymene and the *E. amygdalina* oil a large amount of dipentene while none contained *dl*-α-phellandrene. It is considered likely that the presence of *p*-cymene in α-phellandrene fractions provides a partial explanation of the variations observed in physical constants. Methods of purification and examination of the fractions are described.—A. J. BIRCH. *Proc. Roy. Soc. N. S. W.*, 71 (1938), 261; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 628. (S. W. G.)

**Fuller's Earth—Use of, in the Investigation and Preparation of Volatile Oils and Perfumes.** A review. Seven references are given. H. FRANK. *Riechstoff-Ind. Kosmetik*, 13 (1938), 205. (H. M. B.)

**Mustard Oil—Isolation and Identification of, from Rape.** Discussion, with forty-three citations, of the occurrence, identity, chemistry, mode of origin and amount of the various isothiocyanates in a great number of botanical varieties of rape. Methods of identification and determination are cited.—H. SCHMALFUSS and H. P. MULLER. *Forschungsdienst.*, 6 (1938), 83–94; through *Chem. Abstr.*, 33 (1939), 1365. (F. J. S.)

**Ocimum Canum Oil of North India.** *Ocimum canum* grows wild in North India both on cultivated and uncultivated land. Its seeds are used for the preparation of cooling drinks and also as a diuretic. The oil has so far not been utilized. A detailed examination of the oil has shown it to have approximately the following composition: citral (49.6%), citronellal (15.7%), *l*-linalool (15%), methyl cinnamate (5.4%) with small quantities of acetic and citronellic acids, eugenol and unidentified phenols and terpenes.—J. N. RAKSHIT. *Perfumery Essent. Oil Record*, 29 (1938), 402. (A. C. DeD.)

**Peppermint Oil—Rectification of.** Steam is passed at atmospheric pressure into the crude oil, the first 5–10% of the distillate is rejected, and the distillation continued until 10–15% of tarry residue remains. The main distillate contains not greater than 70% of menthol, and may be marketed without further treatment. The fore-runnings and residues are mixed, and the mixtures further rectified as above.—B. LIFSCHITZ. *Maslob. Zhir. Delo*, No. 4 (1938), 28–29; through *J. Soc. Chem. Ind.*, 57 (1938), 1500. (E. G. V.)

**Pinus Halepensis—Oil of.** *Pinus halepensis* is the most important timber tree of the Cyprus. The oleoresin yielded 18.8% of essential oil having a specific gravity of 0.8717 at 15.5°; optical rotation −17.5°, and refractive index 1.4724. On fractional distillation, 55% was obtained between 152° and 160°, 33% between 160° and 170° and 12% above 170°. The non-volatile residue was 3.2% (the British standards give 2% for oil of turpentine, type I). The oil was found to contain a large amount of α-pinene, identified by its nitrosochloride, melting at 103–104°. The resin had the following characteristics, which are compared with those of American turpentine resin:

| | *P. halepensis* Resin. | American Resin. |
|---|---|---|
| Melting point | Softens at 68° | Softens 70° to 80° |
| Acid value | 177.7 | 152 to 177 |
| Ester value | 4.7 | Up to 30 |

Details are given of various Italian and Spanish oils from *Pinus halepensis;* nearly all these samples are dextrorotatory, whereas the Cyprus oil is strongly levorotatory. According to Dupont, this essential oil consists of about 95% of dextro-α-pinene, 1.1% of bornyl esters and 3.8% of sesquiterpenes. The figures for Spanish oils recorded by Lacrue are as follows: Specific gravity at 20°, 0.8561 and 0.8591, optical rotation, +40° to 49°; refractive index, 1.4666 to 1.4699.—ANON. *Bull. Imp. Inst.*, 36 (1938), 157; through *Chemist and Druggist*, 129 (1938), 108. (A. C. DeD.)

**Rue Oils—Algerian.** Two species of rue are commonly found in Northern Africa: *Ruta montana* L. (*Ruta tenuifolia* Desf.) and *Ruta bracteosa* DC. and, less commonly, a species allied to the latter, namely, *Ruta angustifolia* Pers. (*Ruta chalepensis* L.). The essential oils of these two species contain aliphatic methyl-ketones, particularly methyl-*n*-nonylketone and methyl-*n*-heptylketone. The analytical characters of the oils are listed.—Y. R. NAVES. *Perfumery Essent. Oil Record*, 30 (1939), 93. (A. C. DeD.)

**Terpeneless Oils—Preparation of.** The details of an improved method of production of the terpeneless oils of lemon and mandarin are offered. A. M. BURGER. *Riechstoff Ind. Kosmetik*, 10 (1938), 217–220. (H. M. B.)

**Violet Flowers—Oil of.** The author has examined the essential oil contained in the "absolute" oil of violet flowers. By distillation with steam, from a commercial sample, an essential oil was obtained having a specific gravity of 0.956, and specific rotation +8.7°. It was found to contain a phthalic acid ester of the formula $C_{13}H_{18}O_4$, which was not found in samples of known authenticity, and which was obviously an adulterant. The corresponding distillate from Victoria violets had a specific gravity 0.896 and a specific rotation +7.6°. Oil, steam distilled from the leaves, had a specific gravity 0.906 and specific rotation +2° to −2°. The flower oil contains about the same amount of nonadienol as the leaf oil, but about one-tenth of the nonadienol that is present in the leaf oil. Probably *n*-$C_9H_{13}OH$, a leptenol and an octadienol are present. A ketone of the formula $C_{13}H_{20}O$, to which the name "parmone" has been assigned, was isolated from the flower oil. This ketone, which yields a phenyl-semicarbazone melting at 166–168°, and a *p*-bromophenylhydrazone melting at 132–133°, has an odor which more closely resembles that of violet flowers than ionone, the methyl-ionones and isone. The leaf oil owes its odor mainly to nonadienol.—RUZICKA. *Brit. Chem. Abstracts*, (1938), 980; through *Chemist and Druggist*, 129 (1938), 354. (A. C. DeD.)

**Wood Oil—Relations between Constants of.** The determination of the diene number of a large number of oils pressed from *Aleurites montana* has shown that there is a linear relation between the diene number and the refractive index. The diene number can therefore be calculated from the refraction. Some 75 samples of the oil were examined and the calculated and determined diene numbers agreed within the limits of experimental error. Linear relations were also found to exist between the bromometric iodine number, the Wijs iodine number and the dispersion severally with the refraction. From these relations formulæ connecting these constants with the diene

number can be derived. In all cases the calculated and determined constants were in close agreement, provided the oils were fresh. Using a standard oil which gelatinized at 282° C. after twelve minutes, the gelatinization time of fresh oils can be related to the diene number, with a correction factor for the acid number of the oil. With older oils fairly large discrepancies were found between the determined constants and those calculated from the formulæ. This is due to polymerization which causes a decrease in the constants. By inducing polymerization in the fresh oil, by heating at 282° C., and determination of the several constants at time intervals, polymerization curves for pairs of the constants can be obtained. By determination of the polymerization curves of an older oil and ascertaining their intersection with the corresponding curves for the fresh oil, the original constants of the older oil, when in the fresh condition, can be found; the original refractions obtained from the several constants were found to be in agreement.—E. D. G. FRAHM and D. R. KOOLHASS. *Rec. trav. chim., Pays-Bas*, 57 (1938), 79; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 631. (S. W. G.)

*Glycosides, Ferments and Carbohydrates*

**Amylase—Estimation of, by Liquefaction of Starch Paste.** Because of the difficulty in preparing uniform starch pastes, a modified method of determining amylase is proposed. The time ($t_2$) required to reduce the viscosity of a standard 3% starch paste, to which 0.1 volume of amylase has been added in an acetate buffer at $p_H$ 5.0, to that of a 45% sucrose solution and the time ($t_1$) required to reduce the viscosity 0.5 this much are determined. The enzyme quantity is proportional to $t_2 - t_1$ within 2% if $t_1$ and $t_2$ are between 10 and 30 minutes.—J. BLOM and A. BAK. *Z. physiol. Chem.*, 256 (1938), 197–207; through *Chem. Abstr.*, 33 (1939), 2554. (F. J. S.)

**Catalase—Action of Various Alcohols on.** The inactivating power of alcohols for catalase decreases in the order: methanol, isoamyl alcohol, ethanol, isopropyl alcohol, tertiary butyl alcohol. Ten % of methanol in the solution decreases the activity 65%, and 70% of methanol decreases the activity 88%; 50% of tertiary butyl alcohol decreases the activity about 20%.—N. T. DELEANO and L. ULLMANN. *Bull. soc. chim. biol.*, 19 (1937), 130–136; through *Chimie & Industrie*, 40 (1938), 109. (A. P.-C.)

**Chloroform and Toluene—Influence of, on the Activity of Some Enzymes.** In the presence of chloroform vapor a more intensive inactivation of enzymes is observed: catalase is accelerated by 50–60% and peptidase by 15–16%. Toluene exercises a greater influence on tobacco catalase than chloroform. Oxidase is inactivated more intensively by chloroform. The maximum inactivation is attained at lower concentrations of the antiseptic. Above 5 cc. of the antiseptic no decrease in the activity of the enzyme is noted. Upon killing a tobacco leaf, chloroform inactivated 36.1% of oxidase, 26.67% sucrase and 23.6% catalase.—I. K. SVIRIN. *Vsesoyuz. Inst. Tabach. Makhoroch. Prom.*, 134 (1938), 116–27; through *Chem. Abstr.*, 33 (1939), 1768. (F. J. S.)

**Condurangin.** This glucoside (*A*), obtained quantiatively by various methods, may be freed from minute quantities of impurities by fraction precipitation with petroleum ether (*B*) by dissolving the impure *A* in the least amount of chloroform and adding 1, 2 or 3 times the amount of *B* with shaking. A portion of *A* with the yellow coloring matter separates and adheres to the sides of the vessel; allow to settle, pour off the liquid, evaporate and again treat with a little of *B*. Two or three such precipitations are usually sufficient; the last traces of coloring matter are removed by boiling the chloroform solution with some animal charcoal and the flocculent precipitate thus obtained is washed several times with *B* and dried in a vacuum. This product is soluble in water (1:1000), yields a neutral solution and when saturated becomes turbid on warming and again clears on cooling. Upon acid hydrolysis, a characteristic bright green fluorescence is obtained. This is not observed after the action of emulsin and these reactions may be used to detect the drug in pharmaceutical preparations. Other tests are described.—L. ZECHNER. *Pharm. Monatsh.*, 19 (1938), 96–99. (H. M. B.)

**Digitalis Glucosides—Toxicological Detection of.** A discussion of various known color reactions.—F. MONFORTE and L. SCHIFANI. *Farm. Ital.*, 4 (1936), 787–790, 863–869; 5 (1937), 45–52; through *Chimie & Industrie*, 38 (1937), 1085–1086. (A. P.-C.)

**Furfural—Quantitative Formation of, from Xylose.** A study was made of various methods of distillation of various solutions of furfural and of xylose with the object of increasing the 88% yield of furfural obtained from xylose by the present standard method of distillation. Sources of

error that were considered are: decomposition of furfural, volatilization of furfural, effect of rubber stoppers used in the procedure, incompleteness of distillation, furfural formed from hexuronic acid and substances other than furfural or methylfurfural in the distillate. A procedure was developed which prevents superheating of the solution but which gives rapid formation and removal of furfural. The apparatus has only glass in contact with the hot vapors and acid and is closed with a trap to prevent evaporation from the distillate. The procedure employs 12% hydrochloric acid saturated with sodium chloride to accelerate formation of furfural, which is then removed by steam distillation. Decomposition of furfural is prevented and a practically theoretical yield of furfural from xylose is obtained.—E. E. HUGHES and S. F. ACREE. *J. Research Natl. Bur. Standards*, 21 (1938), 327–336; through *Chem. Abstr.*, 33 (1939), 578. (F. J. S.)

**Glucosides and Glucoside-Like Compounds—Manufacture of, of the Flavone Series.** Polyhydroxy-flavones or -flavanones or partly etherified derivatives are converted into glucosides by standard methods, or corresponding polyhydroxychalcones are converted into glucosides which are then converted into glucosides of the flavones, etc. For example, 7-hydroxy-4′-methoxyflavone is converted by acetobromoglucose and sodium hydroxide in acetone into the tetra-acetylglucoside, melting point 168–188°, which with potassium hydroxide in aqueous methyl alcohol gives the glucoside (I), melting point 256–257°. Galangin glucoside, melting point 252–253°, and eriodictyol tetra-acetyl glucoside and glucoside are similarly prepared. Alternatively, I is prepared from 2′:4′-dihydroxy-4-methoxychalkone-4′-tetra-acetylglucoside, melting point 186–187°, by conversion into its 2′-acetate, melting point 151–152°, and treatment of the dibromide, melting point 160–161°, of this with potassium hydroxide in methyl alcohol.—W. W. GROVES. Brit. pat. 490,360; through *J. Soc. Chem. Ind.*, 11 (1938), 1363. (E. G. V.)

**Hoya Carnosa—Condurangin-Like Glycoside in.** *Hoya carnosa* R. Br. (*Asclepias carnosa* L.) commonly known as "Wax-Flower" was formerly a favorite house plant. From 131.6 Gm. of fresh stems and leaves (equivalent to 28.32 Gm. of dried material) was isolated about 0.5% of a nearly white precipitate by the procedure described earlier for the extraction of condurangin and vincetoxin. The compound was further purified by repeated fractional precipitation from chloroform by petroleum ether. The material is a white, loose powder having a bitter taste, easily soluble in cold water and less soluble in hot water, soluble in cold alcohol, amyl alcohol, acetone, ethyl acetate, chloroform, benzene and pyridine, less easily soluble in ether and practically insoluble in petroleum ether. The aqueous solution does not foam on shaking, is neutral and gives no color with ferric chloride, gives no fluorescence in ultraviolet light, but gives a yellowish-green fluorescence after boiling with hydrochloric acid, does not reduce Fehlings' solution until boiled with hydrochloric acid, precipitates with tannic acid and is converted to a yellow resinous precipitate on boiling with sodium hydroxide solution. The compound does not melt characteristically. It is named hoyin and gives reactions characteristic of condurangin. The possibility of its being a mixture with condurangin is suggested.—L. ZECHNER and R. GAGER. *Scientia Pharm.*, 9 (1938), 93. (M. F. W. D.)

**Papain—Value of, in the Preparation of Some Pharmaceutical Products.** Either in the form of dried papaw juice or of the purified product, the plant enzyme papain readily digests horse, calf or heart muscle proteins. The mixture of muscle extractives and protein degradation products provides a valuable nutrient medium for many types of bacteria. By varying the conditions of digestion, media containing as little as 1.5% or as much as 10.0% of total solids can be obtained by this method. These bacteriological culture media are of value in the preparation of pharmaceutical products such as diphtheria prophylactics, therapeutic sera and vaccines.—A. F. WATSON, R. A. TAGGART and H. F. MANNION. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 391–400. (S. W. G.)

**Pentoses—Utilization of, in Biological Protein Synthesis. I. Analytical Basis for Pentose Balances.** Pentose determination was carried out by precipitation of furfural with barbituric acid, since hexoses do not interfere in this procedure. But for accurate results xylose or arabinose should be used in amounts of 100–200 mg. Various hexoses affect the furfural yield by pentoses to a different degree, but with amounts of 100–200 mg. pentose the yield is practically theoretical in the presence of five times the amount of glucose, two times of fructose and of half the amount of mannose or galactose. The technical requirements of the procedure are discussed in detail.—R. LECHNER and R. ILLIG. *Biochem. Z.*, 299 (1938), 174–193; through *Chem. Abstr.*, 33 (1939), 1771. (F. J. S.)

**Soybean Amylase. I. The Concentration and Characterization of Soybean Amylase.** Methods are described for determining the saccharogenic power of soybeans and soybean-amylase concentrates. These methods are adaptable to the same determination in other seeds. The amylase content of soybeans decreases slightly during germination. A method for preparing amylase concentrates from soybeans is given. Characterization by various methods indicates that the concentrates contain principally $\beta$-amylase.—J. M. NEWTON and N. M. NAYLOR. *Cereal Chem.*, 16 (1939), 71–78; through *Chem. Abstr.*, 33 (1939), 2541. (F. J. S.)

**Sugar Alcohols—Rapid Micromethod for the Quantitative Estimation of.** A rapid method for the estimation of the sugar alcohols, sorbitol, mannitol, dulcitol, erythritol, pentaerythritol and inositol, is presented by which 0.1 to 0.7 mg. in 5 cc. of solution can be determined in properly clarified filtrates of blood, urine, etc. The principles of the Hagedorn-Jensen sugar method are used with modifications to meet special requirements. The reactions are not specific for these compounds and consequently the method, though satisfactory for certain work, has distinct limitations.—W. R. TODD, J. VREELAND, J. MYERS and E. S. WEST. *J. Biol. Chem.*, 127 (1939), 269–273; through *Chem. Abstr.*, 33 (1939), 1775. (F. J. S.)

**Tyrosinase. Nature of the Enzyme.** A study of the activity of tyrosinase preparations from the common mushroom toward catechol and *p*-cresol. A discussion with graphs and tables is given.—MARK H. ADAMS and J. M. NELSON. *J. Am. Chem. Soc.*, 60 (1938), 2474. (E. B. S.)

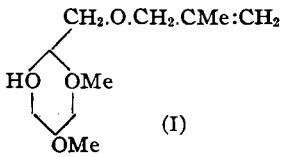
**Tyrosinase—Use of Added Protein in the Determination of the Activity of.** It is shown that for the determination of the activity of highly purified tyrosinase it is necessary to add protein. The method of Graubard and Nelson for determining the activity of tyrosinase toward *p*-cresol is modified to conform to the influence of protein.—MARK H. ADAMS and J. M. NELSON. *J. Am. Chem. Soc.*, 60 (1938), 2472. (E. B. S.)

**Xanthine Oxidase—Observations on the Stability of.** Glycine and cyanide increased the activity of xanthine oxidase in whole milk and concentrates. This effect was probably due to the prevention of copper inhibition. The loss of activity of some preparations on dialysis or incubation could be wholly or partly reversed by the use of glycine or cyanide.—F. J. PHILPOT. *Biochem. J.*, 32 (1938), 2013–2016; through *Chem. Abstr.*, 33 (1939), 2926. (F. J. S.)

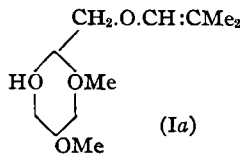
*Other Plant Principles*

**Acacia, Tragacanth and Some Other Gums—Methoxyl Index of.** The methoxyl index of various gums was determined by a micro-Zeisel method and calculated as follows: $n \times 31/p \times 50$; where $n$ = cc. of silver nitrate solution combined, $p$ = weight of sample in Gm., 31 = $OCH_3$ and 50 = normality of the silver solution. Acacia has an index of zero, tragacanth about 30. Values for several other gums are given.—MAURICE-MARIE JANOT and PIERRE GONNARD. *Compt. rend.*, 207 (1938), 594. (G. W. H.)

**Bæckeol.** This phenol which was found, some years ago, to be a constituent of the essential oils of various species of *Myrtaceæ*, more especially of *Bæckea crenulata* and *Darwinia grandiflora*, has been reëxamined with a view to determining its constitution. It is suggested that the structure is represented by (I) or (Ia); the positions of the substituents in the nucleus were established, but the structure of the side chain was not definitely proved. Fusion with sodium ethoxide at 200° C. gave phloroglucinol $\alpha$-methyl ether and on oxidation with alkaline hydrogen




(I)




(Ia)

peroxide, *iso*-butyric acid. A nitro derivative, $C_{11}H_{12}O_5(OMe)$, m. p. 106° C., was prepared; this gave a red coloration with alcoholic ferric chloride, but solutions in alkali were colorless. Bæckeol crystallized from methyl alcohol in faintly yellow prisms m. p. 103° to 104° C. It had very weak acidic properties and the acetate crystallized in colorless prisms m. p. 71° to 72° C.—A. R. PENFOLD and J. L. SIMONSON. *Proc. Roy. Soc. N. S. W.*, 71 (1938), 291; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 628. (S. W. G.)

**Carotenoids—Effect of Acids on.** Five new carotenoids, designated as pigments *A*, *B*, *C*, *E* and *F*, have been obtained from alfalfa silage and from acidified fresh alfalfa. They were not present in untreated forage. Dilute solutions of *A*, *B* and *E* in benzine were greenish-yellow and those of *C* and *F* were reddish. The first three, *A*, *B* and *C*, were epiphasic and the last two were hypophasic. Quantitative separation was effected by the use of MgO chromatogram and elution with benzine-alcohol mixtures. When fed to Vitamin A deficient rats, *A* and *B* exhibited no biological activity. Both pigments were found in butters produced by cows on A. I. V. silage.—UNIVERSITY OF WISCONSIN, COLLEGE OF AGRICULTURE. *J. Am. Chem. Soc.*, 60 (1938), 2937. (E. B. S.)

**Catuabol—Isolation of, from Catuaba Bark (Trichilia Sp.).** The procedure followed in separating catuabol from the bark is given in detail. The bark was found to contain, among other substances, a substance melting at 115–116° which was not studied, and the alcohol catuabol, $C_{25}H_{40}O$, melting at 200–201°. The compound may be classed as a sesquiditerpene. It is isomeric with euphosterol and homotaraxasterol. The formic, acetic and benzoic esters were prepared and studied.—M.-M. JANOT and E. CIONGA. *Bull. sci. pharmacol.*, 45 (1938), 499–500. (S. W. G.)

**Chasmanthin.** Chasmanthin isolated from calumba root is isomeric with palmarin, but differs from it in constitution; the differences between them, however, disappear in the course of certain reactions, such as hydrogenation. Alkaline fusion and oxidation produces the same degradation in both compounds. The differences in the constitution of the two compounds must therefore be of relatively little importance.—F. WESSELY and K. SCHÖNVL. *Monatsch. Chem.*, 71 (1937), 10–26; through *Chimie & Industrie*, 40 (1938), 303. (A. P.-C.)

**Drosera Rotundifolia—Constituent of.** 2-Methyl-5-hydroxy-1,4-naphthoquinone (*A*) is synthesized by using 1-nitro-2-methyl-5-aminonaphthalene prepared by using the method of Vesely and Kapp. By diazotizing the amine and boiling the diazonium salt, 1-nitro-2-methyl-5-hydroxy naphthalene is obtained. This is reduced with zinc and hydrochloric acid and then with hydrogen peroxide in glacial acetic acid is oxidized to *A*, melting at 77° C. It, therefore, appears that plumbagin of the plumbago species occurs in drosera and the name of droseron for the portion volatile with steam should be deleted. Seven references are given.—H. DIETERLE. *Scientia Pharm.*, 11 (1938), 121–122. (H. M. B.)

**Embelic Acid—Active Principle of Kurjan Seed, Myrsine Africana.** Kurjan or kachamoo "seeds" from Jigjiga, Abyssinia, the kernals of which are used locally as a vermifuge, have been identified as the dried fruits of *M. Africana*, L.; they were free from cyanogenetic glucosides, saponins and alkaloidal substances, contained 3.8% of reducing sugars, for example, gluctose, and 0.2% of non-reducing sugars (sucrose), and yielded 4.3% of matter soluble in light petroleum, 4.8% of crude crystals identified as embelic acid and about 1% of quercitol.—ANON. *Bull. Imp. Inst.*, 36 (1938), 319–322; through *J. Soc. Chem. Ind.*, 11 (1938), 1361. (E. G. V.)

**Eriocephalus Africanus—Concrete Otto of.** The odoriferous substances were extracted by means of volatile solvents. The stem of the plant, with the leaves and flowers, was treated with petroleum ether and a concrete otto, of a green color, fairly dark (0.3%) was obtained. Steam distillation of this concrete otto *in vacuo* yielded 10–15% of a rather viscous essential oil of a yellowish color. The oil has a herbaceous and balsamic odor. A botanical description of the plant is given.—L. TRABAUD and S. SABETAY. *Perfumery Essent. Oil Record*, 30 (1939), 171. (A. C. DeD.)

**Horehound—Structure of the Bitter Principle in.** L. and E. have elucidated the formula of marrubin, the bitter principle of horehound, by the use of these reactions. A careful analysis gave results which favor the formula $C_{20}H_{28}O_4$ instead of $C_{21}H_{28}O_4$ as previously reported. Dehydrogenation with selenium proved the presence of a hydronaphthalene nucleus and indicated a relationship with the diterpene group. The presence of a lactone group was indicated by the ease with which the substance is hydrolyzed to marrubic acid. Marrubin absorbed four atoms of hydrogen and was easily dehydrated, the latter reaction suggesting the presence of a tertiary hydroxyl group.—A. LAWSON and E. D. EUSTICE. *J. Chem. Soc.* (London) (1939), 587. (W. T. S.)

**Kawa-Kawa or Wati—Isolation of the Soporific Substance from.** Kawa-Kawa or Wati is a plant used by aborigines of Dutch New Guinea for both tonic and soporific effects. Brewed as a tea, the stems and roots are stimulating but chewed they cause a deep but harmless sleep. The active principle, named marindinine, was isolated in transparent prisms, melting at 60°.

The method consisted of extraction with petroleum ether-$Et_2O$ mixture and adsorption on acid-clay. No details are given. More marindinine was found in old than in young roots and stems. It is active only in fine emulsion which explains the difference in action between brewing and chewing.—A. G. VAN VEEN. *Proc. Acad. Sci. Amsterdam*, 41 (1938), 855–858; through *Chem. Abstr.*, 33 (1939), 1445. (F. J. S.)

**Lactucarium. II.** Further studies were made on the isolation of lactucin with a view to its analytical estimation, in the course of which a new bitter compound was obtained, lactucopicrin, which melts and turns brown at 146° C. The melting point of lactucin, $C_{15}H_{16}O_5$, was redetermined and found to be 226° C. The presence of the sugar inositol was confirmed.—G. SCHENCK and H. GRAF. *Arch. Pharm.*, 275 (1937), 36–44; through *Chimie & Industrie*, 38 (1937), 734. (A. P.-C.)

**Navel and Valencia Oranges—Bitter Constituents of.** The bitter principle of the Navel orange has been isolated and identified as isolimonin, a previously reported constituent of orange seeds. This substance occurs in the albedo, the center fibrovascular bundle and in the section covering of the fruit, in non-bitter, water-soluble form. When these tissues are ruptured, it is extracted into the juice, where it is slowly converted to the intensely bitter lactone form. It has a higher molecular weight than previously reported and is apparently an isomer of limonin and of citrolimonin. Limonin has been isolated from the pulp of the Valencia orange. Both limonin and isolimonin form non-bitter, water-soluble salts with alkalies from which they can be precipitated unchanged upon acidification.—RALPH H. HIGBY. *J. Am. Chem. Soc.*, 60 (1938), 3013. (E. B. S.)

**Ouabain—Structure and Reactions of.** The structural formula for ouabain and isoouabain, according to the authors, is analogous to the structural formulæ of scillaren A and scillaridin. However, in regards to the position of the hydroxyl group in ouabagenin, it can be linked only to the $C_{14}$; and there is a possibility that a $CH_2.OH$ group can be attached to the $C_{10}$ atom. Other investigators obtained a lactone as the result of the hydrolysis of ouabain; and the identity of this compound was not fully ascertained. It was suggested that it be named $\alpha$-lactone. Another product which was obtained during the hydrolysis was $\beta$-lactone, $C_{22}H_{28}O_3$, which differed from $\alpha$-lactone in the isomerization of the side chain.- R. TSCHESCHE and W. HAUPT. *Ber. deut. Chem. Gesell.*, 70 (1937), 43; through *Chem. Zentr.*, 108 (1937), 1946. (G. B.)

**$\alpha$-Phellandrene—Detection and Estimation of, in Essentail Oils.** The methods described are based on the Diels-Alder reaction of $\alpha$-phellandrene with maleic anhydride in acetone solution, with production of a crystalline additive compound which melts at 126° C. *Detection.*—In a typical experiment *l*-$\alpha$-phellandrene (0.1 cc.), *p*-cymene (10 cc.) and maleic anhydride (0.2 Gm.) were mixed in a 100-cc. distilling flask having a neck 12 cm. long between the bulb and side arm. After standing for one hour the solvent was removed on a water bath and them steam-blown through the mixture until oil ceased to come over. The residue solidified on cooling and was recrystallized from alcohol (0.5 cc.); m. p. 126° C. *Estimation.—First Method.* An $\alpha$-phellandrene mixture (8 cc.) was mixed with acetone (10 cc.) and maleic anhydride (6 Gm.) in a 100-cc. cassia flask and allowed to stand for one hour. The acetone was removed and 40 cc. of 10% sodium hydroxide added. The flask was heated on a water bath with frequent shaking for fifteen minutes. The mixture was cooled and adjusted to volume with sodium hydroxide solution. The volume of residual oil (*i. e.*, the non-phellandrene portion) was then read off. *Second Method.* The same reaction was carried out in a long-necked 100-cc. distilling flask, but after the addition of 40 cc. of sodium hydroxide solution steam was blown through. The distillate was received in a cassia flask and the volume of residual oil read off as before.—A. J. BIRCH. *Proc. Roy. Soc. N. S. W.*, 71 (1937), 54; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 281. (S. W. G.)

**Psoralen—Occurrence of, in Phebalium Argenteum, Smith.** When the coumarin derivative previously isolated from the essential oil of *Phebalium argenteum* was further purified by sublimation at 120–130° at 0.05 mm. and crystallization from methyl alcohol, it yielded crystals, melting at 166–167°, which are identical with psoralen (*Chem. Abstr.*, 27, 3030; 30, 7575).—P. K. BOSE and H. H. FINLAYSON. *J. Indian Chem. Soc.*, 15 (1938), 516; through *Chem. Abstr.*, 33 (1939), 2281. (F. J. S.)

**Pyridine Content of Tobacco.** The pyridine content of samples of tobacco was determined as follows: A sample of tobacco powdered and previously soaked in sodium hydroxide solution

was extracted with ether-benzin (1:1) and the extractive was filtered and evaporated to 40–50 cc. The concentrated extractive was then shaken with 20 cc. of 10% sulfuric acid and then the acid solution was made alkaline to methyl red and distilled. Pyridine was tested for in the distillate according to the methods of König and Barta. Of the thirty-six samples of tobacco analyzed, the pyridine content was found to be as high as 0.004%.—P. BODNAR and L. NAGY. *Z. Untersuch. Lebensm.*, 74 (1937), 302; through *Pharm. Zentralhalle*, 79 (1938), 563. (N. L.)

**Vanillin—Manufacture of.** Vanillin is extracted from alkaline aqueous solution by an alcohol immiscible with water, the alcohol is removed and water and sulfur dioxide are added to form the soluble sodium bisulfite compound, and crude vanillin is liberated by adding sulfuric acid. The treatment of ligninsulfonic acid, lignocellulose or crude lignin extract with alkali to yield vanillin is described and the treatment of calcium ligninsulfonate with sodium hydroxide and extraction with butyl alcohol is claimed.—MARATHON PAPER MILLS CO. Brit. pat. 490,646; through *J. Soc. Chem. Ind.*, 11 (1938), 1269. (E. G. V.)

**Vanillin—New Methods for the Preparation of.** A review with eight references.—H. FRANK. *Riechstoff-Ind. Kosmetik*, 10 (1938), 229–231. (H. M. B.)

**Verbena Officinalis, L.—Constituents of. II. Constitution of Cornin.** The behavior of cornin toward acetylation and oximation appears to indicate the presence of an $\alpha$-keto alcohol. Acetylcornin melts at 133° C.; acetylcornin oxime melts at 175° to 176° C. and its acetyl derivative melts at 184° C. It is still uncertain whether these three compounds contain 4 or 5 acetyl groups.—B. REICHERT and W. HOFFMANN. *Arch. Pharmazie*, 275 (1937), 474–477; through *Chimie & Industrie*, 40 (1938), 105. (A. P.-C.)

*Fixed Oils, Fats and Waxes*

**Avocado Pear Oil.** On a single sample of the oil the authors found 1.49% of unsaponifiable matter; specific gravity 0.918; refractive index 1.4725 at 21° C.; saponification value 180; iodine value 86; acid value 0.4. Examination spectrophotometrically showed a maximum of 25 p. p. m. of provitamin D in the oil with the probabilities that the true value is much below this. Biological tests showed that the oil contained less than 4 international units of vitamin D per Gm., no vitamin A and probably little or none of biologically active carotinoids. Vitamin E content was at most 0.1 of the amount present in wheat germ oil and the probabilities are that it was absent.—A. L. BACHARACH and E. L. SMITH. *Analyst*, 63 (1938), 811. (G. L. W.)

**Chaulmoogra Oil from Mauritius.** Three samples of the oil from *Hydnocarpus wightianus*, having refractive indices at 20° of +57, +56.1 and +55.25 and prepared, respectively, by expression and by extraction with ether and light petroleum, showed analytical figures conforming to the B. P. except that the oils were not "almost wholly soluble" in hot 90% ethyl alcohol, possibly on account of their very low acidity (acid values 1.7, 1.7 and 0.7, respectively; compare B. P. limit of not more than 25). The extracted samples contained traces of solvent, but if freed from such would appear to be equivalent to the expressed oil for therapeutic purposes.—ANON. *Bull. Imp. Inst.*, 36 (1938), 317–319; through *J. Soc. Chem. Ind.*, 11 (1938), 1322. (E. G. V.)

**Castor Oil—Preparation of an Oil Similar to, from Soya Bean Oil.** Fifty grams of soya bean oil in 200 cc. glacial acetic acid were oxidized with 5–15 Gm. of hydrogen peroxide (30%) on a water bath under reflux for 1 hour, and the glacial acetic acid then expelled under reduced pressure. The iodine value decreased, the acetate value increased, but the acid value remained small. It is concluded that two hydroxyl groups are added at the double linking. The viscosity of the oxidized oil is slightly less than that of castor oil at 0°, but considerably greater at −10°. At −20° there is no separation of crystals. A fish oil and castor oil were similarly oxidized. The fish oil became rather viscous, but crystals separated when it was cooled. Castor oil became very viscous and it was difficult to expel the acetic acid completely.—R. ODA. *J. Soc. Chem. Ind. Japan*, 41 (1938), 195–196; through *J. Soc. Chem. Ind.*, 11 (1938), 1322. (E. G. V.)

**Cod Liver Oil Industry.** A brief description of the steps in the extraction and refinement of cod liver oil and measures taken to improve its palatability. The essential steps in the purification of the oil consist of (1) removal of "stearin," (2) deodorizing and (3) decolorization.—ANON. *Pharm. J.*, 141 (1938), 529. (W. B. B.)

**Cod Liver Oil—Short-Path High-Vacuum Distillation of Materials Such as.** A process of short-path high-vacuum distillation comprises passing fluid organic material which is ordinarily undistillable by other means without harmful decomposition over a heated surface which is main-

tained under a high vacuum, condensing vaporized molecules derived from the material upon a condensing surface, which is near to the heating surface and is separated therefrom by substantially free unconstricted space, and circulating over the condensing surface during distillation a liquid which is miscible but is not chemically reactive with the distillate and which has a vapor pressure sufficiently low at the temperature of the condensing surface and at the pressure prevailing during distillation that the rate of distillation is not substantially diminished.—KENNETH C. D. HICKMAN and JOHN C. HECKER, assignors to EASTMAN KODAK CO. U. S. pat. 2,126,467, Aug. 9, 1938. (A. P.-C.)

**Fat Acids and Glycerides—Solubility of, in Bile and Bile Salts.** The solubility of fat acids and glycerides in bile and bile constituents (cholesterol, lecithin, mucin, etc.) was determined. A dispersion of the acid or glyceride is dialyzed (in parchment tubes) against bile previously boiled two hours to prevent the possibility of any enzymic action. Results show: (1) The fat acids (oleic acid) diffuse in both bile and bile salts. (2) Glycerides are diffused by bile but not bile salts. (3) Glycerides are diffused by cholesterol and lecithin.—G. QUAGLIARIELLO and F. CEDRANGOLO. *Atti accad. Lincei, Classe sci. fis. mat. nat.*, 27 (1938), 503–505; through *Chem. Abstr.*, 33 (1939), 1766. (F. J. S.)

**Fats—Hydrogenated, for Pharmaceutical Purposes.** Pharmaceutical fats must possess suitable hardness and not melt above 37°. In addition to cacao fat, hard fats containing paraffin are also to be considered. A suitable mixture contains 30 parts hard fat melting at 40°, 65 parts hard fat melting at 34° and 5 parts paraffin melting at 51–55°. Hard fats for medicinal use must meet the following requirements: They must be white to light yellow in color, odorless, of a dense, friable homogeneous consistency, melting not below 35° nor above 37°. A 2-gram pellet must melt completely to give a clear liquid in 3 to 6 minutes at 37–38°. When warmed to 40°, the fat must be completely transparent and no precipitate must form within an hour. Saponification number should be 192–206; $n^{40}$ should be 1.453–1.462; water up to 0.1%; ash up to 0.35%; the pure fat should contain no unsaponifiable matter (unless paraffin is used); iodine number not less than 60 nor more than 85; nickel content not more than 5 mg. per Kg.; iron only in traces; and acid number not greater than 1 mg. The same requirements apply to mixtures of hard fats and paraffin. Two methods are given for determining the melting point of such a mixture: (1) Two drops of the mixture are introduced into a capillary tube and after 24 hours the tube, with its upper end closed with a rubber cap, is suspended in a beaker of water equipped with stirrer and the water is warmed. Melting begins when the fat starts to flow out and is complete when that remaining in the capillary is transparent. (2) A capillary tube 1 mm. in diameter and 10 cm. long is filled with the fat mixture and the melting point determined as above. Two methods are given for the determination of the duration of melting: (1) When a 2-Gm. pellet of the fat is placed in a beaker warmed in a 37–38° thermostat it should melt in 3 to 6 minutes. (2) A beaker is fitted with a flat screen of thin aluminum wire (5 cm. from the bottom) through which pass a thermometer and stirrer. The water is maintained at 37–38° and the time required for a 2-Gm. pellet of fat to fuse, pass through the screen and float on the surface of the water is taken as the time of fusion. For the determination of hardness in weight units, an apparatus is used by which the weight required to cut through a thin slab of the fat of definite size in a definite time is obtained.—A. KATALKHERMAN. *Sbornik Gosudarst. po Voprossan Farm.*, (1936), 25–30; through *Chem. Abstr.*, 33 (1939), 1878. (F. J. S.)

**Fatty Acids—Dyer Method for the Identification and Determination of Volatile.** A critical study of the Dyer method revealed that the distillation constants of the various acids depend largely upon the size and design of the apparatus, as well as upon the rate of distillation. Details are given of an apparatus and a procedure by which consistent results are obtained. Graphs show the rates of distillation of formic, acetic, propionic, butyric and isobutyric acids. The most logical course for an analyst in this field is to use his own assembly for determining the constants of the particular acids in which he is interested, which does not affect the general principle of the method and would give more accurate results.—E. P. CLARK and F. HILLIG. *J. Assoc. Official Agr. Chem.*, 21 (1938), 684–688; through *Chem. Abstr.*, 33 (1939), 1237. (F. J. S.)

**Fatty Alcohols and Their Sulfates.** An account of the increasing application of fatty alcohols and sulfonated fatty alcohols in cosmetics.—S. P. JANNAWAY. *Perfumery Essent. Oil Record*, 30 (1939), 45. (A. C. DeD.)

**Fish Liver Oils—Analytical Classification of. VI. Iodine Value of Unsaponifiable Matter.** The following conclusions are given: (1) The range of values for the iodine value of the unsaponifiable matter of medicinal cod liver oils is from 100 to 130. (2) Oils from individual species of the family *Gadidæ* also give values lying within a similar range. (3) Oils from various fish of the order *Elasmobranchii* (which includes the sharks, rays, skates and dog fish) generally give lower values, except such shark liver oils as contain large amounts of squalene, which have much higher values. (4) A number of miscellaneous fish liver oils other than those from *Gadidæ* and *Elasmobranchii* have given a wide range of values from 72 to 313. (5) In view of the findings that shark liver oil may give higher or lower values than cod liver oil, according to the species, we consider the determination to be of little value in detecting shark liver oil in cod liver oil. It may, however, be useful as a supplementary analytical characteristic. Shark liver oil is always accompanied by a high percentage of unsaponifiable matter and this is no doubt a more reliable indication of adulteration.—D. C. M. ADAMSON, N. EVERS and W. SMITH. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 437–442. (S. W. G.)

**Fish Liver Oils—Topical Therapy with.** A discussion indicating that large quantities of fatty unsaturates in linseed oil are not superior to cod liver oil, that vitamins A and D do contribute to the effectiveness of fish liver oil therapy and that the fatty unsaturates in the fish liver oils are more powerful in the stimulation of tissue growth than the fatty unsaturates in vegetable oils. Thirteen references are given.—L. STAMBOVSKY. *Drug and Cosmetic Ind.*, 43 (1938), 542–544. (H. M. B.)

**Foodstuff Fats—Examination of.** Procedures are detailed for the determination of the propionic acid value (B), the total and residual lower fatty acids (R), and isooleic acid. The following new formulæ are derived: butter fat = 5.09B–0.12R; coconut oil = 2.76R–2.07B. Simplification of the procedure is possible when either constituent is absent. The limits of accuracy allowed by the normal variation in composition of the natural fats are indicated.—J. GROSSFELD. *Z. Untersuch. Lebensm.*, 76 (1938), 340–350; through *J. Soc. Chem. Ind.*, 57 (1938), 1443. (E. G. V.)

**Germ Oils of Gramineæ—Pharmaceutical Value of.** The oils of cereal germs are semi-drying; they contain mostly oleic, palmitic and linoleic acids. The oil obtained by pressing the germs is not a homogeneous fat; it carries in solution lecithin, vitamins, and more particularly β-carotene, β-auxin, sterols and especially sitosterol. Its use in pharmacy would therefore offer considerable interest.—H. KÜHL. *Mühlenlab.*, 9 (1937), 133–136; through *Chimie & Industrie*, 40 (1938), 309. (A. P.-C.)

**Huchen Oil—Chemical Study of.** The oil acids contain approximately 85% of oleic, linoleic, linolenic and clupanodonic acids, and 10–12% of palmitic and stearic acids. The oil is non-drying. The head oil contains 0.64% of unsaponifiable matter, mostly isocholesterol. The subcutaneous oil contains 1.75% of unsaponifiable matter, chiefly an alcohol $C_{17}H_{34}O$.—N. V. WILLIAMS and P. O. BURLATSCHENKO. *Schriften zentr. Forsch.-Inst. Lebensmittelchem., U. S. S. R.*, 4 (1935), 170–174; through *J. Soc. Chem. Ind.*, 11 (1938), 1323. (E. G. V.)

**Hyperoodon Rostratus—Oils from.** Oil obtained from under the skin of the back of *H. rostratus* is identical in chemical composition with that of the cachalot. The oil from the various parts of the head resists oxidation by oxygen and has a low solidifying point characteristic of high grade lubricating oils.—I. M. P. BELOPOLSKI and O. B. MAXIMOV. *Ruib. Choz. Dal. Vostoka*, 13 (1935), No. 1, 101–103; through *J. Soc. Chem. Ind.*, 11 (1938), 1323. (E. G. V.)

**Marine Animal Fats—Improving the Quality of, by Conjugated Hydrogenation.** The fishy taste and odor of seal, dolphin and other marine animal oils are abolished by subjecting the oils to conjugated hydrogenation, with ethyl alcohol (nickel catalyst).—V. M. PUZANOV. *J. Applied Chem. Russ.*, 11 (1938), 668–669; through *J. Soc. Chem. Ind.*, 57 (1938), 1184. (E. G. V.)

**Mustard Oils—Production and Identification of, in Rape Seed.** The mode of occurrence of mustard oils in rape seed is discussed and methods of identifying and determining these oils are outlined.—H. SCHMALFUSS and H. P. MULLER. *Forschungsdienst*, 6 (1938), No. 2; *Allgem. Oel- u. Fett-Ztg.*, 35 (1938), 387–388; through *J. Soc. Chem. Ind.*, 11 (1938), 1321. (E. G. V.)

**Myrobalans—Utilization of. II. Myrobalan Oil.** The oil is yellow and has $d_{26}^{25}$ 0.9132, saponification value 190.2, iodine value 105.1, unsaponifiables 1.15%, Hehner value 96.0, $n_D^{25}$ 1.4700, acid value 3.4, liquid unsaturated acids 78.77%, acetyl value 5.25, $[\alpha]_D^{25}$ +0.12°, olein

58.6%, linolein 23.3%, saturated glycerides 17.75%. Its composition is similar to that of arachis oil, but it is of little commercial value owing to the low oil content of the myrobalans.—S. R. SUNTHANKAR and S. K. K. JATKAR. *J. Indian Inst. Sci.*, 21, A (1938), 149–152; through *J. Soc. Chem. Ind.*, 57 (1938), 1446. (E. G. V.)

**Oils and Fats—Relations between Characteristics of.** Various formulæ for computing the iodine value from observations of refractive index and density are collected from the literature.—F. FRITZ. *Ole, Fette, Wasche*, 5 (1938), 7–8; through *J. Soc. Chem. Ind.*, 11 (1938), 1323. (E. G. V.)

**Oils—High-Vacuum Short-Path Distillation of, Such as Those Containing Vitamins.** A highly unsaturated vegetable oil such as cod liver oil, etc., is subjected to distillation under high-vacuum short-path conditions and a distillate is separated containing the unsaturated glyceride content of the oil free of protein material and objectionable odor and suitable for use in foods.—KENNETH C. D. HICKMAN, assignor to EASTMAN KODAK CO. U. S. pat. 2,126,466, Aug. 9, 1938. (A. P.-C.)

**Oils—Hydrogenation of, of Fish and Sea Animals.** The rate of hydrogenation of the oils of white whale and Japanese sardine with nickel precipitated on kieselguhr decreases sharply when the highly unsaturated clupanodonic acids have disappeared. The hydrogenated oils, with iodine values 85 and 100, respectively, are practically odorless. The mildly hardened oils (melting point 30–35°) contain partly saturated clupanodoic acids. The isovaleric acid content of the white-whale oil remains almost constant during hardening.—M. P. BELOPOLSKI and O. B. MAXIMOV. *Bull. Pacific Sci. Inst. Fisheries, U. S. S. R.*, 7 (1934), 107–128; through *J. Soc. Chem. Ind.*, 11 (1938), 1323. (E. G. V.)

**Olive Oil—Estimation of the Vitamin Content of.** Considerable work on olive oil indicates that the vitamin content is less than one international unit and in this respect is very much inferior to many fish oils.—M. R. MARCILLE. *Ann. chim. anal. chim. appl.*, 21 (1939), 7–11; through *Chem. Abstr.*, 33 (1939), 2355. (F. J. S.)

**Olive Oil—Manufacture of.** Methods of manufacture of the oil and for preservation of olives are reviewed. The importance to the industry of the centrifugal separation of the oil is stressed.—M. CONSTANT. *Bull. mat. grasses inst. colonial Marseille*, 22 (1938), 167–180; through *J. Soc. Chem. Ind.*, 11 (1938), 1321. (E. G. V.)

**Pyrethrum Flowers—Oil Distilled from.** During the manufacture of pyrethrum preparations small quantities of a volatile oil with a pleasant, characteristic odor have been obtained from the factory. It has been found, however, that after subjecting Dalmatian, Kenya and English grown pyrethrum flowers (*Chrysanthemum cinerariæfolium* Trev.) to steam distillation the oil isolated in each case had characteristics very different from the oil mentioned above. Therefore the projected attempt to identify the constituents of the factory oil was abandoned since an examination of this oil, which apparently had little relationship to the steam distilled oil, was of no value. In addition, naphthalene was readily identified in the factory oil but could not be found in the steam distilled oil. The oils obtained in similar, very low yields from the flowers of different origin showed considerable variation. From the Dalmatian and English oils a hydrocarbon, $C_{19}H_{40}$, melting point 53–54°, was isolated.—R. P. MERRITT and T. F. WEST. *J. Soc. Chem. Ind.*, 57 (1938), 321–323. (E. G. V.)

**Rancidity in Fats—Reagents for Determining Degree of.** Comparative tests, with various methods, on ethyl oleate, ethyl esters of mixed oil acids, soya bean, sunflower seed and linseed oils, and on goose grease are described.—S. L. IVANOV, V. V. MASLENNIKOV, A. M. KOGAN and M. L. KROL. *Schriften zentr. Forsch.-Inst. Lebensmittelchem., U. S. S. R.*, 4 (1935), 175–184; through *J. Soc. Chem. Ind.*, 11 (1938), 1321. (E. G. V.)

**Seal Oil—Chemical Study of.** Seal fat contains approximately 10% of glycerol, 0.4–0.7% of unsaponifiable matter, 16.1–16.4% of saturated acids (chiefly palmitic acid), 6% of a solid unsaturated acid of melting point 117°, and 52–55% of liquid unsaturated acids of the oleic acid type. A portion of these acids (4–9% of the fat) can be resinified by polymerization. Oil prepared at moderate temperature has good possibilities for use in the food and soap industries.—N. V. WILLIAMS and G. A. MACHROV. *Schriften zentr. Forsch.-Inst. Lebensmittelchem., U. S. S. R.*, 4 (1935), 157–165; through *J. Soc. Chem. Ind.*, 11 (1938), 1323. (E. G. V.)

**Shark Liver Oils.** The specific gravity, refractive index, acid, saponification and iodine numbers, and percentage of unsaponifiable matter are reported for liver oils from the following

sharks: *Centrophorus* species, *Squalus japonicus*, probably *Somniosus microcephalus* (Akeondenzamé), *Rhinodon typicus* and *Orectolobus japonicus*. The oil from *Centrophorus* species contained 80.8% crude squalene (reported by K. Kôgami to be effective in curing tuberculosis when biochemically activated), but the other oils had none. All of the oils were markedly inferior to cod liver oils in vitamin A content.—M. TSUJIMOTO. *J. Soc. Chem. Ind.* (Japan), 40 Suppl. Binding (1937), 365; through *Chimie & Industrie*, 40 (1938), 318. (A. P.-C.)

**Unsaturated Oils—Analysis of Highly, by the Thiocyanogen Method.** Data for the iodine and thiocyanogen values of purified arachidic and clupanodonic acids are recorded. They may be used in indirect determinations of different kinds of acids in the glycerides of a fat.—P. O. BURLATSCHENKO. *Schriften zentr. Forsch.-Inst. Lebensmittelchem.*, 4 (1935), 192–195; through *J. Soc. Chem. Ind.*, 11 (1938), 1322. (E. G. V.)

**Vegetable Oils—Analysis of, by Kaufmann's Thiocyanogen Method.** The method gave concordant results for various oils and is accurate even when there is a high degree of unsaturation.—S. L. IVANOV, V. P. LEBEDEV and P. P. KELTZEV. *Schriften zentr. Forsch.-Inst. Lebensmittelchem., U. S. S. R.*, 4 (1935), 185–191; through *J. Soc. Chem. Ind.*, 11 (1938), 1322. (E. G. V.)

**Wax from Sugar Cane—Chemical Examination of.** Sugar cane wax extracted from the press-mud of a sulfitation factory has been found to contain 43.7% of acids and 53% of non-saponifiable material. By the usual method of ester fractionation under a reduced pressure, the component acids have been found to be resin acid (4.5%), caproic acid (0.6%), palmitic acid (22.7%), stearic acid (22.4%), oleic acid (41.5%) and archidic acid (3.3%). The non-saponifiable material has been resolved into primary alcohols, secondary alcohols and paraffin fractions by treating it with phthalic anhydride. The non-saponifiables consist of about 80% primary alcohol (*n*-triaccontanol or myricyl alcohol), about 10% is a mixture of sterols from which brassica, stigma and sitosteriols have been isolated by the fractional crystallization of their bromination products and about 5% of an aliphatic paraffin, *n*-pentatriaccontane ($C_{35}H_{72}$). The wax does not contain any dibasic acid or oxy-acid.—N. L. VIDYARTHI and M. NARASINGARAO. *J. Indian Chem. Soc.*, 16 (1939), 135. (F. J. S.)

**Whale Products—Some.** A review of some of the characteristics of fats and waxes of the whale which have found application in industry and especially in pharmacy.—H. LEHMANN. *Schweiz. Apoth.-Ztg.*, 76 (1938), 525, 537. (M. F. W. D.)

*Unclassified*

**Acyl-β-Alkyl Choline Salts—Optical Isomers of.** A process of producing *d*-acyl-β-methyl choline salts comprises: resolving dimethylaminoisopropanol into its dextro form by treating the racemic form of the amine with bromocamphorsulfonic acid; subsequently treating the dextro form thus obtained with methyl iodide to form its methiodide; thereafter converting the methiodide into the desired salts by treating it with the silver salt of an acid whose silver salt is more soluble than silver iodide, and acylating the salt thus obtained. A process of producing *l*-acyl-β-methyl choline salts comprises: resolving dimethylaminoisopropanol into its levo form by treating the racemic form of the amine with *d*-tartaric acid; subsequently treating the levo form thus obtained with methyl iodide to form its methiodide, thereafter converting the methiodide into the desired salt by reacting upon it with the silver salt of an acid whose silver salt is more soluble than silver iodide, and acylating the salt thus obtained. The physiological action of the *d*-form of acetyl-β-methyl choline chloride is stronger and that of the *l*-form is milder than the racemic form. Various details of procedure are described, and silver chloride may be used.—RANDOLPH T. MAJOR and HOWARD T. BONNETT, assignors to MERCK & CO. U. S. pat. 2,118,054, May 24, 1938. (A. P.-C.)

**Amidines—Therapeutically Active.** Phenyloxy alkylene amidines unsubstituted in the phenyl nucleus and substituted in the amino group of the amidine group by alkyl, phenalkyl or alkyl amino alkyl, the alkyl radicals being of the lower aliphatic series, are produced by using as the parent material a phenyloxy fatty acid nitrile, amide or thioamide which is not substituted in the phenyl nucleus and converting this compound into an amidine substituted at the amidine nitrogen. Phenoxyethenyl-β-phenylphenylethylamidine hydrochloride melts at 201° to 203° C. and is freely soluble in water. α-Phenoxybutenyldibutylamidine hydrochloride melts at 117° to 118° C. General mention is made of other similar compounds.—KARL MIESCHER and ERNST

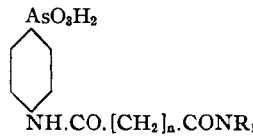
URECH, assignors to SOCIÉTÉ POUR L'INDUSTRIE CHIMIQUE À BÂLE. U. S. pat. 2,131,141, Sept. 27, 1938. (A. P.-C.)

**Amine Hydriodides.** Various details are given of the production of compounds such as ethylenediamine mono- and di-hydriodides, which are suitable for the administration of iodine in internal medication, and general mention is also made of the hydriodides of ethanolamine, diethanolamine and triethanolamine.—FRANK B. FISK, assignor to PITMAN-MOORE CO. U. S. pat. 2,128,741, Aug. 30, 1938. (A. P.-C.)

**6-Aminoquinoline—Contribution to the Preparation and Chemistry of.** Experimental work was undertaken with the idea that para or 6-aminoquinoline might serve as a source of the 5,6-quinoline quinone. It was found that good yields of 6-aminoquinoline are produced by reduction of the corresponding nitro compound with stannous chloride and decomposition of the tin double salt and extraction with ether. The amino compound is readily diazotized; attempts to convert the diazonium compound to the hydroxy compound failed. Oxidation of the aminoquinoline did not yield the 5,6-quinone. 6-Aminoquinoline is not sulfonated by concentrated sulfuric acid or oleum of less than 20% but with chlorosulfonic acid it reacts readily.—GEORGE W. HARGREAVES, A. B. MARSHALL and W. W. WHORTON. *J. Am. Pharm. Assoc.*, 28 (1939), 140. (Z. M. C.)

**Antimony—Trivalent, Aromatic Compounds of.** Complex trivalent antimony compounds soluble in water are prepared by causing an organic antimonic compound to react with a benzene derivative containing at least two hydroxyl groups ortho to each other and at least one acid group capable of forming salts in the presence of a solvent and a basic substance in amount such that the final reaction is neutral.—HANS SCHMIDT, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,127,371, Aug. 16, 1938. (A. P.-C.)

***p*-Arsanilic Acid—New Derivatives of.** During the last few years a group of compounds of the general formula and with values of $n$ ranging from 0 to 8:




has been prepared. These compounds were in general obtained by condensing *p*-arsanilic acid with a derivative of a dibasic acid, usually the ester acid chloride, and converting the product into an amine according to the scheme: $AsO_3H_2.C_6H_4.NH_2 + ClOC.(CH_2)_n.COOR \rightarrow AsO_3H_2.C_6H_4.NH.CO.(CH_2)_n.COOR \rightarrow AsO_3H_2C_6H_4.NH.CO.(CH_2)_n.CONR_1R_2$. Nearly all the sodium salts of these amides proved to be trypanocidally active in mice and accordingly three of the most promising, namely, sodium malonaniloethylamide *p*-arsonate, sodium succinanilomethylamide *p*-arsonate, and sodium glutaranilodimethylamide *p*-arsonate were chosen for further trial on rabbits. Of these three compounds the succinyl derivative, now known as neocryl, was eventually selected for clinical trial.—G. T. MORGAN and E. WALTON. *Pharm. J.*, 139 (1937), 296. (W. B. B.)

**Azoproteins—Chemotherapeutic Compounds of, with Heavy Metals.** *2,128,201*—Various therapeutic compounds are obtained from albuminous materials such as serum, serum fractions, casein, etc., and metal compounds such as *o*-auromercapto-*p*-aminobenzoic acid, *o*-argentomercapto-*p*-aminobenzoic acid, cadmium-1-amino-3,4-mercaptobenzimidazole, or silver, copper, zinc, iron, cobalt, lead, mercury or bismuth compounds, by diazotizing and coupling according to details of procedure that are described. *2,128,202*—Various therapeutic compounds of antimony with azoproteins are prepared by diazotizing an amine of the benzene series such as tartranilic acid, 4-acetylamino-2-chlorobenzene-1-stibonic acid or the like, coupling the diazotate with horse serum or other suitable albuminous material, and causing the resulting product to react with an antimony compound. Various examples with details are described.—MAX BOCKMÜHL, WILLY LUDWIG and PAUL VON MUTZENBECHER, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,128,201 and 2,128,202, Aug. 23, 1938. (A. P. C.)

**Benzylidene Derivatives—Isomerization of. I.** The red dibenzylidene compound obtained by condensing benzaldehyde with 4:6-dianilino-1:3-diaminobenzene, when boiled with alcohol, isomerizes to a yellowish white substance, which is not hydrolyzed by the action of dilute acids. Similarly, the benzylidene compounds, prepared by condensing other aromatic aldehydes

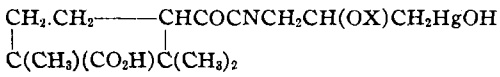
with the above diamine and with 4:6-*o*-toluidino-1:3-diaminobenzene, undergo isomerization, whereas the dibenzylidene derivative of 4:6-mesidino-1:2-diaminobenzene remains unchanged. The results are interpreted on the basis of the formation of derivatives of dihydrofluorindene.—H. S. JOIS, A. KUPPUSAMI and B. L. MANJUNATH. *J. Indian Chem. Soc.*, 16 (1939), 43.

(F. J. S.)

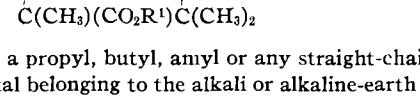
**Benzyloxyalkyl and Hydroxyalkyl Ethers—Manufacture of, of Cinchona Alkaloids.** Cinchona alkaloids containing phenolic OH are treated with a benzyloxyalkyl arylsulfonate, or their chloroalkyl ethers are condensed with $CH_2Ph.ONa$. The products are hydrolyzed by dilute acids to hydroxyalkyl ethers. In examples, β-benzyloxyethylapocupreine is prepared from apocupreine by benzylation of its $Cl.(CH_2)_2$ ether, and by its interaction both with $PhSO_3.(CH_2)_2.O.CH_2Ph$ and with $p\text{-}C_6H_4Me.SO_3.(CH_2)_2.O.CH_2Ph$; it is hydrolyzed by 10% aqueous hydrochloric acid to β-hydroxyethylapocupreine. β-Benzyloxyethyl- and β-hydroxyethyl-hydrocupreine, γ-benzyloxypropyl-, γ-hydroxypropyl-, α-methyl-β-benzyloxyethyl-, and α-methyl-β-hydroxyethyl- apocupreine are similarly prepared. The products are claimed to be of value against pneumococci.—C. L. BUTLER, A. G. RENFREW and L. H. CRETCHER. Brit. pat., 491,351; through *J. Soc. Chem. Ind.*, 11 (1938), 1366. (E. G. V.)

**Bromine—Sensitive Detection of Organically Combined.** Concentrated aqueous solutions of potassium bromide and copper sulfate give mixtures the color of which changes from yellow or brown to intense purple on the addition of a little concentrated sulfuric acid. This color is visible with 0.5 mg. of bromine per liter. When a few drops is placed on pure filter paper dried and moistened with sulfuric acid (1:1), a brown-violet ring appears, even at the dilution mentioned. The sulfuric acid liberates hydrobromic acid, which then forms the compound $HCuBr_3$, already described by Sabatier. To detect bromine in a rubber product, treat the latter with hot aqueous potassium hydroxide, filter, add a drop of copper sulfate solution and 2 drops of concentrated sulfuric acid. Brominated rubber gives a violet color, which is not disturbed by traces of chlorine (from factice, cold vulcanization, etc.). The reaction can also be utilized under suitable conditions for detecting copper, in which case 0.05 mg. of copper can be detected per liter by a brown-violet ring on paper. The two reactions: $KBr + CuBr_2 \rightleftarrows KCuBr_3$ and $HBr + CuBr_2 \rightleftarrows HCuBr_3$, represent equilibria which are displaced to the right by an increase in concentration or temperature. The second reaction depends also on the volatility of hydrobromic acid and, by heating, the color disappears and brown cupric bromide is formed. Excess sulfuric acid also destroys the color by displacing the equilibria to the left. Spectroscopically the dilute violet solutions show faint bands in the red at 6000 A., dark bands in the green between 5500 and 4400 A. and transmit radiation beyond 4400 A.—F. KIRCHHOF. *Kautschuk*, 14 (1938), 163; through *Chem. Abstr.*, 33 (1939), 942. (F. J. S.)

**Camphoramic Acids—Therapeutic Mercury Compounds of.** In the formula,



X is a methyl, ethyl, propyl or isopropyl radical. In the formula



X is as stated above; R is a propyl, butyl, amyl or any straight-chain aliphatic residue; and $R^1$ is either hydrogen or a metal belonging to the alkali or alkaline-earth group or any other metal of an atomic weight below 56. These compounds are good diuretics, particularly when mixed with an acidic group such as theophylline or theobromine, to neutralize the alkalinity of the sodium salt, and are produced by dissolving mercuric acid or mercuric chloride in methyl, ethyl, propyl or isopropyl alcohol and treating this solution with a camphormic acid having an unsaturated side chain.—NICHOLAS M. MOLNAR. U. S. pat. 2,117,901, May 17, 1938. (A. P.-C.)

**Chlorocarbonic and Carbamic Acids—Beta-Alkoxy Ethyl Esters of.** The beta-alkoxyethanols were prepared by treating ethylene oxide with the desired alcohol in the presence of a small amount of sulfuric acid as a catalyst, except in the cases of the tertiary butoxy and tertiary amoxy ethanols for which aluminum fluosilicate was used as a catalyst. It was found that the beta-ethoxyethyl carbamate is less active and less toxic than urethan and that the isomers of

butoxy and amoxy derivatives are more active and more toxic then urethan.—H. G. ASHBURN, A. R. COLLETT and C. L. LAZZELL. *J. Am. Chem. Soc.*, 60 (1938), 2933. (E. B. S.)

**3,5-Cholestadiene—New Method for the Preparation of.** Nine-tenths of a gram of pseudocholestene dibromide was dissolved in 20 cc. of pyridine containing 18% silver nitrate. The reaction was kept in the dark at room temperature for one month. The solution was then diluted with water, acidified with sulfuric acid and extracted with ether. The residue obtained on evaporation of the ether extract was recrystallized from a mixture of alcohol and ether. The diene thus prepared gave a positive reaction with Rosenheim's reagent and with antimony trichloride. Mixed with a sample of cholesterilene, prepared from cholesterol, it gave no depression of the melting point.—KENZO HATTORI. *J. Am. Chem. Soc.*, 60 (1938), 3082. (E. B. S.)

**Cinchonic Acid—New Synthesis of.** The synthesis comprises three stages: (1) Treatment with concentrated sulfuric acid of the syrup resulting from the condensation of oxalic ester with *N*-methylacetanilide; there is formed ethyl 1-methyl-2-quinolone-4-carboxylate in 73% yield. (2) Chlorination of this compound to produce ethyl 2-chlorocinchonate, in 83% yield. (3) Reduction of the latter into cinchonic acid by means of stannous chloride and concentrated hydrochloric acid, the yield being 72%.—E. THIELEPAPE. *Ber.*, 71 (1938), 387–400; through *Chimie & Industrie*, 40 (1938), 311. (A. P.-C.)

**Circulatory Stimulants—Amide Derivatives of Isoxazole Carboxylic Acids as.** Details are given of the production of the methyl anilide of 3,5-dimethylisoxazole-4-carboxylic acid (melting point 42° to 43° C.), the methyl anilide of 5-methylisoxazole-3-carboxylic acid (melting point 76° to 77° C.), the methylbenzylamide of 3,5-dimethylisoxazole-4-carboxylic acid (melting-point 51° to 52° C.), *p*-dimethylaminophenylbenzeneamide of 3,5-diemthylisoxazole-4-carboxylic acid hydrochloride (melting point 198° to 199° C.), 3,5-dimethylisoxazole-4-carboxylic acid-2′-methylpiperidide (melting point 40° to 41° C.), 3,5-dimethylisoxazole-4-carboxylic acid-2′,6′-dimethylpiperidide (boils at 192° to 195° C. under 11-mm. pressure), 3,5-dimethyl-4-isoxazole-*N*-ethylurethan (melting point 117° C.), and the vinyldiacctoneamide of 3,5-dimethylisoxazole-4-carboxylic acid (melting point 116° C.).—MAX HOFFER, assignor to HOFFMANN-LAROCHE INC. U. S. pat. 2,126,329, Aug. 9, 1938. (A. P.-C.)

**Coumarins—Synthesis of.** Resacetophenone was condensed with bromoacetic ester in the presence of zinc (Reformatsky), giving the alcohol ester, which on dehydration with $POCl_3$ and subsequent ring closure gave 7-hydroxy-4-methylcoumarin. By using ethyl bromopropionate, 7-hydroxy-3,4-dimethylcoumarin was prepared. This method will be used for the synthesis of 7-hydroxy-4,5-dimethylcoumarin from orsacetophenone and bromoacetic ester.—R. D. DESAI and M. EKHLAS. *Science and Culture*, 4 (1938), 64; through *Chem. Abstr.*, 33 (1939), 549. (F. J. S.)

**5-5-Crotyl Alkyl Barbituric Acids.** A group of 5-5-crotyl alkyl barbituric acid derivatives were prepared by treating the sodium salts of 5-monoalkyl barbituric acids with crotyl bromide. Two 5-5-crotyl ethyl barbituric acids were thus prepared which are believed to be the *cis* and *trans* isomers. These derivatives produced an anesthesia of short duration.—W. J. DORAN and H. A. SHONLE. *J. Am. Chem. Soc.*, 60 (1938), 2880. (E. B. S.)

**Diferuloyl-α,β-Ethane Homologous with Curcumin—Synthesis of.** Diferuloyl-α,β-ethane was synthesized and its different behavior from that of natural curcumin was observed.—W. LAMPE and J. SWIERCZEWSKI. *Roczniki Chem.*, 18 (1938), 120–124; through *Chem. Abstr.*, 33 (1939), 551. (E. G. V.)

**2,6-Dimethylheptane. Its Synthesis, Properties and Comparison with an Isononane from Petroleum.** An isononane boiling at 135.2° C. was tentatively identified as 2,6-dimethylheptane at the time of its isolation from a midcontinent petroleum. 2,6-Dimethylheptane has been synthesized by means of the Grignard reaction and the properties of a purified fraction compared with those of the isononane from petroleum. The properties of the isononane from petroleum are in good accord with those of 2,6-dimethylheptane. The properties of 2,6-dimethylheptane (extrapolated to a purity of 100.0 mole per cent from measurements actually made on material of purity 99.6 mole per cent) are as follows: Boiling point at 760 mm. Hg. 135.21° ± 0.02° C.; freezing point in air, −102.95 ± 0.10° C.; density at 20° C., 0.70891 ± 0.00003 Gm. per cc.; refractive index, $n_D^{20}$ 1.40073 ± 0.00005; critical solution temperature in aniline, 80.0° ± 0.3° C.—J. D. WHITE, F. W. ROSE, JR., G. CALINGAERT and H. SOROOS. *J. Research Natl. Bur. Standards*, 22 (1939), 315. (F. J. S.)