PHARMACEUTICAL ABSTRACTS

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PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

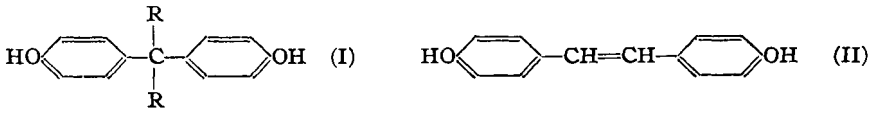
PHARMACOLOGY (*Continued*)

Mistletoe—Two Therapeutically Active Constituents of Northern. A glacial acetic acid extract poured into water-free acetone yields a precipitate which has a lethal dose of 0.008–0.012 Gm. per Kg. (dogs) while a carefully prepared aqueous extract has a dose of 0.064 Gm. The precipitated portion lowered the blood pressure as well as displaying a heart action. It was found that by means of an alcoholic cholesterol solution the constituent which lowered blood pressure (A) was precipitated from the aqueous solution and the heart acting component (B) was in the filtrate. A was further purified and was found to be easily soluble in water in a concentration of 0.5 mg. It produced a pronounced lowering of blood pressure; acid hydrolysis gave a product which reduced Fehling's solution and the water insoluble aglycone contained nitrogen giving a precipitate with Mayer's reagent and had a hemolytic index of 1:800. The filtrate containing B was treated with glacial acetic acid and precipitated with acetone and was obtained as a yellowish white substance which lost its color in air; its action is cardiac with a lethal dose of 0.004 Gm. per Kg. (dogs), it is easily soluble in water with an acid reaction; after hydrolysis, it reduces Fehling's solution and gives only a slight precipitate with Mayer's reagent; hemolytic index was 1:1800. In the hydrolysates were detected glucoronic acid, galactose, an acid, $C_{15}H_{22}O_8$, containing several hydroxy groups and a fourth substance (acetyl ester melting at 54° C.). The nitrogen compound upon dehydration with selenium yields 1,3-dimethyl-naphthalein, melting at 118° C. Eleven references are given.—KARL WINTERFELD. *Scientia Pharm.*, 9 (1938), 105–106. (H. M. B.)

Nitroglycerol—Pharmacological Action of. A study of the rate of formation *in vitro* of methemoglobin by the action of nitroglycerol on solutions of hemoglobin, and of the values of the nitroglycerol:hemoglobin ratio at which conversion of hemoglobin into methemoglobin takes place. Conclusions: The rate of formation of methemoglobin (at least up to 70% of the hemoglobin present in the solution) can be represented by the formula of monomolecular reactions. In this formula the value of K is 4.14×10^4 for a nitroglycerol:hemoglobin molecular ratio of 0.32; it is 8.61×10^4 for a ratio of 0.66, 10.24×10^4 for a ratio of 1, and 14.50×10^4 for a ratio of 1.33. If the molecular concentration of nitroglycerol is calculated from the nitro groups which it contains, it is seen that the value of K, indicating the velocity of the reaction, increases with the ratio R of the molecular concentration of the nitro groups to the concentration of hemoglobin. With values of R from 1 to 2, K is proportional to R; for higher values of R, K continues to increase, but at a rate which is less than directly proportional. If nitroglycerol is treated with an excess of hemoglobin, methemoglobin is formed in the proportion of 3 hemoglobin per nitroglycerol molecule, that is, the reaction stops when each nitro group has combined with one hemoglobin molecule In contact with red corpuscles there is formed endoglobular methemoglobin without the least trace of hemolysis. The mechanism of such formation is similar to that observed with hemoglobin solutions, but the velocity of the reaction is considerably lowered.—G. ORESTANO. *Arch. Ital. Sci. Farm.*, 6 (1937), 285–302; through *Chimie & Industrie*, 40 (1938), 307. (A. P.-C.)

Oestrogenic Activity and Molecular Structure. The testing of synthetic substances for oestrogenic activity has been extended to compounds not possessing the phenanthrene ring system, and the results have shown that such a structure is not an essential for this property. A study of a number of substituted acenaphthenes revealed that 1:2-dihydroxy-1:2-di-α-naphthylacenaphthene possessed considerable activity, and this led to an examination of the simpler aromatic carbinols. Of these, diphenyl-α-naphthylcarbinol was most active, while diphenyl-β-naphthylcarbinol and triphenylcarbinol were without activity. The effect of hydroxy groups in the aromatic nucleus was then studied, and many potent substances were found in derivatives of 4:4′-dihydroxy-diphenyl methane (I: R, R_1 = H). The introduction of alkyl groups on the central carbon atom (I:R, R_1 = alkyl) of this compound produced no change in activity, whereas the introduction of a single phenyl group (R = phenyl, R_1 = alkyl) had a distinct depressant effect on the potency and the diphenyl derivative (R, R_1 = phenyl) was completely inert. 4:4′-Dihydroxy-benzophenone was less active than the corresponding diphenylmethane compound.

Variation of the linkage between the two phenol nuclei produced many powerful agents, particularly 4:4′-dihydroxystilbene (II) which possessed considerable oestrogenic power in doses of 5 mg.



Stilbene itself was also active. Finally a number of similarly constructed compounds, containing one aromatic ring only, were tested, and some of them found to be active, these including *p*-propylphenol and *p*-propenylphenol (anol). The very great activity formerly attributed to the latter compound was found to be due to contamination with some substance arising during its preparation by demethylation of anethole, possibly a polymer of anol.—E. C. DODDS and W. LAWSON. *Proc. Roy. Soc. B.*, 125 (1938), 222; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 309.
(S. W. G.)

Pancreas—Effect of External Secretion of, upon Blood Lipids of Completely Depancreatized Dogs Maintained with Insulin. The external secretion of the pancreas contains a substance that causes a marked rise above the normal in the blood lipid levels of the depancreatized dog maintained with insulin.—M. L. MONTGOMERY, C. ENTENMAN and I. L. CHAIKOFF. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 6. (A. E. M.)

Pentothal with Nitrous Oxide and Oxygen. Anesthesia by pentothal combined with nitrous oxide and oxygen has been induced in 236 cases. Operations performed include tonsillectomy, orthopedic operations, major gynecological operations, other lower abdominal operations, perineal and rectal operations. Vomiting is greatly reduced, and the condition of patients is better than after any other form of general anesthesia.—G. ORGANE and R. J. B. BROAD. *Lancet*, 235 (1938), 1170. (W. H. H.)

Peridural Anesthesia. According to the author this is the ideal method of anesthesia for the great majority of urological operations. Many advantages over spinal (intradural) anesthesia are claimed, and in 1000 operations under peridural anesthesia there were no fatalities attributable to the anesthetic. A fall of blood pressure with collapse of a grave nature did occur in eleven cases, but all responded to the injection of coramine and similar drugs. The anesthesia lasts for two and a half to three hours. The technic is said to be simple.—C. AIKEN. *Zeitsch. für Urologie*, 32 (1938), 649; through *Brit. Med. J.*, 4066 (1938), 1244H. (W. H. H.)

Piperazine—Iodine Derivative of, Pharmacological Study of. "Iodazine," resulting from the combination of one atom of iodine with one molecule of piperazine, melts at 233° C. and contains 59.538% of iodine. It is strongly dissociable in aqueous solution. Iodazine is eliminated in the urine in approximately the same time as is required for the elimination of sodium iodide. Presence of a molecule of piperazine confers on the product characteristic pharmacological properties. Independently of its diuretic action, iodazine possesses an exciting effect on the terminal elements of the parasympathetic, which action is revealed by a marked hypotensive action. This effect is not the result of a depressant action on the heart. In large doses iodazine produces death by respiratory paralysis. From a therapeutic standpoint it is interesting to note that the product is tolerated perfectly at the normal doses used for iodine, and that it permits of avoiding the phenomena of iodism on account of the rapidity with which it is eliminated through the kidneys.—R. BENIGNI. *Arch. Farm. Sper.*, 64 (1937), 193–213; through *Chimie & Industrie*, 40 (1938), 307. (A. P.-C.)

Piperidomethyl-3-Benzodioxane (933F)—Action of, upon the Isolated Intestine of the Guinea Pig. 933F produced a relaxation of the smooth muscle of the isolated intestine of the guinea pig. It diminished and sometimes inverted the inhibitory action of adrenaline upon the intestine.—R. HAZARD and E. MOISSET DE ESPANES. *Arch. intern. pharmacodynamie*, 59 (1938), 457. (W. H. H.)

Pituitary Extracts, Posterior Lobe—Error of the Oxytocic Assay of. The error was calculated from the deviations of the results of individual experiments from the mean result for each extract. The calculations were carried out as follows: The mean result for each extract was calculated and the deviations from the mean squared and summed; this was divided by the square of the mean result so that the deviations were calculated as proportions. The sum of the squares of all the deviations calculated in this way was divided by the total number of degrees of freedom

$= \Sigma(n - 1) = 50$, and the square root of the result was taken as an estimate of the standard error of the test The Standard Error of a satisfactory estimation of the oxytocic principle in extracts of the posterior lobe of the pituitary gland obtained on one uterus under defined conditions is estimated as 7.7%.—J. H. GADDUM. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 697–699.
(S. W. G.)

Pregnancy Test—Xenopus. The xenopus test allows a diagnosis of early pregnancy to be made within less than twenty-four hours. No animals need be killed to obtain the result. The reliability of the test does not seem to differ from that of the Aschheim-Zondek or the Friedman reaction. The technic of this test is comparatively simple and very suitable for experimental work on the anterior pituitary-like hormone of pregnancy.—E. R. ELKAN. *Brit. Med. J.*, 4067 (1938), 1253. (W. H. H.)

Progesterone—Local Action of, upon the Mucous Membrane of the Uterus of the Infantile Rabbit. The author presents a note of Mussio-Fournier, Albrieux, Morato and Grosso who showed that the intra-uterine injection of progesterone produced upon the prepared uterus of the infantile rabbit typical pregravid modifications of the mucous membrane which are more intense than when the hormone is injected by sub-serous, subcutaneous or intraperitoneal injection; the intra-uterine injection was made in the opening of a uterine horn which was ligated to avoid reflux of the solution; the distension of the horn by the injected liquid diminished its action. By this procedure one has a test for the yellow body hormone like the tests of Clauberg and Corner, however more rapid and more sensitive than the latter.—SOUQUES. *Acad. de Med.*, Nov. 8, 1938; through *Presse Medicale*, 92 (1938), 1696. (W. H. H.)

Sensibamine, Ergotamine and Ergotaminine—Action of, upon Diuresis. Ergotamine diminishes the flow of urine, as was the sort of diuresis considered. Ergotaminine augments the quantity of urine emitted per fast, after the ingestion of water. This alkaloid on the contrary reduced the quantity of urine emitted after the ingestion of a solution of sodium chloride or urea. Sensibamine, that is the equimolecular combination of ergotamine and ergotaminine, has a variable action upon water diuresis more often diminishing, but increasing it a little at other times. Sensibamine augments, in the majority of cases, the quantity of urine emitted per fast also after the ingestion of sodium chloride or urea solutions. Sometimes it does not modify the flow of urine during the fast and diminishes the elimination of consecutive urine after the ingestion of sodium chloride or urea. There gradual diminution of the content in urine of ascertained chlorides when the aqueous diuresis is hindered by ergotamine, ergotaminine and sensibamine. The gradual diminution of the content of chlorides in the urine which is produced by urea diuresis is not modified by ergotamine. It does not undergo modifications or is hindered by ergotaminine or sensibamine. The gradual diminution in content of urea in urine is observed after aqueous diuresis is hindered by ergotamine, exaggerated by ergotaminine, sometimes hindered and sometimes exaggerated by sensibamine. The gradual diminution of urea content in urine takes place when the sodium chloride diuresis is hindered by ergotamine, ergotaminine and sensibamine. The gradual augmentation in content of chlorides in urine noted when fasting diuresis is hindered by ergotamine is not appreciably modified by ergotaminine or sensibamine. The gradual increase of chlorides in the urine ascertained from sodium chloride diuresis does not undergo real changes or is it accentuated under the influence of ergotamine. Ergotaminine hinders this phenomena. It is slightly hindered or slightly accentuated by sensibamine. The gradual augmentation of the content of urea in urine observed during fasting is not modified either by ergotamine, ergotaminine or sensibamine. The gradual increase in the rate of urea in urine which is produced after urea diuresis is increased by ergotamine and ergotaminine; it is hindered by sensibamine.—E. ZUNZ and O. VESSELOVSKY. *Arch. inter. pharmacodynamie*, 60 (1938), 301. (W. H. H.)

Skimmia Laureola Hook F.—A Preliminary Note on the Chemistry and Pharmacology of. *S. laureola* is an evergreen shrub of the natural order *Rutaceæ* which is found throughout the temperate Himalayas. The leaves of this plant were said to be burnt near smallpox patients for curative effect. Previous investigation had shown that the leaves of *S. laureola* contain an essential oil composed mainly of the ester, linalyl acetate, along with alcohols and terpenes. Since an alkaloid, skimmianine, and a glucoside, skimmin, had been isolated from *S. japonica* grown in Japan the authors attempted to isolate the same compounds from *S. laureola*. Attempts to isolate a glucoside were unsuccessful and it was concluded that the alkaloid is without specific pharmaco-

logical action.—R. N. CHOPRA, R. G. CHATTERJEE, N. DE and S. GHOSH. *Indian J. Med. Research*, 26 (1938), through *J. Trop. Med. Hyg.*, 42 (1939), 135–136. (W. T. S.)

Soaps—Pharmacology of. U. S. P. XI does not require that soap be made from olive oil, because there are no chemical means of differentiating between such a soap and one made from mixtures of various oils. The wisdom of this is questioned because the soaps may have different irritant effects on the skin. A study of the action of soaps on red blood cells and earthworms has been made as an approach to the problem. The chemistry of the soaps is considered, method for the hemolytic tests described, results shown by graph and discussed. Earthworms were used to determine toxicity. Evidence supports the view that the ultimate lytic component of soap solutions is the fatty acid molecule, that it acts as such because of some intermediate product of hydrolysis like acid soap. The typical hemolytic curve has only moderate hemolytic power in the extreme acid range and as H-ion concentration is reduced hemolytic values rise. With further reduction lytic values are lowered. The rises and succeeding falls of the more soluble sodium and potassium soaps are at higher H-ion concentration than those of less soluble soaps. Sodium soaps of the saturated fatty acids arranged as to lytic values taken at a given temperature are sodium laurate, sodium myristate, sodium palmitate, sodium stearate, but this order does not hold at a given p_H. At a given p_H, increase in temperature enhances hemolytic reaction of less soluble soaps. Hemolytic values of potassium and sodium soaps are similar. Sodium laurate, of the soaps examined, is most toxic to earthworms; toxicity of others appearing in the following order: sodium myristate, sodium oleate, sodium ricinoleate, sodium palmitate and sodium stearate.—LEROY D. EDWARDS. *J. Am. Pharm. Assoc.*, 28 (1939), 209. (Z. M. C.)

Sodium Ethyl Thiobarbiturate—Use of, as a Surgical Anesthetic. The author recommended sodium ethyl thiobarbiturate (pentothal sodium) as a basic intravenous anesthetic in certain types of surgery. A method was given for preparing solutions of pentothal sodium for injection and a procedure was outlined whereby these solutions can be safely administered. In the case of an emergency coramine was found to be the most effective antidote.—E. PAYNE PALMER. *Southern Med. Jour.*, 32 (1939), 290. (W. T. S.)

Sodium Isoamyl Ethyl Thiobarbiturate—Anesthetic Efficiency of. The anesthetic efficiency of this compound, or sodium thio-ethamyl, has been studied experimentally on rats and cats, and compared with that of sodium amytal, of which it is the sulfur derivative. Sodium thioethamyl shows a greater anesthetic range of safety and more consistent in effect than its non-sulfurous homologue. A study of poisonous doses has shown the value of atropine and ephedrine, as well as that of the usual analeptics. Spasm of the larynx has been found to be of importance in the causation of asphyxia as well as central depression, and it is effectively combated by intubation.—C. L. BURSTEIN and E. A. ROVENSTINE. *Anesthesia and Analgesia*, 17 (1938); through *Brit. Med. J.*, 4056 (1938), 728F. (W. H. H.)

Sodium Thio-Ethamyl Anesthesia. A preliminary series of one hundred administrations has been carried out with the newly introduced anesthetic. Cases were selected, and in general it was confined to those requiring only brief anesthesia. In general the results were comparable to those of other short acting barbiturates given intravenously. A note of caution is sounded both as to the conclusions to be drawn from this report and as to the intravenous use of barbiturates in general.—S. C. CULLEN and E. A. ROVENSTINE. *Anesthesia and Analgesia*, 17 (1938); through *Brit. Med. J.*, 4056 (1938), 728F. (W. H. H.)

Sorbitol and Sucrose—Effect of, on Cerebrospinal Fluid Pressure and Urine Output. Parallel experiments have been carried out on 9 pairs of dogs. 50% sorbitol, in a dosage of 2.5 cc./-Kg., injected intravenously at a rate of 7 cc./minute causes a more marked and protracted fall in cerebrospinal fluid pressure, and a greater diuresis, than does an equivalent amount of sucrose.—HENRY G. SCHWARTZ and ROBERT ELMAN. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 506. (A. E. M.)

Stilbosterols—Oestrogenic Activity of. The author gives the results of tests upon the series of compounds in which the ethyl groups of diethylstilbosterol (4:4′-dihydroxy-α-β-diethylstilbene) is replaced by other substituents such as hydrogen, methyl, propyl and butyl. The activity of diethylstilbosterol is 3,000,000 units per Gm. or more than four times that of oestrone (700,000 units per Gm.). Substitution of one ethyl group by methyl reduces the activity to 1,000,000 units and by *n*-propyl to 300,000 units. When both ethyl groups are replaced by methyl and *n*-propyl, respectively, the activity falls to 40,000 units and 50,000 units per Gm. On the other

hand, the activity of dihydroxydiphenylbutadienes attains a maximum with 4:4′-dihydroxy-α:δ diphenyl-β:δ hexadiene which appears to be as active as diethylstilbosterol.—E. C. DODDS and co-workers. *Nature*, No. 3583, page 34; through *Chemist and Druggist*, 129 (1938), 240. (A. C. DeD.)

K-Strophantosid—Influence of, on Elasticity of the Tortoise Ventricle. The cardiac glucoside *K*-strophantosid has no effect on the diastolic elasticity of the tortoise ventricle with doses and within times which result in large increases in tension set up and work done. Larger doses cause large increase in elasticity, up to the point of contracture, but when this occurs, tension and work fall off. The increase in work is not necessarily correlated with diastolic elasticity changes. Inferences from observations on the failing mammalian heart are confused by the fact that anoxia itself alters elasticity and therefore the increased efficiency produced by digitalis would itself be expected to increase the diastolic elasticity. Such an indirect effect is a secondary result of the action of the drug on work performance.—HERMAN KABAT and MAURICE B. VISSCHER. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 8. (A. E. M.)

Strychnine as an Activator of Adrenalinic Substances. Strychnine, like cocaine, increases the hypertension produced by adrenaline and related drugs. It acts by directly sensitizing the vasoconstrictor nerves to sympathomimetic agents and by suppressing the sinocarotid hypotensor reflex.—H. BUSQUET and CH. BISCHNIAC. *Compt. rend. soc. biol.*, 127 (1938), 281–284; through *Chimie & Industrie*, 40 (1938), 307. (A. P.-C.)

Testosterone—Effect of, on Pituitary and Mammary Gland. The daily injections of 200 gamma testosterone propionate for 15 days into sexually mature spayed rats augmented the lactogen content of their pituitary gland about 40%, caused no change in the pituitary weight, induced an extensive development of the lobule-alveolar system of the mammary glands and initiated secretory activity. It is suggested that the action of testosterone on the pituitary gland is sufficient to account for the hyperplasia and hypertrophy of the mammary glands of males.—R. P. REECE and J. P. MIXNER. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 86. (A. E. M.)

Tetraethylammonium Camphosulfonate. Tetraethylammonium camphosulfonate exerted a motor-exciting effect on the nervous system of experimental animals and stimulated cardiac function and respiration. It was less toxic than the corresponding methylate.—E. TRABUCCHI. *Arch. farmacol. sper.*, 64 (1937), 75–88; through *Chimie & Industrie*, 40 (1938), 303. (A. P.-C.)

Thyroid—Assay of, on Tadpoles. In order to compare the activity of two samples of thyroid gland, a weighed quantity of each sample in No. 60 to 80 powder is shaken with distilled water to give a suspension containing either 1 or 2 mg. in 20 cc. The total volume of suspension prepared on any given day should not be much more than will be used on that day. In each of a series of 48 dry numbered boiling tubes is placed 20 cc. of the first suspension. Another series of 48 tubes is prepared containing 10 cc. of the suspension and 10 cc. of distilled water, and a third series of 48 tubes containing 5 and 15 cc., respectively. The same process is repeated with the suspension of the second sample. If time is limited, or if several samples are being assayed simultaneously, the assay may be divided into two halves, putting 24 tadpoles on each dose and repeating a day or two later. Fresh suspensions of each powder must be prepared for each half assay. Tadpoles are taken from a stock which has been growing steadily on a diet of coagulated white of egg, and chosen so that the average length on each dose is approximately the same and lies between 20 and 28 mm. Each tadpole after being measured is placed in a separate tube containing a known volume of thyroid suspension and kept at room temperature. No food is supplied. As the tadpole swims round the tube it should stir the water and keep the powder from settling to the bottom. At the end of 24 hours each tadpole is rinsed with water to remove any adherent powder and transferred to a clean boiling tube of water, where it is fed on coagulated white of egg. The tops of the boiling tubes are covered with muslin net to facilitate the daily rinsing and changing of the water. Measurements are made daily of the length of some of the tadpoles on the highest dose in order to discover when diminution in length commences. As soon as this occurs the whole of the tadpoles must be measured daily until a suitable effect is obtained, which may take two or three days. The average diminution in length, calculated as a percentage of the initial length, should lie between 15 and 30 representing a loss of 3.5 to 7 mm. in tadpoles whose initial length was 24 mm. Individual tadpoles may lose more than half their length. If too large a dose is given, as may happen with an unknown sample, a number of the tadpoles will die before those receiving lower doses have reached a suitable effect. The use of three different doses of each sample allows the

results of the top dose to be discarded without invalidating the assay. The calculation of the relative potencies is based on the assumption that the graph relating the effect produced by the thyroid powder to the logarithm of the dose is, within certain limits, a straight line. This assumption, which has already been proved correct in a wide variety of bioassays, is supported by the findings in a number of experiments on different thyroid powders in which a straight line log. dose/-effect relation was obtained with three doses either of 4, 2 and 1; 2, 1 and 0.5; or 1, 0.5 and 0.25 mg. per tadpole. The effects of the two thyroid powders are plotted on the same diagram against the logarithm of the dose. The two log. dose/effect graphs should usually be parallel straight lines, so that a horizontal line drawn at any level which cuts both graphs will give the ratio of the relative potencies and satisfactory results can be obtained with powders differing widely in activity where the lines are a considerable distance apart. Examples are given of graphs obtained and the calculation of relative potencies.—F. WOKES. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 521–531. (S. W. G.)

Trichlorethanol—Pharmacological Properties of. The action of trichlorethanol has been studied experimentally, and compared with that of tribromethanol, alone and in solution in amylene hydrate. Trichlorethanol has been shown to be slightly less toxic and to have a greater hypnotic effect than tribromethanol; apart from the fact that it occasionally causes extrasystoles, its effects are in general very similar to those of tribromethanol.—H. MOLITOR and H. ROBINSON. *Current Research in Anesth. and Analg.*, 17 (1938), 258; through *Brit. Med. J.*, 4066 (1938), 1244F. (W. H. H.)

Triphenylethylene Tested on Capons. It has been shown by Robson and Schönberg that the synthetic substance triphenylethylene is highly oestrogenic when tested on ovariectomized mice; its ability to inhibit the specific effects of progesterone on the endometrium and muscle of the rabbit's uterus demonstrates that it possesses many of the attributes of oestrin. Triphenylethylene causes hen-feathering in the brown Leghorn capon, as does oestrin and diethylstiboestrin. In the amounts used it had no effect on the old English game bantams (black-red), which have a low sensitivity to oestrin.—A. M. HAIN. *Brit. Med. J.*, 4063 (1938), 1043. (W. H. H.)

Vitamin C and Toxins. III. Effect of Diphtheria Toxin on Vitamin C Metabolism. A decrease in the ascorbic acid content of the blood, adrenal, liver and kidney of guinea pigs was observed after the injection of 0.5 M.L.D. of diphtheria toxin. During the period of intoxication a greater amount of ascorbic acid has been found to be excreted in the urine in a combined state.—B. GHOSH. *J. Indian Chem. Soc.*, 16 (1939), 241. (F. J. S.)

Wheat Germ Oil—Effect of Ether Peroxides in, on Production of Tumors in Rats. The factor in crude wheat germ oil that produces tumor in rats is not formed by the action of ether peroxides.—HARRY G. DAY, J. ERNESTINE BECKER and E. V. MCCOLLUM. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 21. (A. E. M.)

TOXICOLOGY

Adrenaline and Cocaine—Toxicity of Mixtures of. The results obtained are divided into three sections: Doses of 0.5, 1.0 and 1.5 Cg. of cocaine hydrochloride per Kg. of guinea pig were given with each different dose of adrenaline. (1) Doses of 0.25, 0.50 and 0.75 mg. of adrenaline per Kg. Neither cocaine nor adrenaline in the amounts used, when injected separately, are fatal. The mixture, however raises the mortality, but the increase in mortality does not vary directly with the increased dosage. (2) Doses of 1.0, 1.25 and 1.5 mg. of adrenaline per Kg. When the adrenaline only is administered to 4 animals 1 to 2 deaths occur. The addition of cocaine generally gives a higher proportion of fatalities, the increase being more or less regular. The surviving guinea pigs pass through a severe phase of intoxication. (3) Doses of 1.75, 2.0 and 2.5 mg. of adrenaline per Kg. The increase in dosage of adrenaline alone gives at first an increase then a relative diminution in toxicity. The addition of cocaine gives unexpected results: the toxicity remains the same or diminishes when increased doses of adrenaline are given with the same dose of cocaine. The surviving animals show few signs of poisoning. Further study is suggested.—R. HAZARD and A. MANGEOT. *J. pharm. chim.*, 28 (1938), 375–379. (S. W. G.)

2-(*p*-Aminobenzenesulfonamido) Pyridine—Toxicity of. Determination of the toxicity of this compound for mice and rats showed it to have about one-fourth the toxicity of sulfanilamide. Daily administration of 0.5 mg. per Gm. to rats for two weeks had no effect on the blood or urine. Similarly, doses of 1 Gm. administered daily for seven days to cats and dogs appeared to have no

effect on the blood, urine and general health. A daily dose of 4 mg. per Gm. (sixteen times the minimal effective dose for experimental infections in mice), given for two weeks, had an effect on the rate of growth of young rats comparable with that produced by a daily dose of 1 mg. per Gm. of sulfanilamide. A daily dose of 1 mg. per Gm. of M. and B. 693 caused no significant inhibition of growth. Sulfanilamide given in a daily dose of 1.5 mg. per Gm. for two weeks caused a large increase in the excretion of urinary porphyrin, accompanied by a decrease in the red cell count and deposition of hemosiderin in the spleen. 2-(*p*-Aminobenzenesulfonamido) pyridine given in twice and four times the dose had no such effect upon the hemopoietic system in causing a disturbance in pigment metabolism. The evidence shows that this substance has a big advantage over sulfanilamide in being much less toxic; and it does not produce porphyrinuria.—R. WIEN. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 217–224. (S. W. G.)

Animal and Vegetable Parasites—Product for the Destruction of. The product consists of an emulsion of aqueous solutions containing formaldehyde with a hydrophobic liquid and use of auxiliary emulsifying reagents.—DEUTSCHE GOLD-UND-SILBER-SCHEIDEANSTALT VORMALS ROESSLER. Belg. pat. 426,053, Feb. 28, 1938. (A. P.-C.)

Antiparasitic Compositions. The composition comprises a nicotine salt of a monosulfate of an aliphatic polyhydric alcohol partial fatty acid ester, the fatty acid radical containing between six and eighteen carbon atoms.—BENJAMIN R. HARRIS. U. S. pat. 2,134,917, Nov. 1, 1938. (A. P.-C.)

Arsenical Poisoning by Wallpaper—Evidence of, Not Conclusive. From a critical review (21 references) of the reports which have been made on the subject of poisoning by wallpapers containing arsenical pigments H. concluded that pathogenic molds rather than arsenic or any of its compounds were a contributing if not the prime cause of poisoning.—HAROLD ROBERT HAY. *J. Trop. Med. Hyg.*, 42 (1939), 126–131. (W. T. S.)

Benzene Intoxication—Chronic, Means for Preventing and Curing. Chronic benzene poisoning is always accompanied by a deficit of vitamin C (determination in the urine). Experiments show that the addition of this vitamin to the ration of rabbits considerably improves the condition of these animals when subjected to benzene; while the leucocyte count drops off sharply in the control animals shortly after injection of benzene, those which received vitamin C never showed this symptom and resisted infection. The hematopoietic organs remain intact, while in the controls there is observed a marked inactivity. On the basis of these results it would seem that vitamin C might constitute a remedy for, if not a preventive of benzene poisoning in man.—FRIEMANN. *Arbeitsschutz*, (1938), 5–6; through *Chimie & Industrie*, 40 (1938), 62. (A. P.-C.)

Benzyl Methyl Carbinamine (Benzedrine)—Effects of Toxic Doses of, in Man. Benzedrine is used extensively, and inhalers are used without medical supervision. Benzedrine sulfate used successfully in narcolepsy. Continuous inhalation can produce definite toxic effects characteristic of sympathomimetic excitation. Ephedrine and benzedrine are pharmacologically similar in toxic doses. Benzedrine in toxic doses is diuretic. Margin of safety of benzedrine is great in normal persons. Likelihood of addiction is quite possible; indiscriminate use is unwise.—SIDNEY P. WAUD. *J. Am. Med. Assoc.*, 110 (1938), 206. (G. S. G.)

Bordeaux Mixtures—Possibility of Replacing, by Products with Lower Copper Contents. The following two preparations were studied: (A) copper sulfate 200 Gm., citric acid 50 Gm., concentrated commercial solution of ferric chloride 5 cc., water 100 liters, sodium hydroxide or carbonate sufficient for neutralization; (B) copper sulfate 200 Gm., citric acid 50 Gm., commercial sulfuric acid 460 Gm., concentrated ferric chloride solution 5 cc., water 100 liters, slaked lime sufficient to neutralize. Available copper determination on A and B (considered at different p_H values) and on normally prepared Bordeaux mixtures showed that: A and B can have much higher available copper concentrations than ordinary Bordeaux mixtures of the same total copper concentration; A and B contain available copper at p_H's close to neutrality, contrary to Bordeaux mixtures which are active only in the acid or strongly alkaline range. Practical tests confirmed the satisfactory adhesiveness of the new products on leaves.—L. CASALE. *Italia Vinic. Agr.*, 27 (1937), 39–42, 53–55; through *Chimie & Industrie*, 39 (1938), 990. (A. P.-C.)

Bromide Intoxication. The possible dangers of bromide treatment are stressed and a description of the physical and mental effects of intoxication is given. The view is put forward that bromide intoxication can cause impairment of kidney function, many cases showing a raised blood urea, which falls when the intoxication disappears. The clinical picture is not protean, but

is of an organic reaction type. Several cases are reported. H. TOD and H. STALKER. *Edin. Med. J.*, 45 (1938), 561; through *Brit. Med. J.*, 4059 (1938), 874A. (W. H. H.)

Calcium and Magnesium in the Prophylaxis of Experimental Saturnism. Three lots of rabbits were subjected to the following treatments, respectively: (1). Intramuscular injection of 1 cc. of 1% lead acetate per kilo body weight; the animals died in 16 to 24 days. (2). Same treatment as (1) with simultaneous intravenous injection of 0.5 cc. of 10% calcium gluconate solution; only 1 animal died of saturnism; the remainder showed only a small decrease in weight, in hemoglobin content and in red blood corpuscle count; this decrease, however, persisted and became more pronounced on ceasing the treatment. (3). Same treatment as (1) with simultaneous intravenous injection of 0.5% magnesium sulfate; the animals supported the lead injections without any apparent signs of disease; there was only a slight decrease in weight and in hemoglobin content, which disappeared after stopping the treatment. Calcium does not seem to be indicated for the prophylaxis of saturnism, as it favors accumulation of lead in the system; magnesium, on the other hand, facilitates elimination of lead and protects the system against intoxication.—S. MAUGERI and C. SANTI. *Medicina Lavoro*, 29, 1 (1938), 1–14; through *Chimie & Industrie*, 40 (1938), 674. (A. P.-C.)

Chromium—Toxicology and Hygiene of. The toxicology of chromium compounds is reviewed. The following procedure for testing for chromium compounds in organs is given: The organs are mineralized by Deniges's nitro-sulfuric or Kahane's nitro-sulfo-perchloric methods. The final mixture is diluted and the last traces of nitrous products removed by boiling with a little urea or hydrazine sulfate. The liquid resulting from 200 Gm. of organs is diluted with water to 200 cc. so that the sulfuric acid present is less than 10%. Add 2 drops of 1% silver nitrate solution and bring to boiling. Remove the flame and add 20 cc. of 4% potassium persulfate solution to oxidize the chromium to chromate. Let stand for 10 minutes, then boil gently for 10 minutes to remove excess persulfate. If permanganate is present, add 2–3 drops of hydrochloric acid. Allow to cool, add 2 cc. of fresh 0.2% alcoholic solution of diphenylcarbazide. A red color is produced. The reaction is sensitive to one microgram.—J. A. LABAT. *Bull. trav. soc. pharm. Bordeaux* 76 (1938), 191–201. (S. W. G.)

Cocaine and Novocaine—Cardiovascular Accidents during the Course of Local Anesthesia with. Cocaine in large doses, immediately causes a severe intoxication of the nerve centers, especially the respiratory center. In weaker doses one observes a syndrome of sympathetic excitation, and, if administration is continued, a secondary hypotension with bradycardia; and the bulbar toxic accidents make their appearance. Novocaine does not produce the same effects when introduced in similar quantities, but will do so on larger quantities. The author describes the latent toxic effects as well as the probability of toxic symptoms in individuals suffering from asthma, migrain, urticaria and liver ailments.—ANON. *L'Odontologie*, 76 (1938), 345; through *Presse Medicale*, 91 (1938), 177. (W. H. H.)

Coramine—Action of, on Melanophores and the Nervous System. The lethal dose of coramine was found to be between 1.9 and 2.0 mg. per Gm. of frog. Coramine in large doses like nicotine has three sites of action: the central nervous system, all autonomic ganglia (vagus), and the nerve ends in voluntary muscle. On each of these sites it produces a primary stimulation followed by paralysis. The reaction is apparently chemical in nature since the temperature coefficient has a magnitude of about 1.9 for each 5-degree increase in temperature. Coramine in large doses produces general paralysis of the sensory nervous system of the frog which apparently precedes the motor paralysis. In the frog the stimulatory effect of coramine depends on the metabolic activity of the central nervous system which mainly is dependent on temperature. At low temperatures the depressant action predominates, but is preceded by varying degrees of stimulatory effects at higher temperatures. Coramine causes melanophore dispersion in the normal and hypophysectomized frog in a manner similar to nicotine, but not as marked as pituitary extract. The toxicity of coramine is increased directly as the temperature is increased.—A. F. BURTON. *Arch. inter. Pharmacodynamie*, 60 (1938), 270. (W. H. H.)

Cyanosis Due to Sulfanilamide—Treatment of, with Methylene Blue. Reporting more at length on the subject which was described in a preliminary note in the *J. A. M. A.* some time ago, Wendel states that the intravenous injection of a 1% aqueous solution of methylene blue in amounts of 0.1 to 0.2 cc. per Kg. of body weight will convert all of the methemoglobin in the blood to hemoglobin within 45 minutes, even where the abnormal pigment is present in amounts up to

40% of the total blood pigment. The effect lasts 12 hours or more, and can be prolonged by the additional administration of the dye by mouth in doses of 0.5 to 1.0 Gm. per day for adults. The dye does not increase the toxicity of sulfanilamide. Wendel believes that most of the cyanosis seen following sulfanilamide is due to methemoglobin, as he has been able to demonstrate this pigment in every case, and was unable to find any significant amounts of the conjugation product of sulfanilamide, as previously reported by other workers at the Johns Hopkins Hospital at Baltimore, Maryland.—W. B. WENDEL. *J. Clin. Invest.*, 18 (1939), 179; through *Abbott Abstract Service*, (1939), No. 472. (F. J. S.)

Drugs or Foods Containing Caffeine or Their Aqueous Extracts—Process for Detoxicating. Adenine is added to the aqueous extracts, or the dry material is moistened with a solution of adenine.—ANON. Cafè Hag. Belg. pat. 426,414, April 30, 1938. (A. P.-C.)

Hydrocyanic Acid Poisoning—Treatment of. The main point in hydrocyanic acid poisoning is to prevent death. There are many more efficient antidotes for oral poisoning than for the inhaling poisoning. Subcutaneous or intravenous injection of the remedy should be made to prevent the action of the poison. Oxidation remedies, such as hydrogen peroxide or potassium permanganate, also ferrous sulfate with sodium carbonate, a mixture of magnesium oxide, ferrous sulfate solution, cobalt nitrate and sodium thiosulfate solutions can be used for the treatment of oral poisoning. Addition of sulfur to the cyanide radical decreases its toxicity. In inhalation hydrocyanic acid poisoning, sodium nitrite followed by amyl nitrite has some curative effect when the dose of poison is not too deadly. Sodium carbonate and bicarbonate hasten recovery. These remedies, just like dextrose, are harmless. The progress of the poisoning can be made mild through the following remedies: sodium tetrathionate, sodium thiosulfate, sodium nitrite, Oxanthin and sodium carbonate. The respiratory center is hindered during the poisoning. Artificial breathing with the aid of oxygen seems to be the best method for keeping the patient alive. Addition of carbon dioxide to the oxygen is not necessary for stimulating the respiratory center.—W. WIRTH. *Zbl. Gewerbehyg.*, 24 (1937), 258–261; through *Chimie & Industrie*, 40 (1938), 61. (A. P.-C.)

Insect Control—Toxicological Problems in. Methods of determining toxicity and the interpretation of results are discussed. The need of extended biological investigations in insect toxicology is stressed.—F. STELLWAAG. *Angew. Chem.*, 51 (1938), 589–594; through *J. Soc. Chem. Ind.*, 57 (1938), 1473. (E. G. V.)

Lead and Opium Pills—Encephalopathy from the Therapeutic Use of. Report of a case receiving a pill of one gr. each of lead acetate and opium twice daily for diarrhoea for more than four months. Convulsions and delirium occurred and persisted for about two weeks. Therapy was calcium chloride and calcium gluconate, 15 grs. each by mouth and 30 grs. iron and ammonium citrate three times daily. Also parenteral liver therapy. Efforts concentrated on maintaining calcium balance.—WILLIAM R. GERAGHTY. *J. Am. Med. Assoc.*, 110 (1938), 208. (G. S. G.)

Lead Poisoning—Use of Vitamin C in the Treatment of. This preliminary report gives the results of treating painters who suffered from chronic lead poisoning with supplements of vitamin C. Those who suffered from chronic lead poisoning were found to improve clinically when they received such supplements. By means of test-tube experiments it was shown that vitamin C reacts with lead ions to form poorly ionized compounds of lead which are much less toxic than the metal itself. It is believed that painters who constantly absorb lead may have their stores of vitamin C exhausted by this detoxifying mechanism and therefore require additional amounts of vitamin C in the diet. It is suggested that this may be supplied in the form of daily doses of cevitamic acid of 50 mg. added to a diet rich in natural forms of the vitamin. Indications for this simple precaution are so strongly shown by the present work that this preliminary report is published to enable those exposed to the lead hazard to take advantage of it at once.—H. N. HOLMES, E. J. AMBERG and K. CAMPBELL. *Science*, 89 (1939), 322; through *Abbott Abstract Service*, (1939), No. 467. (F. J. S.)

Mercury Oxycyanide Poisoning. In connection with the case of a woman who died one hour and a half after drinking an unspecified quantity of a 3% solution of mercury oxycyanide, the authors discuss the mechanism of such poisoning and the possibilities of its being due to ordinary mercury poisoning or (as in their case) to the liberation of prussic acid, an effect produced by the action of the hydrochloric acid of the gastric juice on the mercury oxycyanide.—O. BERNER

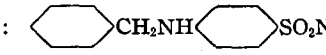
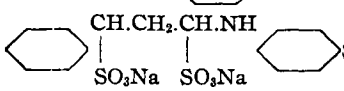
and E. JENSEN. *Nord. Med. Tidskrift*, 16 (1938), 1656; through *Brit. Med. J.*, 4069 (1938), 1402B. (W. H. H.)

Mercury Parasiticide. A water-insoluble complex silicate of mercury is prepared by intermixing an alkali silicate solution containing ammonia with a solution of mercuric chloride.—ALWYN C. SESSIONS, assignor to CALIFORNIA SPRAY-CHEMICAL CORP. U. S. pat. 2,143,282, Jan. 10, 1939. (A. P.-C.)

Nicotine and Cardiac Damage. Chronic nicotine poisoning in smokers, according to Læssing, results from several factors. Constitution, age, abuse of caffeine and alcohol, debility and the amount of tobacco consumed are important. Subjective symptoms are vague but reminiscent of cardiac neuroses and angina pectoris. Palpitation, tachycardia, vertigo, headache and faints may be complained of. There may be pain behind the sternum and alternating feelings of cold and heat. Objective symptoms include bradycardia and tachycardia, changes in rhythm and extrasystoles. The blood pressure is usually lower than normal. The heart is occasionally enlarged and changes in the electrocardiogram may be observed.—F. LÆSSING. *Med. Welt.*, 12 (1938), 1485; through *Brit. Med. J.*, 4068 (1938), 1350B. (W. H. H.)

Parasites—Process for the Destruction of. Tertiary zinc arsenate is used.—L. C. MARQUART A. G. Belg. pat. 426,670, March 31, 1938. (A. P.-C.)

Pentachlorophenol—Properties and Uses of. Pentachlorophenol (I) is a weak acid soluble in alcohol; the sodium salt (II) is soluble in water. The p_H values of 1, 5 and 25% solutions of II are 8, 9.6 and 10.5, respectively. I is stable, even at elevated temperatures, melting at 190.2 °C. Heavy metal salts of I are often colored. The minimum lethal dose for rabbits is 36, 60 and 200 mg. per Kg. for intravenous, subcutaneous and cutaneous injections, respectively. Lethal doses give symptoms of toxemia. An oil solution of I or water solution of II causes dermatitis in the case of laboratory animals. Intelligent handling may render the health hazard entirely negative. The most important use of I is in the field of industrial preservation, where its high degree of toxity to fungi, bacteria, yeasts, protozoa and other microörganisms, combined with its unusual physical and chemical properties, renders it particularly effective. I is a very effective fungicide against widely different types of organisms. Also, II is as toxic as the free phenol. Many phenolic fungicides are markedly less active when neutralized with alkali.—T. S. CARSWELL and H. K. NASON. *Ind. Eng. Chem.*, 30 (1938), 622–626. (E. G. V.)

Proseptasine and Soluseptasine—Meningococcal Meningitis Treated with. Nine cases of meningococcal meningitis were treated with proseptasine and soluseptasine, with two deaths. The formula of proseptasine is as follows:  . The formula of soluseptasine is as follows:  . In no case was there any considerable amount of diazotizable substance present in the body fluids in the course of the treatment. In no case was any toxic manifestation evident in the course of treatment. The results of treatment are contrary to expectation as judged by the results obtained by Whitby (1937) in experimental meningococcal infections in mice.—R. H. HANNAH and F. G. HOBSON. *Lancet*, 235 (1938), 937. (W. H. H.)

Quinine and Barbital—Poisoning by Ingestion of. The patient, a thirty-eight year old man, had taken 15 Gm. of a quinine salt and a large number of barbital tablets. The following symptoms were observed before treatment: palor, complete prostration, intense cephalea, vomitting, humming and whistling in the ears, complete bilateral blindness, abolition of photomotor reflex, pupils discolored and in mydriasis, sound of heart difficult to perceive and hypotension. The alkaloid and barbiturate were extracted from the urine with ether, first from acid then from alkaline medium. In spite of the large amounts of the substances taken the poisoning was not fatal, probably because of a physiologic antagonism between the alkaloid and the barbiturate, comparable to that between strychnine and the ureide hypnotics.—E. CATTELAIN. *J. pharm. chim.*, 28 (1938), 158–159. (S. W. G.)

Rotenone—Study of, and Action of Some Plants from French Sudan. The following plants were studied: (1) *Entada Sudanica* Schweinf.—Dibi-djiaba female (*Leguminosæ*). (2) *Entada Africana* Guill. and Perr.—Dibi-djiaba male (*Leguminosæ*). (3) *Swartzia Madagascariensis* Desv.—Diabi (*Leguminosæ*). (4) *Balanites acutangula* Roxb.—Serene-Sereno (*Zygophyllaceæ*).

(5) *Luffa cylindrica* Mill.—Foro-Foro (*Cucurbitaceæ*). (6) *Mundulea sericea* A. Chev.—Colo-Colo Diabi (*Leguminosæ*). (7) *Tephrosia Vogelii* Hook—Diabi-die (*Leguminosæ*). (8) *Derris uliginosa* Benth.—Indochinese derris. (9) *Derris elliptica* Benth.—Dutch Indies derris. The plants were tested for toxicity toward fish (*Carassius auratus*) and the guinea pig. The following conclusions are given: Six of the French Sudan plants were definitely toxic to fish; only the female Dibi-djiaba was slightly active. Of the six ichthotoxic plants only *Luffa cylindrica* was very toxic to the guinea pig. Of the five plants which were very toxic to fish and non-toxic to the guinea pig only one, *Entada Africana*, gives a positive test for rotenone. The following differences in the physiologic action of Derris (rotenone) and pyrethrum is noted: In the case of fish, pyrethrins cause on immersion a characteristic preliminary excitation then a progressive paralysis. Derris produces no excitation, but numbs and paralyzes little by little without violent reaction. In the guinea pig, the pyrethrins are inactive by ingestion; while Derris causes convulsions with death by asphyxia after a very definite period of suffocation.—O. GAUDIN and R. VACHERAT. *Bull. sci. pharmacol.*, 45 (1938), 385–394. (S. W. G.)

Saturnism of Riveters. The atmospheric dust of riveting shops was collected by means of the Owens apparatus, and lead was determined directly by solution in acetic acid and precipitation with potassium iodide. Before work was started, no lead was found; after riveting, the air contained 0.03 to 0.67 mg. of lead per cubic meter. The fumes and dust produced during riveting contain a mixture of lead oxide and metallic lead. The oxide present in the air behaves as a gas and diffuses much more rapidly than metallic dusts. It is easily resorbed by the lungs. This explains the saturnism observed in riveters, although the concentration of lead to which they are exposed is always less than 1 mg. per cubic meter.—NEUMANN. *Arbeitsschutz*, (1937), 292–294; through *Chimie & Industrie*, 40 (1938), 62. (A. P.-C.)

Sericite and of Dust—Injurious Action of, Produced in Polishing Steel. Observations were made on guinea pigs which were subjected 8 hours a day to sericite dust, steel polishing dust and quartz dust at the rate of 80,000 to 100,000 per cc. of air. The experiments were carried out over a period of seven and a half months. At post mortem examination, in addition to inflammatory phenomenon which caused a strong catarrh of the lower respiratory tract and important pleuritic lesions, there is observed in the case of sericite so extensive and important a formation of conjunctive tissues as to prove the highly injurious nature of this mineral as compared with steel or quartz dusts.—P. WEILAND. *Arch. Gewerbepath.*, 8 (1937), 412–524; through *Chimie & Industrie*, 40 (1938), 61. (A. P.-C.)

Silicosis—Comparative Studies on. The lungs of 128 patients suffering from silicosis were examined from the standpoint of their alumina content. Even in the case of silicosis produced by sericite there was no relation between the silica and alumina counts. No relation was found between the severity of the silicosis and the alumina content. In silicosis without tuberculosis there is a simple relation between the importance of the focus and the quantity of dust inhaled. Increase in the importance of the focus is accompanied by a corresponding increase in the alumina content. Such relationships do not exist in silicotuberculosis; the foci are always more important than in the preceding case or even than when silicosis is followed by tuberculosis. Examination of the lymphatic moduli does not permit of establishing a relationship between their importance and hardness, on the one hand, and their alumina content on the other.—G. GERSTEL. *Arch. Gewerbepath.*, 8 (1937), 277–316; through *Chimie & Industrie*, 40 (1938), 61. (A. P.-C.)

Sulfanilamide Compounds—Granulocytopenia Following. Granulocytopenia may occur after or during treatment with the sulfanilamide-prontosil group of drugs. It has a high fatality rate. Routine leucocyte counts are not necessary in all patients receiving the drugs. Toxic signs and symptoms in the absence of granulocytopenia do not constitute an indication for stopping treatment in conditions in which the drug is known to be effective. Frequent blood examinations should be made on all cases showing an atypical response to treatment. The duration of the treatment is probably a more important factor than the total dosage of the drug.—F. D. JOHNSTON. *Lancet*, 235 (1938), 1044. (W. H. H.)

Syphilis—Studies on the Various Forms of Bismuth Used in. A comparative study was made of toxicity, absorption and excretion and therapeutic effectiveness of thirteen compounds and preparations of bismuth. There was not as definite a relationship between the percentage of elemental bismuth and the toxicity as has commonly been believed. In terms of elemental bis-

muth, it appeared that the insoluble compound (bismuth subsalicylate) was one of the least toxic. Next in toxicity is potassium bismuth tartrate suspended in oil, followed by the oil-soluble compounds. The water-soluble compounds are the most toxic, and the least toxic members of this group are the alkaline tartrates. Of the five compounds which were soluble in water, the alkaline tartrates were the most treponemicidal, probably because of their higher bismuth content. The oil-soluble compounds were about midway between the water-soluble and the oil-soluble products in this respect. Most of the compounds tested are suitable for the treatment of syphilis, but need further study.—J. A. KOLMER, H. BROWN and A. M. RULE. *Am. J. Syphilis Gonorrhea Venereal Diseases*, 23 (1939), 7; through *Abbott Abstract Service*, (1939), No. 469. (F. J. S.)

Vetch Seeds—Harmful Substances of. The experiments were carried out to determine if vetch seeds, either untreated or steamed, contained saponins or hydrocyanic acid. The presence of saponins could not be positively determined, or if they underwent any changes on steaming. The air-dried seeds contained 0.050 Gm. of hydrocyanic acid per kilo. In a laboratory test it was found possible to remove the hydrocyanic acid by soaking the seeds and subsequently steaming them, but in preparing seeds for practical feeding tests in this fashion, traces of hydrocyanic acid still remained. It is thought that with more adequate soaking and steaming the hydrocyanic acid could be completely removed.—G. SCHWARZ and H. FINZENHAGEN. *Biedermanns Zentr.* (B.), 9 (1937), 115–120; through *Chimie & Industrie*, 40 (1938), 157. (A. P.-C.)

Xanthine—Liver Regeneration in Rats Protected with, against Carbon Tetrachloride Poisoning. Xanthine has a protective action against carbon tetrachloride poisoning. The extent of necrosis in the liver lobule is decreased by its action. In rats killed 48 hours after administration of carbon tetrachloride, the damage in the liver involves only a small area around the central lobular vein in the test animals, whereas the controls show affection of 50 to 80% of the lobule. While the mortality is not decreased at large doses of carbon tetrachloride, a life saving effect of xanthine at moderate doses is quite evident. The mitosis of regeneration of the liver cells was not stimulated.—O. GARTH FITZHUGH. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 11. (A. E. M.)

THERAPEUTICS

Adrenal Gland in Coughs. Whole adrenal gland, given by mouth, has been used in the treatment of 1700 cases of respiratory disorders associated with a disturbing cough, during a period of eight years, with a clinical improvement in from 70–90% of the cases. The group of cases included acute rhinopharyngitis, acute bronchitis, chronic rhinopharyngitis, chronic bronchitis, whooping cough and measles. Certain untoward reactions (abdominal pain, vomiting and constipation) occurred in a few cases.—O. E. BARBOUR. *Clin. Med. and Surgery*, 45 (1938), 519. (W. H. H.)

Anemia—Cure of Microcytic Hypochromic, in Dogs with Crystalline "Factor I." A dietary microcytic hypochromic anemia of dogs was cured by the addition of the crystalline factor I to the diet. This material is identical with the factor that cures rat dermatitis, described elsewhere (Lepkovsky, *J. Biol. Chem.*, 124 (1938) 125).—PAUL J. FOUTS, O. M. HELMER and S. LEPKOVSKY. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 4. (A. E. M.)

Belladonna—Treatment of Post-Encephalitic Parkinsonism with Bulgarian and English. Fourteen patients suffering from post-encephalitic Parkinsonism were treated with decoction of Bulgarian belladonna. Improvement was found in ten patients who showed decreased rigidity; of these, four also showed diminished tremor. The oculogyric crises were not much improved. Ten patients also gained weight. On substituting English belladonna, decocted first with wine and later in acid-alcohol, the improvement in the Parkinsonism was maintained. The patients did not at first notice the substitution. With the acid-alcohol decoction, signs of belladonna poisoning became pronounced in six cases; this may be because it contains more alkaloids of belladonna than the wine decoction. From this series of cases there is no evidence that the therapeutic properties of Bulgarian belladonna differ from those of its English equivalent.—D. HILL. *Lancet*, 235 (1938), 1048. (W. H. H.)

Black Widow Spider Bite—Treatment of and Diagnosis of. The black widow spider is widely distributed throughout the South, and is a glistening black spider with a leg span of $1^1/_2$ to

2 inches. It may be identified by a red marking in the shape of an hour-glass located on the ventral surface. The spiders frequently lurk in the dark corners of privies, and for this reason a large number of bites are sustained on the genitalia. The initial bite feels like a bee sting; after 30 or 60 minutes, the muscles closest to the site of the wound become excruciatingly painful, and this pain often spreads to all the muscles of the body. There may be rigidity of the abdominal muscles which, with the intense pain, may lead to a false diagnosis of ruptured peptic ulcer. Morphine is not very efficacious in relieving the pain, but some success has been reported from the use of magnesium sulfate solutions parenterally. The author had success in relieving pain with intravenous injections of 10 cc. of 10% solution of calcium gluconate.—H. T. KIRBY-SMITH. *Tenn. State Med. J.*, 31 (1938), 357; through *Abbott Abstract Service*, (1938), No. 362. (F. J. S.)

Blood Guanidine and Convulsants. After administration of representative convulsant drugs acting on different parts of the central nervous system, blood guanidine is not increased more than would be expected from the degree of concentration of the blood or the renal insufficiency present. Most of the treated animals show values essentially the same as their control values. Hyperguanidinemia accompanying convulsant states in man may find explanation in the degree of blood concentration or renal insufficiency present.—J. E. ANDES and G. A. EMERSON. *Arch. inter. pharmacodynamie*, 60 (1938), 30. (W. H. H.)

Burned Surfaces—Therapeutic Agent for Application to. A therapeutic agent for use in preparations for external application to burned surfaces, weeping surfaces and those affected by loss of sera, consists of the extract of arterial and venous tissue containing in active proportions the protein element thereof which is soluble in its natural state in dilute salt solutions and is largely precipitatable therefrom on acidifying. This agent has the property of relieving pain, forming a protective coating over the surfaces which is translucent and promotes vascular tone.—CLYDE H. CHASE, assignor of one-half to ARTHUR DAVID. U. S. pat. 2,143,475, Jan. 10, 1939. (A. P.-C.)

Cancer—Chemotherapy of. A number of aldehydes, oils, glycosides and ketones (thirty-six substances in all) —were examined for their power to inhibit the growth of grafted tumors (Crocker Sarcoma 180) and of spontaneous mammary tumors in mice. Citral in daily doses of 10 mg. caused some inhibition in both types of tumor; heptaldehyde, 50 mg. daily, inhibited spontaneous tumors but not grafted tumors, the action being the reverse of that of colchicine, while phloroglucinaldehyde, 5 mg. daily, was slightly effective in spontaneous tumors. It is possible that the action of aldehydes is due to the formation of organic peroxide.—E. BOYLAND and E. H. MAWSON. *Biochem. J.*, 32 (1938), 1982; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 143. (F. J. S.)

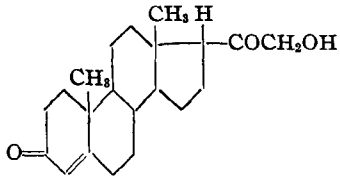
Carbon Preparation—Therapeutic. A concentrated suspension of carbon particles is milled until no carbon particle is larger than a human red blood corpuscle. The suspension is then diluted, dispersed and sterilized.—GEORGE E. ROCKWELL. U. S. pat. 2,143,088, Jan. 10, 1939. (A. P.-C.)

Cardiovascular Syphilis. Cardiovascular syphilis can be prevented by treating early syphilis promptly. Effective treatment of cardiovascular syphilis depends on early diagnosis, which is difficult or impossible. When the diagnosis is obvious, hope for the cure is useless. Only relief of pain and prolongation of life can be expected from therapy. Treatment must be individualized; started cautiously to avoid therapeutic shock (Herxheimer reaction) and therapeutic paradox with potassium iodide and bismuth (0.1 Gm. every four or five days, increased to 0.2 Gm. once a week if well tolerated for 4 or 5 injections). The degree of cardiac reserve determines the propriety of an arsenical. After 3 months of preparatory treatment with bismuth and iodides, the arsenicals of choice are neoarsphenamine and Bismarsen. The initial dosage for both is from 0.05 to 0.1 Gm. Neoarsphenamine is increased cautiously to a maximum of 0.3 Gm. Treatment should be prolonged and continuous. Life-long observation should be made.—F. C. CLIFFORD and A. P. JAMES. *Ohio State Med. J.*, (March 1938), 265; through *Abbott Abstract Service*, (1939), No. 490. (F. J. S.)

Copper—Action of, in Preparations Used Internally. An extensive review.—WALTER MEYER. *Scientia Pharm.*, 9 (1938), 140–146. (H. M. B.)

Desoxycorticosterone Acetate—Synthetic, Use of, in Addison's Disease. A synthetic product, desoxycorticosterone acetate, similar to corticosterone, was found effective in two pa-

tients with Addison's disease. It has a therapeutic action in Addison's disease similar to that of extract of the suprarenal cortex (cortin). The formula for desoxycorticosterone is as follows:



From the cases recorded it appears that 6 mg. of desoxycorticosterone acetate (1 cc. of oily solution) is equivalent to more than 5 cc., but less than 20 cc., of cortin.—S. L. SIMPSON. *Lancet*, 235 (1938), 557. (W. H. H.)

Diarrhoea Treated with Pancreatic Juice. Steatorrhea may result from many causes, and one of these is pancreatic deficiency. The authors describe several cases in which the etiology was chronic pancreatitis. They have not had good results from treatment with pancreatin, but record some success with pancreatic juice the obtaining of which they describe. In discussing the paper, Dr. A. C. Ivy pointed out that of six samples of commercial pancreatin tested by him in 1937 only three were potent. He also stated that the usual doses of this substance are far too small. Work on animals and analysis on two patients showed that the daily dose should be 25 Gm. of pancreatin. Enteric coating increased the efficacy of the medication. Pancreatin of proved potency contains all the ingredients of pancreatic juice, together with lecithin. Both duodenal drainage with enzyme assay and stool analysis are quite necessary before a diagnosis of pancreatic deficiency may be accurately established.—J. A. BARGEN and J. L. BOLLMAN. *Am. J. Digestive Diseases Nutrition*, 4 (1938), 728; through *Abbott Abstract Service*, (1938), No. 284. (F. J. S.)

Diuretic Composition. The active diuretic agent is iso-mannide.—JOHN C. KRANTZ, JR. U. S. pat. 2,143,324, Jan. 10, 1939. (A. P.-C.)

Estrogenic Substances—Treatment of Tinnitus and Deafness with. While treating a series of patients for atrophic rhinitis with an estrogenic substance, as described in a previous communication, the authors noticed that several patients reported improvement in tinnitus with which they had previously been afflicted. Certain cases of "constitutional deafness" also showed some improvement. Pursuing the observations further, the authors selected a series of patients marked by a high incidence of a type of cranial dysplasia which was manifested by underdevelopment of the facial part of the skull and premature thickening of the calvarium. The patients received daily a nasal insufflation of 1000 units of an estrogenic substance dissolved in 1 cc. of oil. Their progress was measured by tests with the audiometer. The treatment was followed by marked improvement in certain cases and the hearing ability of the whole group was increased by a statistically significant amount. The exact mechanism of this effect cannot yet be fully explained.—H. MORTIMER, R. P. WRIGHT, D. L. THOMPSON and J. B. COLLIP. *Can. Med. Assoc. J.*, 40 (1939), 17; through *Abbott Abstract Service*, (1939), No. 441. (F. J. S.)

Estrogenic Therapy of Disorders Accompanying Menopause. Three types of reaction have been found to follow estrogenic treatment of menopausal disorders, according to Schneider; if there is a total absence of any reaction, this usually indicates that a deficiency of estrogenic substance exists, but that the dose of estrogen administered has not been sufficient. Improvement, or a relief of the symptoms with a feeling of well-being is also evidence that a deficiency of estrogenic substance had previously existed, and is an indication to continue administration of the treatment. Exaggeration of symptoms, including feelings of extreme exhaustion, pain in the region of the ovaries or "bearing-down" sensations may indicate either one of two things: (*a*) if transitory, they indicate that an estrogen deficiency exists, but that the dose of estrogen has been too large; (*b*) if prolonged and not followed by relief, they indicate that no deficiency exists and that treatment should be discontinued. These subjective responses are quite specific.—P. F. SCHNEIDER. *Illinois Med. J.*, 75 (1939), 57; through *Abbott Abstract Service*, (1939), No. 454. (F. J. S.)

Gold Salt—New, Treatment of Rheumatoid Arthritis with. A new gold salt, parmanil, has been used in the treatment of fifty cases of rheumatoid arthritis over a period of one year.

The dosage has been approximately half that previously used with other gold preparations. The curative results have been equaled or surpassed. Toxic reactions occurred in a quarter of the cases. Parmanil is one of the least toxic of gold salts.—S. J. HARTFALL, H. G. GARLAND and W. GOLDIE. *Lancet*, 235 (1938), 1410. (W. H. H.)

Gold Therapy. These experiments support the view that the beneficial effect of gold in pulmonary tuberculosis is due to stimulation of the reticulo-endothelial system. The white blood count was found to be the most reliable index of gold therapy. Eosinophilia is a most sensitive sign of susceptibility to gold.—ST. J. LEITNER. *Beitr. Klin. Tuberke*, 91 (1938); through *Brit. Med. J.*, 4056 (1938), 728F. (W. H. H.)

Gout—Report of Case and Discussion of Frequent Incidence of. Although medical teaching for a generation has led to the belief that gout is a rare disease, recent studies and writings have done much to refute the idea. It is sufficiently prevalent so that it must always be considered in the differential diagnosis of arthritis. A hereditary tendency is pronounced in this disease which characteristically attacks men in the third and fourth decades. The initial attacks are always of short duration, and the complete freedom from symptoms between them is very characteristic. Tophi and elevated blood uric acid are later manifestations. As to treatment, colchicine is specific in relieving the pain of the attacks, and is given in frequent doses, *e. g.*, $^1/_{120}$ gr. every one or two hours until nausea, vomiting or diarrhoea occurs. When the amount of colchicine which is necessary to produce diarrhoea has been determined for a given individual, somewhat less than this amount should then be considered the proper dose. The patient should always have the drug on hand.—J. A. HALSTED. *New England J. Med.*, 218 (1938)., 723; through *Abbott Abstract Service*, (1938), No. 311. (F. J. S.)

Hay Fever—Treatment of, and Other Air-Borne Diseases. A nasal medicament for hay fever comprises a solution of a proteolytic enzyme and a vaso-constrictor.—SOL SNYDER. U. S. pat. 2,144,395, January 17, 1939. (A. P.-C.)

Hay Fever—Treatment of, with Desensitizing Pollen Extracts. De Lee reviews the status of the desensitization treatment of hay fever, pointing out that much of the skepticism concerning the efficacy of this procedure arises from clinical failures that might have been avoided. The chief cause for such failures, he states, is an incomplete understanding of the problem of contact with pollen. This subject may now be very satisfactorily elucidated by means of the excellent pollen counts which are available for nearly every area in the United States. The patient must be tested for sensitivity to the important pollens known to be in the air at the season of symptoms, and must receive an adequate dose of the pollens causing his sensitivity. Many failures are said to arise from the use of cheap, unreliable pollen antigens, from "shotgun" pollen mixtures designed to cover too wide a range of cases, and from erroneous interpretation of skin tests. With reliable materials and methods, success with pollen desensitizing treatment is much greater.—R. B. DE LEE. *Tri-State Med. J.*, 10 (1938), 2032; through *Abbott Abstract Service*, (1938), No. 280. (F. J. S.)

Helium—Use of, in Anesthesia. The author gives an account of the history, properties and clinical use of helium. Its value in anesthesia depends on its low specific gravity and rapid rate of diffusion, which rendered it useful in the relief of various types of respiratory obstruction.—U. H. EVERSOLE. *Current Research Anesthesia and Analgesia*, 17 (1938), 264; through *Brit. Med. J.*, 4066 (1938), 1244F. (W. H. H.)

Hematopoietic Principle in Diseased Human Liver. Extracts were prepared post mortem from five human livers of cases with chronic liver disease. They were shown to contain the hematopoietic principle by injection into a suitably controlled group of patients suffering from pernicious anemia in relapse. Although three extracts were prepared from the liver of patients with cirrhosis who had suffered from macrocytic anemia, they produced characteristic reticulocytosis, increase in hemoglobin and red cell count and marked clinical improvement. This suggests that the macrocytic anemia associated with liver disease is not caused by a failure of the liver to store the specific anti-anemic substances.—L. SCHIFF, M. L. RICH and S. D. SIMON. *Amer. J. Med. Sci.*, 196 (1938), 313; through *Brit. Med. J.*, 4067 (1938), 1296D. (W. H. H.)

Hesperidin (Vitamin P)—Effect of, on Capillary Fragility. In two conditions of nervous hyperexcitability—tetany and epilepsy—depression of nervous activity can be achieved by raising the serum calcium. Nineteen patients in a mental hospital who showed increased psychomotor activity were subjected to twenty-three courses of a treatment designed to raise the calcium content of the blood and cerebrospinal fluid. In about 70% of the courses given such treatment di-

minished the psychomotor activity given, and the reduction sometimes persisted for a long period. —T. M. CUTHBERT. *Lancet*, 235 (1938), 612. (W. H. H.)

Hormones—Administration of, by the Subcutaneous Implantation of Tablets. Further investigation has been made of the effectiveness of crystalline gonadal hormones when administered by the subcutaneous implantation of solid tablets of the pure substance. It is concluded that the technic is particularly useful where a long-continued steady effect is required, as, for instance, in the depression of the gonad stimulating and growth promoting activity of the pituitary by oestrogens, and in the masculinization of the female by androgens. It appears that treatment of very long duration following one administration of hormone will be possible by implantation of tablets. —R. DEANESLY and A. S. PARKES. *Lancet*, 235 (1938), 606. (W. H. H.)

Hormones in Imperfect Descent of Testes. Treatment of retained testes with gonadotropic extract of human urine of pregnancy should be employed in those patients in whom retention does not appear to be due to an anatomical abnormality. The dose in most patients should not be less than 500 rat units, intramuscularly, twice a week. Treatment should not be employed in patients under ten years of age for fear of inducing a precocious puberty. The optimum age for treatment is between ten and fourteen. The treatment of patients over eighteen is unsuccessful, probably owing to an anatomical abnormality. All cases of retractile testes will respond to hormone therapy within three months. Treatment, however, is unnecessary as they will descend spontaneously before or at puberty. Testes, which are situated in the inguinal canal, are movable, but cannot be manipulated into the scrotum will probably respond to hormone therapy (76% in the bilateral, 64% in the unilateral group). A successful result is unlikely if the retained testis be impalable or be not freely movable. In those cases of retained testes which respond, a successful result will be obtained within six or nine months. In patients of suitable age there are no serious contraindications to treatment. There is no evidence that the continued administration of gonadotropic hormone from a human source produces degenerative changes in the testes. In patients in whom there is doubt about the presence of an anatomical abnormality it is unwise to wait for spontaneous descent, as degenerative changes begin in a retained testis at puberty.—A. W. SPENCE and E. F. SCOWEN. *Lancet*, 235 (1938), 983. (W. H. H.)

Insulin—Repeated Injections of, upon Functional and Structural State of Langerhans Tissue. The authors have verified experimentally that under the effects of repeated injections of insulin, there is produced an increased amount of insular tissue in the pancreas, shown by the augmentation of the number and increased size of the islets as well as the number of forms of acino-insular passage, and by the production of diffused regions of exo-endocrine alteration.—E. AUBERTIN, A. LACOSTE and R. SARIC. *Ann. de Méd.*, 43 (1938), 253; through *Presse méd.*, 76 (1938), 145. (W. H. H.)

Jaundice—Treatment of the Bleeding Tendency in. Until recently there was no satisfactory means of determing which jaundiced patients harbored a bleeding tendency, and no satisfactory method of treating the hemorrhagic tendency had been developed. Now, almost simultaneously, there have been provided both a method for determining the hemorrhagic diathesis and a treatment for it. The prothrombin clotting time test of Quick shows up the patients who are likely to bleed following surgery, a prothrombin time of 20 to 30 seconds being normal, while one of higher than 100 seconds indicates that the patient is in immediate danger of a severe hemorrhage. To forestall this, vitamin K is administered. This material is extracted from alfalfa, and is available in a concentrated form so that effective doses can be given. Bile must be given at the same time to facilitate absorption. A typical case is reported in which the prothrombin time was reduced from 200 to 150 seconds in 3 days by this treatment, and in seven days to 38 seconds.—P. F. OLSON. *J. Iowa State Med. Soc.*, 29 (1939), 103; through *Abbott Abstract Service*, (1939), No. 482. (F. J. S.)

M. & B. 693—Acute Gonorrhea Treated with. M. & B. 693 (a pyridine-sulfamide compound) (19 Gm. in seven days) was used in the treatment of 100 cases of acute gonorrhoea in males seen in an early stage. Lavage of the anterior urethra with potassium permanganate for three weeks was also given. Delay in starting treatment is unnecessary and undesirable. With M. & B. 693 the daily urethral smear did not show the geanularity and loss of definition seen with sulfanilamide; but often the gonococci disappeared in twenty-four hours or, if they persisted, were usually extracellar. Uretheral discharge disappeared in 4.5 days on an average. About 45% of the patients complained of toxic effects (headache, nausea, dizziness, rash, dysponea);

but the toxic effects of M. & B. 693 were less than those of sulfanilamide. All patients were cured of uretheral discharge in three weeks; but it is too early to say how many were finally cured of the infection. In judging cure, prolonged observation is preferable to provocative tests. There were four cases of possible relapse, but one of them was probable reinfection. In two cases of apparent relapse gonococci were not found. The only gross complication arising during treatment was epididymitis in one patient. Another patient developed folliculitis. Similar results were obtained with 101 cases at another Glasgow clinic.—J. G. McGregor-Robertson. *Lancet*, 235 (1938), 1463. (W. H. H.)

Magnesium—Action of, on Anemia Produced by Saturnism. Patients suffering from lead colics and pronounced porphyrinuria were given injections of 10 cc. of 10% magnesium sulfate solution. The results were highly satisfactory in all cases; after about 10 injections a very considerable increase in red blood corpuscle count and in hemoglobin content was observed, and there was a decrease in elimination of porphyrin in the urine, indicating a reduction in hemolysis. Magnesium is therefore seen to act in two different ways: it mobilizes the lead deposited in the system, and more particularly in the bones, thereby liberating the system from the paralyzing action of the poison; and it facilitates elimination of the lead thereby decreasing its hyperhemolytic action.—F. Capelli. *Medicina Lavoro*, 19, No. 2 (1938), 43-52; through *Chimie & Industrie*, 40 (1938), 488. (A. P.-C.)

Male Hormone—Percutaneous Absorption of. The percutaneous application of testosterone propionate in a fatty vehicle and an alcoholic solution has been investigated for potency and optimum dosage in three patients—a post-puberal eunuch, an eunuchoid and a case of delayed puberty—and their effects have been compared with those of a solution of testosterone in alcohol. This method of giving male hormone is effective and simple but a larger dosage is required than when the hormone is given by injection. An ointment containing 25 mg. of testosterone propionate per Gm. in two-Gm. collapsible tubes is recommended for practical use as the most efficient means of percutaneous androgen therapy at present available.—G. L. Foss. *Lancet*, 235 (1938), 1284. (W. H. H.)

Mapharsen in Latent Syphilis. Mapharsen is as effective in the treatment of latent syphilis as neoarsphenamine; it is, however, less toxic, a matter of some importance, since many patients with latent syphilis are past the prime of life. It gives better results when combined with bismuth, and the two drugs are more efficient when given concurrently than when given alternately.—G. D. Astrachan and F. Wise. *Amer. J. Syphilis, Gonorrhea Venereal Diseases*, 22 (1938); through *Brit. Med. J.*, 4056 (1938), 728D. (W. H. H.)

Mecodrin in Depression and Neuroses. The action of this drug was tested on one hundred patients in a Danish hospital for mental disease. The longest observation period being only three months, no opinion could be expressed as to the reaction to mecodrin in the long run, but it would seem to be most suitable for transitory or periodical emotional states such as associated with menstruation.—C. Ortmann. *Ugeskrift Laeger*, 100 (June 16, 1938); through *Brit. Med. J.*, 4051 (1938), 480B. (W. H. H.)

Migraine—Treatment of, with Inhalations of Oxygen. One of the patients treated by the author for migraine by the usual methods did not obtain complete relief, but was able to obtain access to a supply of oxygen. The patient was induced by friends to experiment with the effects of pure oxygen inhalations on the migraine attacks, and was surprised to obtain a quick effect. This was drawn to the attention of the physician, who experimented in two other patients of similar type and found that certain attacks of migraine which failed to yield to ergotamine tartrate could be aborted by the inhalation of pure oxygen. The gas is best administered by a semi-open mask, in which provision is made for the overflow of oxygen. The rate of flow was found to be satisfactory at six to eight liters per minute. Inhalation of oxygen had previously been used to relieve the headache following air injection for encephalography, with good results. The method is quite practical, since tanks of pure oxygen are available even in small communities.—W. C. Alvarez. *Proc. Staff Meetings Mayo Clinic*, 14 (1939, 173; through *Abbott Abstract Service*, (1939), No. 463. (F. J. S.)

Neoarsphenamine. The stability of this product is affected by age and moisture retained in the powder, and instability increases as one or both increase. When the powder contains not more than 1.5% of volatile material, as determined by a method described, it may remain stable for three years when stored at a temperature of less than 20° C. An analysis of over half a million

administrations in the course of five years in the U. S. Navy shows four hundred and twenty-six reactions, classified as two hundred and seventy mild, one hundred and forty severe and sixteen deaths. Material not over three years old gave a reaction expectancy of one to one thousand three hundred and twelve doses, while older material gave one to eight hundred and seventy—an increase of 65%. The average reaction expectancy was one to one thousand two hundred and seventy doses, which corresponds with a previous report of one to one thousand two hundred and seventy-two.—T. F. PROBEY. U. S. Public Health Reports, 53 (May 27, 1938); through *Brit. Med. J.*, 4051 (1938), 480G. (W. H. H.)

Neoarsphenamine—Agranulocytosis Caused by. A woman of thirty-nine was treated for syphilis with neosalvarsan and bismuth. She was unwell after each injection of neosalvarsan, and became acutely ill with swelling and soreness of the throat when she had had 2.1 Gm. Autopsy showed extensive necrosis of the tongue, pharynx and larynx, and of the transverse colon and rectum. There was also atrophy of the bone marrow. Patients who prove intolerant to arsphenamine should have early and full blood examination.—S. THOMSEN. *Lancet*, 235 (1938), 1358. (W. H. H.)

Nicotinamide—Treatment of Pellagra with. Fifteen patients with pellagra and dermatitis, and two with, presumably, pellagrous stomatitis were treated with nicotinamide. Nine of these were given an ordinary hospital diet, with or without marmite, during a short control period, and there was either no improvement or the condition became aggravated (except in one instance). Nicotinamide effected great improvement in the acute mucous membrane lesions and a slower improvement in the acute skin conditions. Chronic skin lesions in friction areas and chronic atrophic changes in the tongue were only slightly affected. The appetite, mental condition and general physical health of all the patients were improved by the treatment. Headache, itching and warmth of the skin followed treatment in some cases, and one patient had colic after the administration of 1 Gm. of nicotinic acid; but the same doses of nicotinamide led only to transient headache in two patients.—A. C. ALPORT, P. GHALIOUNGUI and G. HANNA. *Lancet*, 235 (1938), 1460. (W. H. H.)

Oestrogen Therapy—Suppression of Lactation by. Experience in a few cases of acromegaly and thyrotoxicosis when attempting to inhibit anterior pituitary function in human beings (Foss, 1937), together with Zondeck's statement (1936) regarding the quantity of oestrogen necessary to retard growth and gonadotropic function in rats, makes it difficult to realize that oral oestrone in doses of 20,000 to 30,000 I. U. given over a period of two to six days can inhibit a function of the anterior pituitary. Normally this is only held in check by massive amounts of oestrogen and/or progesterone in the placenta. It is much more possible, in our view, that oestrone acts specifically on the mammary gland, in some way preventing the action of the lactogenic hormone of the anterior pituitary, or even by a direct antagonism to this lactogenic hormone. At present an explanation of this clinical finding cannot justifiably be ventured. It is unlikely that such small doses will in any way influence the chemical constitution of human milk.—G. L. Foss and P. PHILLIPS. *Brit. Med. J.*, 4060 (1938), 887. (W. H. H.)

Oestrogens—Interruption of Early Pregnancy by Means of Orally Active. Experiments have been carried out on the inhibition of implantation and the interruption of established pregnancy by the oral administration of two new oestrogens—ethinyl oestradiol and diethyl-stilboestrol. Both of these substances given by mouth inhibit the effect of progesterone and prevent implantation of the blastocysts in rabbits. Small doses of diethyl-stilboestrol prevent implantation in rats, while ethinyl oestradiol is highly effective in interrupting established pregnancy in rabbits. —A. S. PARKES, E. C. DODDS and R. L. NOBLE. *Brit. Med. J.*, 4053 (1938), 557. (W. H. H.)

Ozena—Use of Estrogenic Substance in Treatment of. Blaisdell reviews some of the newer facts concerning the general systemic effects of the estrogenic hormones. The question of the carcinogenic possibilities of these compounds when given in large doses over long periods of time is discussed, and the author feels able to conclude that these effects do not constitute a contraindication to the local use of estrogenic substances in the nose. A series of 60 cases of atrophic rhinitis is described; these fell into two groups: those in whom the onset of the disease occurred before the age of twenty and those with a later time of onset. Treatment consisted in removing the crusts and mucus and swabbing the membranes with estrone, 10,000 I. U. in 1 cc. oil. For home use a spray of 2 cc. of this same concentration, mixed with sesame oil to make 30 cc. was prescribed. All the cases in the second group were improved showing diminution of crusting and odor,

while 86% of those in the second group improved.—I. H. BLAISDELL. *Laryngoscope*, 48 (1938), 699; through *Abbott Abstract Service*, (1939), No. 416. (F. J. S.)

Procaine Injection Treatment of Herpes Zoster. Twenty-two patients suffering from herpes zoster were treated by injections of a 0.5% procaine solution into the intervertebral and prevertebral ganglia. Except in two patients, the pain ceased and the vesicles dried within twenty-four to forty-eight hours. Two patients suffering from trigeminal zoster had their Gasserian ganglia injected with 1 and 2 cc. of this dilute procaine solution and in forty-eight hours the symptoms disappeared.—S. ROSENAK. *Lancet*, 235 (1938), 1056. (W. H. H.)

Prontosil—Experimental Investigations of Action of, in Gas Œdema. The author's experiments *in vitro* and *in vivo* (mice) fail to confirm the good results claimed for sulfanilamide in the treatment of gas œdema infections by H. R. Bohlman in the *J. A. M. A.*, July 24, 1937.—H. NATVIG. *Norsk Mag. Laegevidenskap.*, 99 (June 1938); through *Brit. Med. J.*, 4050 (1938), 436B. (W. H. H.)

Sodium Chloride Deficiency—Effect of, on Gastric Acidity. A state of sodium chloride deficiency was produced in three normal healthy adult male volunteers by decreasing the sodium chloride in the diet and increasing the excretion of sodium chloride by sweating. A state of sodium chloride deficiency was shown to have been established by the fall in urinary and whole-blood chlorides and by the rise in urea nitrogen and non-protein nitrogen in one of the subjects. Gastric analyses were made each morning and showed that the sodium chloride deficiency produced no significant changes in the gastric secretion in the three subjects studied.—M. H. SOLEY, M. B. LAGEN and J. C. LOCKHART. *Am. J. Med. Sci.*, 196 (July 1938); through *Brit. Med. J.*, 4061 (1938), 976C. (W. H. H.)

Sorbitol—Use of, in Anuria. The author reviews the work done by him and his associates in the search for an efficient diuretic agent acting on osmotic principles. Work was done with sucrose; then other sugars and substances resembling sugars were given a trial. Among these were raffinose, mannitol and sorbitol, as well as simple brown sugar. Diuresis was successfully established with hypertonic sugar solutions in a dog which had been rendered anuric by poisoning with bichloride of mercury, and the author suggests clinical application of this effect. Sorbitol in dogs was found to be equal in diuretic potency to sucrose, and surpassed this sugar in some cases. In one clinical case of anuria, diuresis could not be established by any of the usual solutions, but when the dose of sorbitol was raised to 1 cc. of the 50% solution per pound, output became equal to intake over night. In conclusion, the author states that in certain cases sorbitol gave a more marked diuresis than any other substance.—J. G. STROHM. *Western J. Surg., Obstet., and Gynecol.* 46 (1938), 200; through *Abbott Abstract Service*, (1938), No. 304. (F. J. S.)

Sulfamides—Spermatogenic Troubles Caused by. An exact evaluation of the seminal liquid is difficult to determine. To study the action from treatments by sulfamides upon spermatogenesis, it is necessary to study the motility of the spermatozoa, their abnormal form and their number. On the other hand, it is impossible to make an examination at the beginning of the disease before absorption of the sulfamides because the vitality and number of spermatozoa often become diminished. Three procedures have been used: direct examination after the fixation of a smear of a drop of sperm. There is considerable disproportionment in the field of examination. It is better to use ten drops of sperm in 5 cc. of water and then take one drop of the dilution. Further, it has been proposed to take a hematimeter of Malassez, utilizing a solvent of bicarbonate and formaldehyde. With the procedure of dilution and fixation it has been found in 20 normal subjects a count of 43 spermatozoas. In the same subjects after the absorption of 15 Gms. of sulfamide in doses of 2.5 Gm. per day, it was found that the number fell to 34.69% of the subjects have presented a number of spermatozoas less than half the original. The action of sulfamides upon spermatogenesis is put in evidence in other words by the attenuation of the motility of spermatozoas and the frequency of abnormal forms. Due to this toxic action sulfamides should be used with great precaution and only in the case of serious infection.—P. BARBELLION and F. THORES. *J. des Practiciens*, 52 (1938), 465; through *Presse Medicale*, 101 (1938), 209. (W. H. H.)

Sulfanilamide—Action of, on Leucocytes. Serial leucocyte counts performed on fifty ambulant patients receiving 21 Gm. of sulfanilamide in fourteen days showed that in 46% of cases there was a transient polymorph leucopenia and in 44% a monocytosis. These changes were usually found between the seventh and twentieth day after administration of the drug.

Toxic symptoms arose in 70% of cases, but these bore no definite relationship to variations in the white count. The mild leucopenia found is significant, especially as the dosage employed was small.—C. J. C. BRITTON and J. HOWKINS. *Lancet*, 235 (1938), 718. (W. H. H.)

Sulfanilamide—Delayed Photosensitization of Skin from. The fact that sulfanilamide may produce photosensitization of skin during the time that it is being administered is well recognized, but Wax reports a case in which he believes that this effect was delayed until three months after the use of the drug had been discontinued. The patient had sustained a severe compound fracture which was followed by an osteomyelitis due to strepotococcal infection, and he was treated with sulfanilamide. Three months after the cessation of treatment, ultraviolet treatments were prescribed for treatment of general debility which had resulted from the prolonged period of sepsis. The exposure to the ultraviolet light was followed by the appearance of two large, brown pigmented areas on the skin of the legs. These later showed a tendency to break down and form ulcers, which retained their pigmentation after healing. It is believed that this is the first recorded case of delayed photosensitivity; the precautions suggested by it are obvious.—W. V. WAX. *New York State J. Med.*, 39 (1939), 723; through *Abbott Abstract Service*, (1939), No. 466. (F. J. S.)

Sulfanilamide in Blood and Urine. The rapid absorption of sulfanilamide when given by the mouth suggests the desirability of giving it frequently and in small doses if its concentration in the blood is to be maintained at a fairly constant level. An initial large dose of 2.4 Gm. might be followed by small doses of 0.6 Gm. given five times in twenty-four hours. When the functional capacity of the kidneys is under suspicion, it is well to control the excretion of sulfanilamide in the urine in the hope of avoiding sulfanilamide poisoning.—E. LUNDSTREEN, E. VERMEHREN and M. VERMEHREN. *Ugeskrift Laeger*, 100, (1938); through *Brit. Med. J.*, 4046 (1938), 208C. (W. H. H.)

Sulfanilamide in the Treatment of Experimental Trypanosomiasis of Rats. Sulfanilamide by intravenous and oral administration was ineffective in the treatment of Trypanosoma equiperdum infections of rats.—JOHN A. KOLMER and ANNA M. RULE. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 77. (A. E. M.)

Sulfanilamide in Tuberculosis in Guinea Pigs. Sulfanilamide appears to produce some degree of inhibition of an infection of guinea pigs with a human strain of the tubercle bacillus. The authors' results are less striking than those of Rich and Follis—possibly due to a difference in strain. The drug had very little influence on the course of infection in guinea pigs and none in rabbits when the bovine strain was used. The authors agree with Rich and Follis that it would be regrettable if any premature and unjustifiable conclusions were drawn regarding the treatment of tuberculosis. Further prolonged investigations with sulfaniliamde and other preparations are clearly necessary under carefully controlled conditions, special attention being paid to the toxicity of the drugs employed.—G. A. H. BUTTLE and H. J. PARISH. *Brit. Med. J.*, 4058 (1938), 776. (W. H. H.)

Sulfanilamide—Successful Treatment of Lymphogranuloma Inguinale with. Hamilton was first induced to attempt the treatment of lymphogranuloma inguinale with sulfanilamide by the early reports of successful treatment of virus diseases with a sulfanilamide derivative. The first two cases in his series showed such prompt improvement that all others seen subsequently were given sulfanilamide. The dose schedule was as follows: 80 grs. in divided doses each day for two days then 60 grs. daily for three days, and then 40 grs. daily for four to eight days. Under this treatment a prompt decrease in the size of the involved lymph glands took place within a few days. In 13 out of 15 cases this improvement continued and a complete symptomatic cure resulted. In the remaining two cases there were recurrences, but these subsided upon continuing the same treatment. No patient developed inguinal sinuses while under treatment, and those already having these showed a prompt decrease in discharge followed by healing.—G. R. HAMILTON. *Military Surgeon*, 83 (1938), 431; through *Abbott Abstract Service*, (1939), No. 417. (F. J. S.)

Sulfanilamide—Treatment of Gonorrheal Ophthalmia with. The author calls attention to the small number of cases of ophthalmia neonatorum reported in the literature as having been treated with sulfanilamide, and reports five cases of his own. These infants responded to the treatment more rapidly than had ever been noted with any other medication in the experience of the clinic. While not enough cases have been observed to permit generalizations as to optimum dosage, the authors found that between $1^1/_2$ and 2 grs. per pound daily (0.20 to 0.25 Gm. per kilo) seemed to be an adequate dose. One infant suffered a marked fall in erythrocyte level and re-

quired treatment by transfusion, apparently as a result of the medication, and this complication must be guarded against. Irrigation and other local measures were carried out in the treatment of these infected eyes. Striking amelioration of local symptoms was evident in this series of five cases within eighteen to twenty-four hours after the beginning of sulfanilamide treatment.—T. WILLIS. *Yale J. Biol. Med.*, 10 (1938), 275; through *Abbott Abstract Service*, (1938), No. 275. (F. J. S.)

Sulfanilamide—Unpleasant Symptoms from, Relieved by Nicotinic Acid. Because of the findings of Spies, Cooper and Blankenhorn that the porphyrinuria accompanying pellagra and numerous other disorders could be relieved by the use of nicotinic acid, the authors decided to administer this substance to patients taking sulfanilamide, who also show a notable porphyrinuria. The dose was 50 mg. three times daily, beginning on the fourth day of sulfanilamide administration. Findings of other workers that nicotinic acid decreased the porphyrinuria of sulfanilamide-treated patients were confirmed, and it was noted that as the porphyrin in the urine decreased there was a marked diminution in the variety of unpleasant symptoms which usually accompany the taking of sulfanilamide. The most marked effect was a clearing of the mental dullness which often accompanies high dosage of sulfanilamide. Other side-reactions which diminished were malaise, weakness, headache, tinnitus, vertigo nausea, vomiting, diarrhoea and anorexia.—A. P. MCGINTY, G. T. LEWIS and M. R. HOLTZCLAW. *J. Med. Assoc., Georgia*, 28 (1939), 54; through *Abbott Abstract Service*, (1939), No. 474. (F. J. S.)

Sulfanilamide—Value of, Seriously Questioned in the Treatment of Gonorrhea. The author deprecates an attitude toward new remedies for gonorrhea which he has been able to observe for a number of years—an attitude which welcomes each new remedy with enthusiasm, forgetting the nature of the disease itself which is such that no panacea can ever cure all its manifestations. He believes that far too many of the "studies" of the action of sulfanilamide in gonorrhea have been superficial and poorly controlled, and is not inclined to think that the new drug gives any better end-results than former methods. One thing new which he views with alarm is the rapidity with which discharge and other open symptoms of the disease may be controlled This, he states, is lulling many physicians and patients alike into a false belief of cure, when the patients are really asymtomatic carriers. The old criteria for identifying gonococci in smears no longer hold when sulfanilamide is used, he believes, and cultural methods (relatively inaccurate) must be used instead.—P. S. PELOUZE. *Am. J. Syphilis, Gonorrhea Venereal Diseases*, 23 (1939), 48; through *Abbott Abstract Service*, (1939), No. 470. (F. J. S.)

2-Sulfonilylaminopyridine—Treatment of Meningococcal Meningitis with. 2-Sulfonilylaminopyridine has proved to be a successful chemotherapeutic agent in the treatment of six cases of meningococcal meningitis. In two cases a concentration of no more than 3 mg. per 100 cc. in the cerebrospinal fluid produced an effective bacteriostasis. The passage of the drug from the gastrointestinal tract into the blood is rapid, but the rate of passage is related to the state of the gastrointestinal tract. The passage of the drug from the blood stream into the cerebrospinal fluid is rapid, and the concentration of the drug in the cerebrospinal fluid is approximately half of that found in the blood stream. Toxic symptoms were unimportant, although in all probability an unnecessarily large dose was used.—F. G. HOBSON and D. H. G. MAC QUAIDE. *Lancet*, 235 (1938), 1213. (W. H. H.)

Sulfur—Colloidal, Therapeutic Preparation of. The product comprises a colloidal emulsion of elementary sulfur, a protective dispersing agent of lecithin and an oleaginous base.—RAYMOND L. HIGH. U. S. pat. 2,138,546, Nov. 29, 1938. (A. P.-C.)

Tabes Dorsalis. Coöperative Clinical Studies in the Treatment of Syphilis. A study of case reports of patients treated in coöperative clinics, and under observation for periods of 2 to 20 years, revealed that routine antisyphilitic treatment had reversed hitherto positive spinal fluid in 29% of cases. In 15.4% of the cases the clinical symptoms were arrested. In early cases, in which routine treatment alone had failed, the added use of spinal therapy proved most beneficial. Where the spinal fluid showed the "paretic formula," malaria therapy, followed by intraspinal and routine treatment, had a satisfactory effect. The recommended treatment of tabes dorsalis necessitates at least 2 courses of arspehnamine (8 injections each) and of bismuth (16 injections each). The two courses should be separated by a two months' intervening course of heavy metal alone (12 to 15 injections). Potassium iodide in as large a dose as the patient can tolerate is to be given in conjunction. Intraspinal therapy requires 6 injections given in two courses; malaria

therapy, 8 paroxysms.—ANON. *Venereal Diseases Information*, (November 1938), 367; through *Abbott Abstract Service*, (1939), No. 491. (F. J. S.)

Testicular Hormones—Prostatic Hypertrophy Treated by. The following are the conclusions: Symptoms of prostatic hypertrophy are relieved by treatment with synthetic testicular hormones. The earlier the treatment, the more efficacious it is. The general condition and renal function improve, and the amount of residual urine decreases until its disappearance. The treatment is inefficacious in the presence of chronic retention and vesical distension, serious infective complications, or vesical calculi or diverticula, or in the case of small fibrous prostates. Hormone therapy is applicable to all cases and is quite harmless, even in doses far above the average. It does not lead to reduction in size of the prostate. If hormone therapy fails, surgical intervention is not prejudiced. Testosterone propionate is the preparation recommended, in daily intramuscular injections of from 5 to 10 mg. continued until improvement appears to be permanent.—A. OBERHOLTZER. *Brit. J. Urol.*, 10 (1938), 237; through *Brit. Med. J.*, 4069 (1938), 1402E. (W. H. H.)

Trypaflavine in Psittacosis. Trypaflavine prolongs the life of mice experimentally infected with the virus of psittacosis, and if the dose of the latter is not too great, may even save the life of the animal. The results of such experiments vary with the route of administration, both of the virus and of the trypaflavine, which is least effective when given intravenously (presumably owing to rapid elimination). Its action may be either direct or indirect; if the former, its capacity for penetrating cells is likely to be an important factor.—G. MAUER. *Zentral. für Bakteriol.*, 142 (1938), 279; through *Brit. Med. J.*, 4068 (1938), 1350H. (W. H. H.)

Tuberculous Empyema—Treatment of, by Injections of Metaphen in Oil. Rudman calls attention to the fact that pleural effusions in tuberculosis are quite likely to occur in various phases in the course and treatment of the disease. He does not agree with those who believe such fluid accumulations are to be regarded as harmless if they produce no symptoms. One serious complication of effusions is the development of empyema, and the author comments on the various agents which have been used in the treatment of this condition. Searching for a better medication to be applied intrapleurally, the author made trials with Metaphen in oil. The procedure consisted in preliminary aspiration of as much pus as possible, followed by the injection of enough air to replace the fluid removed. When this operation is completed, 20 to 30 cc. of Metaphen in oil are injected. Eighteen cases have been so treated. The result reported is a thinning of the exudate and, after a short interval of time, a disappearance of viable bacteria from the pleural cavity.—I. E. RUDMAN. *J. Chemotherapy*, 14 (1938), 106; through *Abbott Abstract Service*, (1938), No. 367. (F. J. S.)

Varicose Veins—Modern Treatment of. The indications for the injection of varicose veins far exceed the contraindications. The contraindications include degenerative diseases, acute local or general infection, chronic varicose ulcer, if infected at the time of treatment, severe arterial disease of the leg, pregnancy and phlebitis. In order to determine whether any patient will do better with injection treatment alone, or whether combined injection and ligation at the sapheno-femoral junction should be performed, a few simple tests must be performed. These are known as Perthes' test and the Trendelenburg test, and they serve to indicate whether the deep venous return from the leg is functioning, whether the valves in the communicating veins are incompetent, and whether the valve at the sapheno-femoral junction is competent. Those cases in which an incompetence of the communicating veins is manifested may be said to have the poorest prognosis while those with non-functioning valves at the sapheno-femoral junction do better with ligation.—P. J SARMA. *Bull. Ravenswood Hospital*, Chicago, 2 (1938), 1; through *Abbott Abstract Service*, (1938), No. 356. (F. J. S.)

Varicose Veins—New Sclerosing Solution for. The author has used a new sclerosing solution consisting of monoethanolamine oleate, 5%, with benzyl alcohol, in the treatment of varicose veins. A total of 550 injections has been given without untoward reactions. The advantages of the new solution as compared with sodium morrhuate, are its constant composition and its purity The exact chemical composition of morrhuate solution is probably never the same in two ampuls, because it is derived from cod liver oil, which varies in composition. In the author's cases the new compound, Monolate, has proved as effective therapeutically as sodium morrhuate, and there have been no sloughs following accidental perivenous injections. Muscle cramps have not occurred and no allergic manifestations have been noted. After six months, the results have been

satisfactory. Glasser believes Monolate should be added to the list of desirable chemicals for treatment of varicose veins.—S. T. GLASSER. *Am. J. Surgery*, 39 (1938), 120; through *Abbott Abstract Service*, (1938), No. 256. (F. J. S.)

Vitamin C Deficiency—Frequency of, in Peptic Ulcer. In a general review of recent advances in the field of gastroenterology, the author discusses the large amount of attention which has recently been devoted to the question of vitamin C deficiency in peptic ulcer. He states that according to present standards, vitamin C deficiency is the rule rather than the exception in patients with ulcer. The deficiency is in no way specific of the disease, but is common in many cases where dietary limitations or emaciation exist. As yet there is no evidence that vitamin C lack has any etiological importance in the causation of peptic ulcer, nor has any proof been brought forward up to the present that the administration of supplementary vitamin C is of other than general importance in patients with ulcer. One exception to this latter statement is found in patients requiring surgery, in whom an adequate supply of vitamin C is important to secure the normal rate of healing in the operative wounds, and to assure the patient an uneventful convalescence.—C. M. JONES. *New England J. Med.*, 220 (1939), 339; through *Abbott Abstract Service*, (1939), No. 475. (F. J. S.)

Vitamin C in Treatment of Whooping Cough. Twenty-one cases of whooping cough have been treated with large doses of vitamin C. The illness lasted an average of thirty-five days, compared with forty-one days in twenty control cases, a difference which lies within the limits of statistical error The average rate of weight gained was practically the same in both the "treated" and the control cases. These figures are in keeping with the general clinical impression that there was no striking difference in the course of the disease in the two sets of cases, and the assertion of Ormerod and UnKauf that the paroxysmal period of the disease is shortened "from a matter of weeks to a matter of days" was not confirmed. In comparing these results with those of Ormerod and UnKauf it is seen that the average course of the disease in the cases treated with vitamin C was thirty-five days in the present series as compared with only twenty-three days in the Canadian series. The two sets of cases appear to be comparable in so far as the average period for which symptoms had existed before treatment was practically the same in both series.—D. GAIRDNER. *Brit. Med. J.*, 4057 (1938), 742. (W. H. H.)

Vitamin C—Treatment of Pulmonary Asthma by. Vitamin C administered by intravenous route has a distinct retarding effect upon the pulmonary asthmatic attacks of humans. The results differ from one case to another therefore the results are classified as good, favorable, doubtful and negative. In general, the effect upon the asthmatic fever is less clear than that upon the attacks. Long remissions are often obtained by prolonged treatment. The cause of the differences in response to this treatment is being further investigated. It is thought that vitamin C acts by a non-specific desensitization action in asthmatic cases. Its anticolloidoclassic action has been demonstrated experimentally elsewhere by distinct experiences and this has been used as an explanation for the mode of action in asthma. Also recent researches has demonstrated an analogous action between vitamin C and cortical suprarenal extracts. Likewise it is known of the relation between this vitamin and other endocrine glands: thyroid, ovaries, etc. Vitamin C also exercises a remarkable influence upon intermediate protein metabolism. Hochwald has shown that in allergic and shock conditions, the organism consumes, as in infections, a large quantity of ascorbic acid which determines the pathologic phenomena. Here a series of problems should be studied for clarifying the mechanism of action of vitamin C in asthma which probably should be humoral. Since this work and clinical reports produce a point of both scientific and practical value it merits further study.—D. HAGIESCO, G. BAZAVAN, M. CRISCOTA and M. CIORANESCO. *Presse Medicale*, 78 (1938), 1435. (W. H. H.)

Vitamin C—Use of, in the Treatment of Essential Hematuria. The author believes that the chief anatomical defect in essential hematuria is an abnormal permeability of the glomular capillaries, which allows red cells to escape from their normal position inside the capillary loops. One possible cause for such an abnormal permeability is a weakening of the intercellular cement which is thought to seal the interstices of all cells in the body. This defect in intercellular cement substance is characteristic of vitamin C deficiency, and accounts for some of the hemorrhagic phenomena observed in scurvy. Accordingly, Burkland gave vitamin C in the form of its sodium salt once or twice daily in doses of 100 mg. to four patients who were suffering from essential hematuria. In every case the bleeding stopped a few days after the treatment had been started

and did not recur during the follow-up period. The cases showed no other definite signs or symptoms which might have led one to make a diagnosis of vitamin C deficiency.—C. E. BURKLAND. *J. Urol.*, 41 (1939), 401; through *Abbott Abstract Service*, (1939), No. 476. (F. J. S.)

Vitamin D—Comparison of the Two Forms of, in the Treatment of Rickets. The authors carried out feeding experiments on 23 cases of florid rickets and 27 cases of spasmophilia, using two different forms of vitamin D. One form, derived from the irradiation of ergosterol, is generally known as vitamin D_2 in Europe; the other form, found naturally in fish liver oils and resulting from irradiation of animal provitamin D (as in cholesterol) is called vitamin D_3. Whether the antirachitic substances were administered in a single large dose or in fractional doses, it was found that they were equally active in bringing about cure in the two pathological states. However, the D_3 material contained about 33% by weight of inert substances, and therefore must have been more powerful than the D_2 preparation, which was apparently 100% pure. The difference in activity was not demonstrated in any other aspect of the work, the two substances having an apparently identical normalizing effect upon the disturbed calcium and phosphorus metabolism.—H. BISCHOFF and H. BRIEGER. *Klin. Wochenschr.* 17 (1938), 1795; through *Abbott Abstract Service*, (1939), No. 483. (F. J. S.)

Vitamin K—Relation of, to Hemorrhage in Jaundice. In an article reviewing the history of theories concerning the nature of the hemorrhagic diathesis in jaundice and the development of vitamin K, it is brought out that most of the older theories proved inadequate to explain the bleeding tendency associated with icterus. Vitamin K is a fat-soluble substance requiring bile for its proper absorption. Numerous papers have already appeared reporting a decrease in the prothrombin clotting time in jaundiced patients following the administration of vitamin K and bile salts. To these reports, the author adds fourteen more cases of jaundice treated with vitamin K concentrate. In general, the effects of the material on the prothrombin time were favorable, though in three cases the response was unsatisfactory. In two of these, this could be explained by inability to retain the medication or by lack of coöperation of the patient, but in the other the cause is obscure. The author suggests that routine administration of vitamin K will doubtless become the general rule in cases of jaundice.—J. E. RHOADS. *Surgery*, 5 (1939), 794; through *Abbott Abstract Service*, (1939), No. 492. (F. J. S.)

Vitamin K—Use of, As an Adjunct in the Surgery of Bile Ducts. As a part of a general discussion of the management of diseases of the biliary tract, the author mentions that one of the most distressing complications of operations performed on the jaundiced patient is hemorrhage. Until Quick developed the prothrombin time test no satisfactory explanation existed as to why, of two patients with an equal degree of jaundice, one would bleed and the other would not. At present, Quick's test for prothrombin provides a reliable index of the hemorrhagic tendency, and Ravdin follows this closely in every patient with biliary tract disease. To correct the bleeding tendency, he feeds bile preparations together with a potent extract containing vitamin K. It is theoretically possible that in the presence of extremely severe liver damage the feeding of vitamin K might be inefficacious, but such cases are probably rare. Since the routine use of vitamin K and bile was instituted, the mortality in these cases from hemorrhage has been sharply reduced.—I. S. RAVDIN. *New England J. Med.*, 220 (1939), 326; through *Abbott Abstract Service*, (1939), No. 478. (F. J. S.)

Vitamin K—Use of, Previous to Surgical Procedures in Jaundice. The authors have been experimenting for the past year with the use of vitamin K in the treatment of the hemorrhagic tendency sometimes seen associated with jaundice in patients requiring operations. The first material used was an extract of the fat-soluble portions of putrefied fish meal, but due to practical difficulties this source was abandoned. The present material is made by extracting alfalfa with petroleum ether. Patients requiring this medication either (1) have normal prothrombin times (Quick's) (2) have elevated prothrombin times or (3) are actively bleeding. The first type should have prophylactic treatment; two to six gelatin capsules of vitamin K concentrate with 1 to 2 Gm. of bile salts daily. The second and third types are a more difficult problem, and require 1 to 2 Gm. of the concentrate with 2 to 4 Gm. of bile salts. The observations were made on 73 patients, of whom 60 were operated upon. Only 11% of these bled postoperatively instead of the usual 64% of controls.—H. R. BUTT, A. M. SNELL and A. E. OSTERBERG. *Proc. Staff Meet. Mayo Clinic.* 13 (1938), 753; through *Abbott Abstract Service*, (1939), No. 424. (F. J. S.)

Zinc Protamine Insulin—Duration of Action of. Observations of the effect of zinc protamine insulin on the glycosuria of diabetics receiving constant diets (usually in three-hourly feedings) indicate that a large and possibly maximal insulin effect is exerted on carbohydrate metabolism within three to six hours of the injection, and that the total duration of effect of doses lying between 15 and 100 units is fifteen to sixty hours.—R. S. AITKEN. *Lancet*, 235 (1938), 768. (W. H. H.)

NEW REMEDIES

SYNTHETICS

Aktedron (Chinoin, A. G., Ujpest) is phenyl-β-isopropylamine hydrophosphate. It is marketed as tablets, each containing 0.01 Gm., and in the form of ampuls, each containing 0.02 Gm. of the chemical. It is recommended in the treatment of depressive conditions, alcoholism, etc.—*Pharm. Zentralhalle*, 79 (1938), 800. (N. L.)

Albucid (Schering A.-G., Berlin) is 4-amino-benzenesulfonacetamide. It is marketed as tablets, each containing 0.5 Gm. of the medicinal and it is recommended in the treatment of gonorrhea.—*Pharm. Zentralhalle*, 80 (1939), 60. (N. L.)

Argental (Abbott Laboratories), colloidal silver bromide, is a light yellow powder, containing approximately 16% of silver bromide, stabilized by acacia and sorbitol. The addition of water readily makes a colloidal solution. Argental maybe applied to tissues without producing the escharotic effects of the stronger silver salts, yet its power of inhibiting bacterial growth is fully as great as that of other silver halide solutions against *Staphylococcus aureus*. It does not stain. Prolonged application of silver salts to mucous membranes may result in argyria. For inflammatory conditions of the ear, nose and throat, 5 to 40% Argental may be applied by swabbing or spraying. For irrigating sinuses, 2 to 5% solutions; in conjunctival sac, 10 to 25% solutions; in the urethra, 10 to 20% strength. Argental is available in bottles of 1-oz. or 4-oz.—*Am. Drug.*, 99, No. 2 (1939), 64. (E. V. S.)

Blankosulf (Carl Blank, Bonn a. Rh.) is a 5% solution of sulfur in the form of a molecular dispersion. It is recommended in the treatment of acne, seborrhœa and eczema.—*Pharm. Zentralhalle*, 80 (1939), 266. (N. L.)

Certuna (Bayer, I. G. Farbenindustrie, A. G., Leverkusen a. Rh.) is a dialkylamino-oxyquinoline-aminobutane preparation. It is recommended in the treatment of tropical malaria.—*Pharm. Zentralhalle*, 79 (1938), 811. (N. L.)

Citrosulf (Nordmark-Werke, G. m. b. H., Hamburg) has the following revised formula: cysteine, vitamins B and C, pyrazolone and a dimethylaminophenyl derivative. It is marketed in the form of ampuls and is recommended in the treatment of rheumatism, arthritis, grippe, etc.—*Pharm. Zentralhalle*, 80 (1939), 267. (N. L.)

Delsterol in Oil (E. R. Squibb & Sons, New York) is a highly potent, physiologically standardized solution of activated animal provitamin D in oil. The vitamin content has been adjusted to 10,000 U. S. P. XI vitamin D units per gm. Activated animal provitamin D is apparently identical with the vitamin D formed in the skin on exposure to sunlight or other sources of ultraviolet light and appears to be somwhat more effective in man than the form of vitamin D obtained by activation of ergosterol. It is indicated for use wherever it is desired to administer vitamin D for prophylaxis or therapy, as to premature infants, in the prevention and cure of rickets, for expectant and nursing mothers and in disorders of calcium-phosphorus metabolism where there is a deficiency of vitamin D. The daily prophylactic dose for the average infant is 5 drops (approximately 0.1 cc.) which supplies 850 units; for premature infants, the daily dose is 15 drops; during pregnancy and lactation and in the treatment of rickets, the daily dose is 20 drops or more, as may be indicated. Delsterol is supplied in dropper bottles containing 5 cc.—*Am. Drug.*, 99, No. 2 (1939), 64. (E. V. S.)

Flavogel (Glaxo Laboratories Ltd., Greenford) is acriflavine in a water-soluble jelly base. It is used for its powerful and prolonged protection for all wounds. It is supplied in $1^1/_2$ ounce collapsible tubes.—*Australasian J. Pharm.*, 20 (1939), 594. (A. C. DeD.)

Gonadin (Cutter Laboratories, Berkeley, Cal.) is a concentrated preparation of the gonadotropic hormone found in the serum of pregnant mares. It is a standardized, sterile solution; holds labeled potency of over nine months at room temperature and for eighteen months when

stored under proper refrigeration; it is not excreted by the kidney; proved the complete gonadotropic hormone, as it replaces the gonadotropic function of the pituitary in both male and female hypophysectomized animals. It is indicated for use in amenorrhea, sterility, functional bleeding, hypopituitary infantilism in the female; and sterility in the male due to azoöspermia. Gonadin is supplied in boxes of three 1-cc. vials of 200 units each.—*Drug. Circ.*, 83, No. 8 (1939), 41.
(E. V. S.)

Iliren (Bayer Products Ltd., London) is an adrenalin-free preparation of suprarenal cortex. It is used in Addisons' disease and certain cases of delayed convalescence. Each pill contains the equivalent of 3 gr. of active substance of fresh suprarenal cortex. The dose is 1–2 pills b. or t. i. d. It is supplied in bottles of 30 and 50 pills—*Australasian J. Pharm.*, 20 (1939), 594.
(A. C. DeD.)

Imbicoll with Cascara (Upjohn Co., Kalamazoo, Mich.) is a purified dried mucilaginous substance derived from karaya impregnated with cascara in granular form. Each five Gm. contains the equivalent of about 15 minims of fluidextract of cascara. It is indicated in the treatment of constipation due to muscular atony. It is supplied in jars of 4 and 8 oz.—*Drug. Circ.*, 83, No. 8 (1939), 41. (E. V. S.)

Lutocylin (Ciba Pharmaceutical Products, Inc., Summit, N. J.) is a trade name for progesterone, a white crystalline compound, in oily solution possessing the action of the corpus luteum hormone. The dose by intramuscular injections vary according to the individual requirements from 1 to 10 mg.; in menorrhagias or metropathia hemorrhagica, daily or every second day; in threatened abortion, 2 to 10 mg. once or twice daily, until cessation of pains and hemorrhages; in habitual abortion, 2 to 5 mg. one to three times weekly, starting one month before the usual time of abortion, and continuing for two or three months. It is used in functional uterine bleedings; threatened or habitual abortion and in selective cases of dysmenorrhea. Lutocylin is supplied in 1-cc ampuls containing 1 mg. and 5 mg. (boxes of 6 and 50) and 10 mg. (boxes of 3).—*Drug-Circ.*, 83, No. 8 (1939), 40. (E. V. S.)

Medichin Grippe Tablets (Oxylax-Laboratorium, Halle a. S.) consists of pyrazolon-phenyl-dimethylsalicylate 0.15 parts, dimethyl-amino-phenazon 0.1 parts and quinine hydrochloride 0.05 parts. It is recommended in the treatment of grippe. —*Pharm. Zentralhalle*, 80 (1939), 121.
(N. L.)

Mersagel (Glaxo Laboratories Ltd., Greenford, England) is phenyl mercuric acetate in a water-soluble jelly base. It is used as a fungicide jelly; a potent, soothing treatment for mycotic infections. It is supplied in collapsible tubes (approximately $1^1/_2$ ounces).—*Australasian J. Pharm.*, 20 (1939), 594. (A. C. DeD.)

Neoprontosil Tablets (Oral) (Winthrop Chemical Co., Inc.) contain in each dark red tablet 5 grs. of Neoprontosil (disodium 4-sulfamidophenyl-2-azo-7-acetylamino-1-hydroxynaphthalene-3,6-disulfonate). Indicated for use in hemolytic streptococcus infections, erysipelas, scarlatina, meningococcus infections. Its value in gonococcus infections is being studied; including gonorrheal complications (arthritis, etc.). Also of value in severe staphylococcus infections and in urinary infections caused by colon bacillus, aerogenes bacillus, dysentery bacillus and certain forms of staphylococcus. Also may be of value in type 3 pneumonia, undulant fever, colitis and gas bacillus infections. The dose for adults in severe cases is 50 to 80 grs., followed by 15 grs. every four hours; milder cases 5–10 grs. The tablets are available in bottles of 50 and 500.—*Am. Drug.*, 99, No. 2 (1939), 64. (E. V. S.)

One-Two-Three Tablets (Apotheker, G. Ludwig, Brieg, Bez. Breslau) consists principally of para-acetophenetidin and trimethyldioxypurine. It is recommended in the treatment of rheumatism, migrane, etc.—*Pharm. Zentralhalle*, 79 (1938), 802. (N. L.)

Percorten (Ciba Pharmaceutical Products, Inc., Summit, N. J.) is a chemically pure, synthetic desoxycorticosterone acetate. It is a white crystalline compound dissolved in sesame oil. The intramuscular dose is from 5 mg. weekly to 20 or 25 mg. daily, according to the severity of the case, in combination with sodium salt therapy. It is indicated in the treatment of Addison's disease. Percorten is supplied in 1-cc. ampuls of 5 mg. (boxes of 3 and 6) and 10 cc. rubber-capped vials containing 5 mg. per cc.—*Drug. Circ.*, 83, No. 8 (1939), 41. (E. V. S.)

Phanodorm (Bayer Products Ltd., London) is cyclohexenyl-ethyl-malonyl urea. It is used for insomnia. The dose is half to one tablet (gr. $^1/_2$ to 3), followed by hot drinks, before re-

tiring. It is supplied as tablets (3 gr.), tube of 10, bottles of 50 and 250, bottle of 500 and bottle of 1000.—*Australasian J. Pharm.*, 20 (1939), 594. (A. C. DeD.)

Pro-Follin (Schieffelin & Co., New York), a new and potent estrogenic substance, is a preparation of estradiol-17-propionate in sesame oil. Estradiol itself is the most potent of the estrogenic substances that have been isolated from the ovary. It has been found that the combination of estradiol with various organic acids seems to enhance and prolong its action for parenteral administration. Biological tests have shown that estradiol-17-propionate is longer acting than any of the estrogenic substances which are now commercially available. It is indicated in the treatment of those conditions brought about by the absence of the follicular phase of the menstrual cycle. Dysmenorrhea, menopausal neuroses, primary and secondary amenorrhea, delayed puberty, hypo- and hypermenorrhea, frigidity, missed abortions, pruritis vaulvæ and infantile gonorrheal vaginitis are typical symptoms. Supplied in strengths of 1000, 2000, 5000 and 10,000 Allen-Doisy rat units per cc. (boxes of six 1-cc. ampuls).—*Am. Drug.*, 99, No. 2 (1939), 64. (E. V. S.)

Tachalgan Suppositories (Labopharma Dr. Laboschin, G. m. b. H., Berlin-Charlottenberg) consists of pyrazolone salicylate, phenecetin, caffeine and phenylallylbarbiturate. It is recommended in the treatment of migrane, rheumatism, neuralgia, etc.—*Pharm. Zentralhalle*, 80 (1939), 92. (N. L.)

Trinesium (Abbott Laboratories, North Chicago, Ill.) tablets contain in each 7½ grs. of magnesium trisilicate. They are indicated for use in gastric hyperacidity and gastro-enteritis, due to food poisoning or mild bacterial infection. Trinesium is supplied in bottles of 40 and 500 tablets.—*Am. Drug.*, 99, No. 1 (1939), 62. (E. V. S.)

SPECIALTIES

Alliopoplat (Dr. Og. Herzberg, chem.-pharmaz. Präparate, Berlin) is a dragée preparation consisting chiefly of extract of allium and aromatics. It is recommended as an antiacid.—*Pharm. Zentralhalle*, 79 (1938), 800. (N. L.)

Almac Pulvoids (Drugs Products Co., Inc., Long Island City, N. Y.), plain uncoated yellow color, pulverous and segmented, contain in each colloidal aluminum hydroxide 7½ grs., magnesium trisilicate 7½ grs., aromatics and color. They combine the gel-forming, acid-adsorptive and prolonged neutralizing properties of colloidal aluminum and magnesium trisilicate. Used in the treatment of chronic peptic ulceration, hyperchlorhydric dyspepsia and hyperacidity. The dose is one to three pulvoids after meals or as required. Supplied in bottles of 100 and 1000.—*Am. Drug*, 99, No. 1 (1939), 62. (E. V. S)

Alycin Effervescent Tablets (Wm. S. Merrell Co., Cincinnati) contain in each natural sodium salicylate 10 grs., sodium bicarbonate 21 grs., sodium chloride 9 grs., citric acid 7 grs. and tartaric acid 8 grs. They are used as antipyretic, diaphoretic, analgesic or antacid in all conditions in which the internal administration of salicylates is indicated, such as influenza, the common cold, tonsillitis, acute rheumatic fever, arthritis, etc. One tablet is equivalent in salicylate content to a level teaspoonful of Alycin powder or two teaspoonfuls of Elixir Alycin. Supplied in bottles of 25.—*Am. Drug.*, 99, No. 1 (1939), 62. (E. V. S.)

Amaro-Delmin (J. H. Schaub, Delmenhorst) consists chiefly of a mixture of gentian, absinthium, centaury, frangula and ginger. It is recommended as a tonic.—*Pharm. Zentralhalle*, 80 (1939), 219. (N. L.)

Ammonium Mandelate-Asta (Chem. Fabrik Asta A.-G., Brackwede i. W.) is a brown liquid containing 40 Gm. of racemic ammonium mandelate and 4 Gm. ammonium chloride in each 100 cc. The preparation is tasteless, and it is recommended in the treatment of cystitis, pyelitis, etc.—*Pharm. Zentralhalle*, 80 (1939), 219. (N. L.)

Arumol I (Dr. Madaus & Co., Radebeul bei Dresden) is an inhalant consisting chiefly of oil of dwarf pine needles. **Arumol II** contains oil of dwarf pine needles and oil of eucalyptus and is recommended in the treatment of asthma.—*Pharm. Zentralhalle*, 80 (1939), 220. (N. L.)

Askarilax Tablets (Oxylax-Laboratorium, Halle a. S.) consist of santonin 0.02 parts, resin of turpentine 0.05 parts, phenolphthalein 0.05 parts and sugar 0.3 parts.—*Pharm. Zentralhalle*, 7 (1938), 801. (N. L.)

Asthmabarm (Dehnhaide-Apotheke, Hamburg) consists of ephedrine, menthol, monobromated camphor, extract of quebracho and an analgesic. It is recommended in the treatment of asthma.— *Pharm. Zentralhalle*, 80 (1939), 61. (N. L.)

Asthmanon (Central-Apotheka, Ph. Kullmer, Sinsheim a. d. Elsenz) consists of caffeine citrate, extract of quebracho, magnesium oxide, ephedrine, potassium iodide and sucrose. It is supplied in the form of divided powders and is recommended in the treatment of asthma.—*Pharm. Zentralhalle*, 80 (1939), 120. (N. L.)

Barbtheo (Carroll Dunham Smith Pharmacal Co., Orange, N. J.) contains in each tablet theobromine sodium acetate 5 grs., dicalcium phosphate $2^{7}/_{2}$ grs., and phenobarbital $^{1}/_{4}$ grs. It is indicated for use as an antispasmodic, vasodilator in some forms of angina pectoris and arterial hypertension; also useful as a diuretic. Barbtheo is available in vials of 28, and bottles of 100, 500 and 1000.—*Drug Circ.*, 83, No. 8 (1939), 41. (E. V. S.)

Barmbecker Pills (Dehnhaide-Apotheke, Hamburg) consists chiefly of extracts of frangula, cascara, aloes and senna; leptandrin and phenolphthalein. It is recommended as a purgative and cathartic.—*Pharm. Zentralhalle*, 80 (1939), 220. (N. L.)

Benzolan-Kamillen Salve with Arnica and Hamamelis (Dr. Gutzeit, pharmaz. Präparate, Gera) consists of chamomile, arnica, witch hazel and benzolan (ointment base). It is recommended in the treatment of burns, sunburn, etc.—*Pharm. Zentralhalle*, 79 (1938), 811. (N. L.)

Bis Mix (George J. Wallau, Inc., New York), a gastro-intestinal antacid, is composed of a mixture of bismuth subcarbonate, bismuth subgallate, magnesium peroxide, colloidal kaolin, liquid extract of stramonium, plus a mixture of balanced alkalies and aromatic oils. The dose is one or two teaspoonfuls in half a tumblerful of tepid water, before or after meals and at bedtime. Bis Mix is supplied in cans of 4 oz.—*Am. Drug.*, 99, No. 2 (1939), 64. (E. V. S.)

Brom-Phenyral (Apogepha, Fabrik chem.-pharmaz. Präparate, Dr. Starke & Max Biering G. m. b. H., Dresden) consists of potassium bromide and sodium phenylethyl barbiturate in tablet form. It is recommended as a sedative.—*Pharm. Zentralhalle*, 80 (1939), 266. (N. L.)

Calcipot "C" (Troponwerke, Köln-Mülheim) is a vitamin C and calcium preparation containing *l*-ascorbic acid, calcium citrate and calcium glycerophosphate. It is recommended in the treatment of vitamin C deficiency.—*Pharm. Zentralhalle*, 79 (1938), 811. (N. L.)

Calfo-Rayol (E. R. Squibb and Sons' Department, Savory and Moore Ltd., London) contains in each tablet 2.6 grs. of calcium derived from dicalcium phosphate 9 grs. and calcium gluconate 6 grs.; 1.6 grs. phosphorus derived from dicalcium phosphate 9 grs.; 660 International units vitamin D supplied in form of irradiated ergosterol. It is indicated in use in conditions benefited by calcium administration. It is supplied in wintergreen flavored tablets (as above) and in gelatin capsules, each of which contains $4^{1}/_{2}$ grs. of dicalcium phosphate, 3 grs. of calcium gluconate, and at least 330 International units of vitamin D.—*Australasian J. Pharm.*, 20 (1939), 594. (A. C. DeD.)

Calmitol (Josper Ltd., London) is a solution of a lightly iodized camphor-aldehyde with menthol and traces of *l*-hyoscine oleate. **Calmitol Ointment** (10% Calmitol Lotion). It is used in cases of prurigo, eczema, uriticaria, chilblains, insect stings, sycosis barbæ, furuncles, acne punctata, etc. It is supplied as a lotion (applied with cotton wool at night) in bottles of 55 cc.; ointment in tubes of 45 Gm.—*Australasian J. Pharm.*, 20 (1939), 594. (A. C. DeD.)

Centalysan (Chem.-pharmaz. Labor. Ph. Kullmer, Sinsheim a. d. Elsenz.) consists chiefly of lithium salts, diethylene tetramine, quinic acid, hexamethylenetetramine, citrates, tartrates and sodium phosphate.—*Pharm. Zentralhalle*, 79 (1938), 811. (N. L.)

Cholazel-Tee (Labor. "Zely" der Kreiezberg-Apotheke, Berlin) consists principally of anise, peppermint leaves and chamomille.—*Pharm. Zentralhalle*, 80 (1939), 267. (N. L.)

Cilaudent (Bika, chem.-pharmaz. Fabrik, Stuttgart) consists of a mixture of liquid petrolatum, yellow wax, colocynth, turpentine, liquified phenol, oil of citronella, oil of eucalyptus, camphor and eugenol.—*Pharm. Zentralhalle*, 80 (1939), 267. (N. L.)

Cilauphen Vaginal Suppositories (Bika, Chem.-pharmaz. Fabrik, Stuttgart) consist chiefly of yellow wax, phenol, ethyl aminobenzoate, camphor, oil of eucalytus and cocoa butter. They are recommended in the treatment of vulvitis.—*Pharm. Zentralhalle*, 80 (1939), 91. (N. L.)

Codyl Syrup (C. H. Boehringer Söhn, Ingelheim a. Rh.) consists of 0.15% of total alkaloids (in the form of their hydrochloride salt) of which codeine represents 55%, narcotine 30% and papaverine 15%, each teaspoonful containing 0.004 Gm. of codeine sulfate. It is recommended in the treatment of bronchitis, grippe, etc.—*Pharm. Zentralhalle*, 80 (1939), 267. (N. L.)

Dermadura (Dr. Madaus & Co., Radebeul, Dresden) is a homeopathic preparation consisting chiefly of tincture of thuja, tincture of sanguinara and glycerin.—*Pharm. Zentralhalle*, 80 (1939), 267. (N. L.)

Drisdol with Vitamin A Capsules (Winthrop Chemical Co.) contains in each 1000 U. S. P. units of vitamin D in the form of Drisdol (crystalline vitamin D_2) and 10,000 units of vitamin A in sesame oil. Used in all conditions associated with vitamin A and/or D deficiency, or in which the normal requirement is increased. Average dose is one capsule daily. They are supplied in sanitape boxes of 25 and 100.—*Am. Drug.*, 99, No. 1 (1939), 62. (E. V. S.)

Homburg 680 (Chem.-pharmaz. A. G., Bad Hamburg, Frankfurt, a. M.) is a stabilized extract of the root of Belladonna bulgarica, each drop containing 0.075 mg. of total alkaloids.—*Pharm. Zentralhalle*, 80 (1939), 121. (N. L.)

Iri-Rheuma-Tee (H. Kohler, Berlin N) consists chiefly of arnica flowers and sambucus. It is recommended in the treatment of rheumatism.—*Pharm. Zentralhalle*, 80 (1939), 91. (N. L.)

Isipec (Riska-Loratorium, Berlin) consists of fluidextract of ipecac, dilute alcohol and an ammonium salt. The preparation is also supplied with codeine or ephedrine.—*Pharm. Zentralhalle*, 80 (1939), 121. (N. L.)

Lubrifinol "Silbe" (Dr. E. Silten, Berlin) is an emulsion of paraffin and agar-agar. It is recommended as a laxative.—*Pharm. Zentralhalle*, 79 (1938), 802. (N. L.)

Medicholin Dragees (Oxylax-Laboratorium, Halle a. S.) contain chiefly methenamine, sodium oleate and menthol.—*Pharm. Zentrallhalle*, 79 (1938), 801. (N. L.)

Nervoopt (Dr. Braun and Herberg, Hamburg) consists of potassium bromide, sodium phenobarbital, phenazon, extract of valerian, extract of adonis, calcium glycerophosphate, sucrose and aromatics. It is recommended as a sedative, nervine and soporific.—*Pharm. Zentralhalle*, 80 (1939), 121. (N. L.)

Novopect (Chem.-pharmaz. Fabrik "Mainfranken" Würzburg) is a cough remedy consisting of extracts of thyme and drosera, ammonium chloride, alcohol, glycerin, saponin and simple syrup.—*Pharm. Zentralhalle*, 80 (1939), 121. (N. L.)

Novosat Syrup (Paulus-Apotheke, Köln a. Rh.) consists of croesote 2.5 parts, codeine phosphate 0.6 parts, spirit of menthol 10 parts and syrup of aconite, a sufficient quantity to make 1000 parts. It is recommended in the treatment of tuberculosis, bronchitis and bronchial asthma.—*Pharm. Zentralhalle*, 80 (1939), 121. (N. L.)

Ophtopur Eyewash (Chem.-pharmaz. Fabrik Dr. Winzer, Walldorf, Frankfurt, a. M.) is a lotion of zinc borate in isotonic boric acid solution containing also camphor and adrenaline. It is recommended in the treatment of conjunctivitis and blepharitis.—*Pharm. Zentralhalle*, 80 (1939), 91. (N. L.)

Phagosthyl Ampuls (George J. Wallau, Inc., New York) contain in each 5 cc. sodium cacodylate 0.2 Gm., magnesium cacodylate 0.1 Gm., strychnine sulfate 2 mg. in isotonic salt solution. Used as a reconstructive tonic, one ampul is given subcutaneously or intramuscularly daily or every other day. The ampuls are supplied in boxes of 12 and 50.—*Drug. Circ.*, 83, No. 8 (1939), 41. (E. V. S.)

Renotramin (Nihalgen, G. m. b. H., Berlin) consists principally of calendula, juniper, uva ursi, peppermint leaves and methenamine.—*Pharm. Zentralhalle*, 80 (1939), 92. (N. L.)

Vasenol-Cod Liver Oil Paste (Vasenol-Werke, Dr. A. Kopp, Leipzig) consists of vasenol-paste, glucose and 25% cod liver oil. It is recommended in the treatment of acute eczema, burns, etc.—*Pharm. Zentralhalle*, 80 (1939), 92. (N. L.)

V-I-C-M (Drug Products Co., Inc., Long Island City, N. Y.) are tablets containing in each vitamin B_1 50 International units, vitamin B_2 50 gamma, small amount of other known vitamin B complex factors, vitamin D 350 U. S. P. units, ferrous gluconate, manganese gluconate, dibasic calcium phosphate, lactose, arrow root and aromatics. They are used for the treatment of faulty nutrition, lack of or loss of appetite, decreased energy and to stimulate growth; a hematinic, and as a source of calcium and phosphorus for expectant and nursing mothers. The adult dose is one tablet; for expectant and nursing mothers two tablets; for children under 12, one-half tablet, all after meals. V-I-C-M is supplied in sanitape boxes of 48 tablets and bottles of 100.—*Drug. Circ.*, 83, No. 8 (1939), 41. (E. V. S.)

Vi-Litron (Funk-Dubin) (U. S. Vitamin Corporation, New York) is a liver concentrate and ferrous iron product fortified with vitamins B_1, B_2 (G) (including other factors of vitamin B complex) and having a p_H of 4.5, desirable for ready assimilation. It is a new rational antianemia formula useful for the treatment of microcytic, normocytic and some macrocytic anemias; stimulates the formation of erythocytes and hemoglobin. The dose is 2–8 capsules daily, as directed by the physician. Vi-Litron is packed in strips of cellophane, 8 capsules to the strip, in boxes of 48, and 200.—*Am. Drug.*, 99, No. 2 (1939), 64. (E. V. S.)

Vi-Penta Drops (Hoffmann-La Roche, Inc., Nutley, N. J.) contains in each 10 minim dose vitamin A 9000 U. S. P. units; vitamin B_1 0.45 mg. thiamin chloride (150 International units); vitamin B_2 (G) 20 gammas riboflavin; vitamin C 500 International units (25 mg. *l*-ascorbic acid) and vitamin D 900 U. S. P. units. The vitamins are in a highly concentrated clear, palatable solution; provides adequate vitamin supplements for all age groups; especially useful for infants, small children and individuals who cannot swallow capsules. The dose for infants is usually 5 minims daily; older children 10 to 15 minims daily; adults 15 to 30 minims daily. Nursing and expectant mothers require larger doses than average adults. The drops are supplied in vials of 15 and 60 cc., each vial fitted with a measuring pipette, calibrated for 5 and 10 minim doses.—*Drug. Circ.*, 83, No. 8 (1939), 40. (E. V. S.)

Zelycor (Labor. "Zely" der Kreuzberg-Apotheke, Berlin) consists principally of orange peel, cactus, convallaria, cascara sagrada, cimicifuga, thyme, sodium benzoate, theobromine, sodium salicylate and aromatics. It is recommended as a cardiac tonic.—*Pharm. Zentralhalle*, 80 (1939), 267. (N. L.)

BACTERIOLOGY

Alkylfluorophenols—Synthesis and Germicidal Properties of Some. Bromination of para-fluorophenetole gave a crystalline by-product which proved to be 2,4-dibromophenetole. Thermal decomposition of crude para-phenetolediazonium borofluoride yielded a phenetole which could not be separated from the fluorine compound. Catalytic reduction of the alkenylfluorophenetoles offered no difficulty despite the observation that fluorine is removed from the ring as the initial step in the hydrogenation of fluorobenzene to cyclohexane with platinum black. The bacterial data indicate that replacing the ring hydrogen of an alkylphenol by fluorine enhances its germicidal properties but that the effect is not as pronounced as with chlorine or bromine.—C. M. Suter, E. J. Lawson and P. G. Smith. *J. Am. Chem. Soc.*, 61 (1939), 161. (E. B. S.)

Antiseptics of the Acridine Series. With the objective of producing a new series of acridine antiseptics Duegan *et al.*, have introduced, among others, the following typical groups: amidosulfonylaniline; β-chloroethylamino; *p*-anisidine at position (5) of 3-nitro-7-alkoxyacridine. The more useful corresponding amine was prepared in each case by reducing the nitro group at position (3) with stannous chloride in the presence of acetic acid. The bactericidal properties of these compounds are under investigation.—Chim Sain Duegan, Kartar Singh Narang and Jnanendra Nath Ray. *J. Chem. Soc.* (London), (1939), 476. (W. T. S.)

Aromatic Derivatives Possessing Bactericidal Properties—Process for the Production of. Arylsulfonic chlorides obtained from aralkylanilines by treating with chlorosulfonic acid are treated with ammonia.—Société des Usines Chimiques Rhône-Poulenc. Belg. pat. 426,287, March 31, 1938. (A. P.-C.)

Atabrin—A Prophylactic in Malaria. Where drainage of the breeding places of *Anopheles* is impossible other measures, as chemoprophylaxis and larvicides, must be applied to eradicate malaria. During a period of three years a study was made of several antimalarial drugs with particular reference to the conditions which influence their prophylactic activity. Atabrin was found to be generally effective for this purpose when used in a daily dosage of 50 mg. In a large number of cases as much as 25 Gm. of atabrin administered over a period of three years gave no toxic symptoms.—M. E. Winchester. *Am. J. Trop. Med.*, 18 (1938); through *J. Trop. Med. Hyg.*, 42 (1939), 119. (W. T. S.)

Bacterial Spores—Destruction of, by Low Temperature Sterilization. An extensive survey of sterilization procedures at relatively low temperatures, in particular at 80° C. The investigations undertaken and described (with results given) come under three principal headings: (1) The use of germicides to increase the bactericidal value of intermittent heating at 80° C.; (2) the use of germicides to increase the bactericidal value of (*a*) short period heating at 80° C.,

(*b*) relatively long period of heating at 80° C.; (3) the use of germicides to increase the bactericidal value of heating at 100° C. Tentative outlines for three sterilization processes are: (*a*) Dissolve or suspend the medicament in distilled water, glucose solution or physiological saline, add a mineral acid until a hydrogen ion concentration of p_H 2.25 is attained, transfer to the final container, seal effectively and heat at 80° C. for one hour. This process is obviously not of general applicability. (*b*) Dissolve or suspend the medicament in distilled water, glucose solution or physiological saline, to which has been added 1 in 25,000 of a phenylmercuric salt, transfer to the final container, seal effectively and heat at 80° C. for one hour. (*c*) Dissolve or suspend the medicament in distilled water, glucose solution or physiological saline, to which has been added 1 in 400 of *p*-chloro-*m*-cresol, transfer to the final container, seal effectively, and either tyndallize or heat at either (1) 80° C. for four hours, or (2) 100° C. for one hour. In an even mildly acid solution these time periods can be much reduced, and heating for one hour at 80° C. would probably be efficient at p_H values below 5.0.—C. E. COULTHARD. *Pharm. J.*, 142 (1939), 79. (W. B. B.)

Bactericidal Action—Evaluation of. The following method is recommended: Phenol of analytical reagent standard was used and solutions were made up in freshly distilled water, immediately before use. Approximately 40 cc. of phenol solution at 20% was placed in a Jena glass-stoppered bottle and to it was added a certain number of drops of *Bacterium coli* suspension in Ringer's solution. The mixture was shaken 50 times and set aside in a constant temperature bath at 20° C. from time to time samples were taken from this bottle by means of a capillary dropping pipette. Before removing a sample the suspension was shaken 50 times and sucked up and down in the pipette 5 times. A definite number of drops of this suspension was then added to the diluent, sterile Ringer's solution, filtered through a Mandler 15 lb. filter and dilution continued until it was hoped from 100 to 300 bacteria were obtained in the finished sample. This last sample was dropped into molten agar medium kept at 40° C. The tubes were immediately rolled under the tap and incubated. Throughout the work the dilution was of such a degree that any bacteriostatic action of phenol was avoided. After three days incubation the tubes were clamped on a rotating wheel and observed by diffused light. The results are summarized as follows: The roll tube-capillary dropping pipette method of estimating the number of viable bacteria in a suspension has a standard error of about 5% when 4 tubes are used. About half this error is due to measurements of volume and half is due to the inevitable sampling error. The use of calculations of X^2 as a criterion of the accuracy of the results is discussed It has been shown that the death rate of *Bacterium coli* in weak solutions of phenol is not constant, an initial lag period occurring. When the strength of phenol solution is increased the lag period diminishes and with further increase no lag period was detectable. When no lag period occurs, the death rate corresponds to that of a monomolecular reaction. It is suggested that sporing organisms and relatively strong solutions of bactericides should be used for the evaluation of bactericidal action in order to eliminate the lag period. This is being investigated.—E. R. WITHELL. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 736–757. (S. W. G.)

Bromine—Germicidal Action of. Bromine is an effective germicidal agent against non-spore-forming micro-organisms. Spore-forming bacteria are much more resistant. The element has a marked specificity for *Escherichia coli* and *Eberthella typhosa*. Mold spores were more resistant than yeasts or non-spore-forming bacteria.—F. W. TANNER and GEORGIA PITNER. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 143. (A. E. M.)

Brucella—Effect of Sulfanilamide on. The authors tested the action of sulfanilamide *in vitro* on brucella organisms of the caprine, bovine and porcine types, and also investigated the action of the drug on freeing the bodies of inoculated guinea pigs from these organisms. In the test-tube experiments, sulfanilamide was found to exert a bacteriostatic action on all strains of the organism, but its bactericidal effect, reported by other investigators, could not be confirmed. Organisms left in contact with a mixture of sulfanilamide solution and brucella anti-serum seemed to be less adversely affected than those in contact with sulfanilamide alone. Guinea pigs were inoculated with the different strains of brucella organisms and one-half of them were treated with the drug, the other half remaining untreated as controls. Organisms were recovered by culture from the bodies of 19 of 20 untreated animals, but only one out of 20 of the treated animals gave positive cultures by this method.—E. E. MENEFEE and M. A. POSTON. *J. Bact.*, 37 (1939), 269; through *Abbott Abstract Service*, (1939), No. 488. (F. J. S.)

Cantharides Blisters—Use of, in Microbiology. A microbiological study of the serum from a cantharides blister gave better evidence of bacterial, protozoal and fungous infections than could be obtained from a blood-smear. The technic used in producing the blister was given along with directions for investigating the serum. In spite of certain objections to the method it was found advantageous in studying syphilis, leprosy and especially hæmatogenous-infectious dermatoses.—TIBER BENDEK. *J. Trop. Med. Hyg.*, 42 (1939), 81. (W. T. S.)

Cod Liver Oil—Bactericidal Power of. Tested against paratyphoid B, cod liver oil had a bactericidal power equal to a 1% solution of PhOH or a 2% emulsion of essential oil of Ceylon cinnamon.—P. NÉLIS. *Compt. rend. soc. biol.*, 130 (1939), 329. **Bactericidal Action of Cod Liver Oil on Spore Forming Bacilli.** Tested against *B. subtilis* and anthrax bacillus, cod liver oil was a little more active than a 1% solution of PhOH.—*Ibid.*, 508; through *Chem. Abstr.*, 33 (1939), 3969. (F. J. S.)

Germicidal Agent. A composition for destroying coccidia oocysts comprises sulfur dioxide dissolved in an oil.—KARL T. STEIK and JULIUS F. MULLER, assignors to NATIONAL OIL PRODUCTS CO. U. S. pat. 2,139,102, Dec. 6, 1938. (A. P.-C.)

Horse Serum (Meningococcus Antitoxin)—Detection of, in Blood and Cerebrospinal Fluid. A precipitin test is described for detecting and approximately estimating horse serum in the blood and cerebrospinal fluid of patients injected with meningococcus antitoxin. Reasons are advanced for regarding this test as a better indicator of globulins, with which antibodies are usually associated, than of other proteins in the horse serum. In every one of twenty-four patients receiving therapeutic treatment of serum by routes other than the intrathecal the cerebrospinal fluid contained horse serum protein, but only in very small and variable amounts, whose local therapeutic effects must have been correspondingly slight.—J. M. L. BURTENSHAW. *Lancet*, 235 (1938) 1513. (W. H. H.)

Methylene Blue—Elimination of, by the Body. The author found that in man, as in the rabbit, methylene blue is excreted largely in the bile but in the leuko-form. Methylene blue in this form was claimed to be without definite bactericidal effect *in vitro* on a number of micro-organisms.—BELA HALPERT. *J. Trop. Med. Hyg.*, 42 (1939), 72. (W. T. S.)

Pathogenic Fungi—Chemical Studies of Certain. The dried cells of *Monilia albicans* were extracted with an alcohol-ether mixture and chloroform. This was separated into phosphatide and acetone-soluble fractions. The phosphatide fraction formed only a small percentage of the total lipids extracted, the main part consisting of the acetone-soluable fraction. The phosphatide had a nitrogen:phosphorus ratio of 1.2:1. On saponification, glycerophosphoric acid was isolated and identified. A mixture of fatty acids was isolated but the individual acids were not identified. The water-soluble portion gave a positive Molish test, indicating the presence of carbohydrates. The acetone soluble fraction probably consisted of a mixture of glycerides, free fatty acids and free bound sterols. After saponification of this fraction, ergosterol, glycerol and palmitic, stearic, oleic and linoleic acids were isolated and identified.—R. L. PECK and CHARLES R. HAUSER. *J. Am. Chem. Soc.*, 61 (1939), 281. (E. B. S.)

Pectin—Effect of, on Bacterial Growth. Pectin *per se* does not show germicidal action. The H-ion concentration seems to be the factor responsible for the decrease in counts in experiments.—PAUL S. PRICKETT and NORMAN J. MILLER. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 27. (A. E. M.)

Pyridine Azo Compounds—Chemistry and Bacteriology of Some New. The following were found to be distinctly bactericidal: 4-butoxypyridyl-3,5′-azo-2′,6′-diaminopyridine (I), 4-methoxypyridyl-3,5′-azo-2′,6′-diaminopyridine and 6-methoxyquinolyl-3,5′-azo-2′,6′-diaminopyridine (II). I had the greatest effect on cocci and Gram-negative, pathogenic intestinal bacteria, while II inhibited especially growth of species of the coli-proteus group.—O. BREMER and H. LIPPELT. *Arch. Schiffs-u. Tropen-Hyg.*, 41 (1937), 737–743; through *Chem. Abstr.*, 33 (1939), 3965. (F. J. S.)

Quinoline Derivatives as Antiseptics and Trypanocides. Among 7 derivatives of 4-aminoquinoline containing either a methyl, styryl or anilomethyl group together with their quaternary salts only one compound namely 2:2′-bis-*p*-dimethylaminostyryl-4:6′-diquinolylamine demonstrated trypanocidal or antiseptic activity. *Staphylococcus aureus* and *B. coli* were used by C. H. Browning, P. Browning and J. V. M. Robb to determine the antiseptic properties of the

compounds while their trypanocidal activities were tested in mice infected with *T. brucei*.—W. L. GLYNN, M. M. J. SUTHERLAND and F. J. WILSON. *J. Chem. Soc.* (London), (1939), 489. (W. T. S.)

Rabies Virus—Effect of Common Diluents on. The element of time and a diluent (hormone broth) were found to diversely affect the titre of a highly diluted rabies virus. Experiments were conducted with a hope of finding a diluent which would stabilize the virus titre for a period of at least one hour. Nine diluents were added in series to fresh rabies passage virus and certain of the dilutions were tested in mouse groups of four, immediately on preparation, and at varying intervals thereafter up to 24 hours. After 21 days the virus titres in mice were compared to determine the degree of unfavorable effect of each diluent on the virus. Normal saline was found to be definitely harmful in one hour. Distilled water was slightly less harmful to the virus than was hormone broth. The harmfulness of the diluents was decreased by the addition of a 10% normal serum. Serum tyrode solution was found to be the least harmful of the diluents used while serum water was almost as satisfactory.—D. F. MILAM. *Am. J. Trop. Med.*, 19 (1939), 297–301. (W. T. S.)

Rabies Virus—New Culture Medium for. Previous investigations have shown that some attempts to cultivate rabies virus on the chorioallantoic membrane were successful while others were not. After calling attention to several disadvantages of present-day anti-rabic vaccine the authors postulated that a superior and cheaper vaccine would result from the virus grown on chorioallantoic membrane and set out to verify whether the virus could be grown on such a medium. The following findings indicated, however, that their attempts were not successful. Only a small percentage of the inoculated eggs developed lesions and none of the suspensions prepared from the egg membranes which did show lesions proved infective. In no case were the authors able to demonstrate the presence of the virus after the first egg passage.—N. VEERARAGHAVEN and G. D. C. PHILIPSZ. *Indian J. Med. Research*, 26 (1938); through *J. Trop. Med. Hyg.*, 42 (1939), 166–167. (W. T. S.)

Sodium Lauryl Sulfate and Dreft—Selective Bacteriostatic Action of. Sodium lauryl sulfate and the commercial preparation Dreft, which contains large quantities of sodium lauryl sulfate, possess a high degree of bacteriostatic selectivity. The growth of molds and Gm. positive bacteria was definitely inhibited while most Gm. negative bacteria grew freely in the presence of these substances in nutrient agar.—JORGEN M. BIRKELAND and EDWARD A. STEINHAUS. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 86. (A. E. M.)

Sterilization in Pharmacy. The esters of para-hydroxybenzoic acid (nipagin and its congeners) are sufficiently active against cocci and non-spore-forming bacteria, but not against spore-forming bacteria. Chlorobutol is similar. Cardiazol (pentamethylenetriazole) is only effective against the less resistant types. These are therefore unsuited for use in order to make medicinal preparations sterile. Zephirol (zephiran), an aqueous solution of alkyl dimethylbenzylammonium chlorides, if added in the proportion of 0.2% is sufficient for the certain sterilization of medicaments. In stronger concentrations (10%) it will destroy the most resistant spores, and is thus suitable for the sterilization of instruments, bottles, syringes, filters, etc. Solutions of zephirol sometimes show signs of oxidation; this can be prevented by adding about 0.5% of sodium nitrite. For the sterilization of dentists' instruments many solutions with a basis of chloramine have been proposed and also with chlorothymol and chloroxylenol, and with formaldehyde. To prepare sterile sodium bicarbonate, 300 Gm. of pure crystalline sodium carbonate is dissolved in 480 Gm. of water and put in a Sparklet apparatus. This is sterilized by standing in boiling water for forty-five minutes and the sterilized top is put on. The bulb, the end of which is made sterile by burning a few drops of alcohol on it, is inserted and the whole shaken well while adding the carbon dioxide. When adding a fresh bulb the apparatus is turned so that the end of the glass tube is outside the liquid and any pressure is thus released without loss. Fresh bulbs are used until saturation occurs which is shown by the liquid becoming acid to litmus paper. Seven or eight are required. The precipitate is filtered on a sterile filter and washed with distilled water until the washings give no reaction with phenolphthalein. It is dried at 30° to 35° C. and kept in a sterile stoppered bottle. The yield is about 215 Gm.—G. CONCI. *Boll. chim.-farm.*, 77 (1938), 436; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 787. (S. W. G.)

Sterilization of Thermolabile Substances in the Presence of Bactericides. Phenol, *p*-chloro-*m*-cresol, phenylmercuric nitrate and hexylresorcinol were tested as follows: Ten cc. of

the bactericide solution in a test-tube immersed in a water bath at 60° C., 80° C. and in boiling water giving an internal temperature of 98° C., 1 drop of a suspension (500 × 10^6 organisms per cc.) of *B. subtilis* added (the suspension was always freshly prepared from the same agar slope for each experiment); 2 drops of the solution removed every fifteen or thirty minutes for sterility tests in veal digest broth which had been proved to be sensitive to growth from a very small inoculum of the organism. The inoculated broths incubated at 37° C. for five days. Controls were set up to guard against the bacteriostatic properties of the antiseptic. Hexylresorcinol proved to be valueless as it decomposes in aqueous solution, the rate increasing with rise of temperature. The minimum times for killing of the other substances are tabulated. The *p*-chloro-*m*-cresol, preferably about 0.2–0.25%, and phenylmercuric nitrate, 0.001%, appeared to be most effective. The presence of sodium chloride seems to increase the efficiency of the bactericides. The authors suggest that for such medicaments as will withstand steaming (98° C.) for thirty minutes in aqueous solution, the inclusion of either 0.25% of *p*-chloro-*m*-cresol or 0.001% of phenylmercuric nitrate will provide a big margin of safety against viable bacterial contamination. Before adoption, however, toxicity tests should be carried out.—H. BERRY, E. JENSEN and F. K. SILLER. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 729–735. (S. W. G.)

Sulfanilamide and Sulfapyridine—Chemotherapeutic Evaluation of, in Type II Pneumococcal Infections in Mice and Rats. Sulfapyridine was found to be slightly superior to sulfanilamide in combating type II pneumococcal infections in mice and rats. These conclusions are based on survival values only.—FRANK B. COOPER, PAUL GROSS and MARION LEWIS. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 37. (A. E. M.)

Sulfanilamide in the Treatment of Experimental Shigella Dysenteriæ (Shiga) Infections in Rabbits. Sulfanilamide by oral, subcutaneous and intravenous administration was ineffective in the treatment of rabbits inoculated intravenously with virulent *Shigella dysenteriæ* in doses of 300 million per Kg., fatal within 24 to 72 hours in untreated controls.—JOHN A. KOLMER and ANNA M. RULE *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 23. (A. E. M.)

Sulfapyridine—Comparative Therapeutic Effects of, in Experimental Staphylococcus Aureus Infection in Mice. The chemotherapeutic effect of sulfapyridine in staphylococcal infections in mice is definite enough to warrant careful clinical trials in severe staphylococcal infections. Two patients suffering from sepsis showed dramatic response.—ELEANOR A. BLISS and PERRIN H. LONG. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 32. (A. E. M.)

Sulfapyridine in Experimental Infections with Type XXII Pneumococcus. Experimental infections with Type XXII pneumococcus, which are refractory to sulfanilamide therapy, can be treated satisfactorily with sulfapyridine. The amount of drug required for effective treatment is larger than that necessary in types I, VII and VIII infections. Avirulent decapsulated Type XXII pneumococci have been insulated from the blood of mice treated with sulfapyridine. This supports the suggestion that the drug exerts a definite action on the pneumococcus capsule.—CAROLYN HILLES and L. H. SCHMIDT. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 73. (A. E. M.)

Sulfonamide Therapy of Experimental Peritonitis Due to E. Coli, B. Proteus and B. Pyocyaneus. Sulfanilamide and sulfapyridine are both effective against peritonitis of mice caused by *E. coli* and *B. proteus*, but are ineffective against peritonitis of mice caused by *B. pyocyaneus*. Sulfanilamide may cure mice infected intra-abdominally with 100 lethal doses of *E. coli*, or 10 of *B. proteus;* less than 10 of *B. pyocyaneus;* or against 10 lethal doses of a mixture of *E. coli* and *B. pyocyaneus*.—FRANK B. COOPER, PAUL GROSS and MARION LEWIS. *Proc. Soc. Exptl. Biol. Med.*, 40 (1939), 34. (A. E. M.)

Syphilis—Accidental, Suggested Method of Preventing, During Transfusion. The authors conceived the idea that arsphenamine or neoarsphenamine might be added to citrated blood in small amounts to kill any spirochetes which might be present due to undetected syphilis in the donor. Preliminary tests indicated that a 1:10,000 concentration of disodium arsphenamine or neoarsphenamine could be relied upon to kill completely all spirochetes if the blood to which it was added was allowed to stand for fifteen minutes at room temperature. No destructive effect upon blood cells was observed from the addition of the arsenical compounds during this short period, and human subjects have received 300 cc. of blood containing a 1:1000 to 1:3000 concentration of neoarsphenamine without demonstrating any toxic effect. 300 to 400 cc. of blood containing disodium arsphenamine or neoarsphenamine have likewise been given as transfusions with-

out producing any detectable deleterious effect upon the subjects who had volunteered to act as recipients.—C. C. KAST, C. W. PETERSON and J. A. KOLMER. *Am. J. Syphilis Gonorrhea Venereal Diseases*, 23 (1939), 150; through *Abbott Abstract Service*, (1939), No. 477. (F. J. S.)

Toxins—Action of, upon the Thymus of Animals without Suprarenals. After removal of the suprarenals the involution of the thymus due to toxic agents is not produced, but in the tissues, which follows the beginning of the intoxication, one observes nevertheless a light pycnotic reaction. —LEBLOND and SEGAL. *Soc. de Biol.* (Dec. 3, 1938); through *Presse Medicale*, 99 (1938), 1827. (W. H. H.)

Trichomonas—Inhibiting Effect upon, of Certain Arsenicals. The author developed a method of testing the growth-inhibiting power of various drugs upon trichomonads *in vitro*. The organisms were grown upon Loeffler's medium in the presence of suitable concentrations of the drugs to be tested. The smallest concentration which would inhibit growth was recorded. It was not possible to conduct tests for lethal effect because the compounds of this class are not sufficiently soluble in water to make lethal solutions. It is possible to dissolve them in sodium bicarbonate solutions in fairly large amounts, but then the alkalinity of the solution was enough to kill the trichomonads without any other factor. The average concentrations of aldarsone necessary to inhibit growth were from one-half to one-third as great as those necessary for acetarsone and another pentavalent arsenical. On administration by mouth to rats, aldarsone was found to be the best tolerated of three compounds, thus having the highest chemotherapeutic index.—A. E. RAKOFF. *Am. J. Obst. Gynecol.*, 37 (1939), 265; through *Abbott Abstract Service*, (1939), No. 461. (F. J. S.)

Ultraviolet Air Sanitation. The purpose of ultraviolet air sanitation is to make the air in confined spaces more safe under the particular circumstances of its use, and to guard against the possibility that air-borne organisms may cause clinical infections. Such applications may vary greatly in their technical details according to the type of problem presented. Most cases will fall into one of the following categories: inhibition of infection by sedimentation; prevention of cross infection; sterilization of air supply; sanitation in air-conditioned systems. Floor-stand lamps, the wall-bracket types and hospital equipment are pictured.—F. W. ROBINSON. *Ind. Eng. Chem.*, 31 (1939), 23–26. (E. G. V.)

Ultraviolet Irradiation—Effect of, on Serum, Toxin and Toxoid of Diphtheria. Diphtheria toxoid suffers no variation in flocculation power from ultraviolet irradiation. Irradiated toxins lose a little of their power of flocculation, and toxicity diminishes approximately 30%. Antidiphtheretic serums lose flocculation power on irradiation while antitoxic power varies slightly. Precipitability by sodium sulfate of these sera is not affected by irradiation.—F. MODERN. *Rev. soc. argentina biol.*, 12 (Nov. 1936); through *Rev. sud-americana endocrinol. inmunol. quimioterap.*, 21 (1938), 138. (G. S. G.)

Urinary Antiseptics—Comparison of Organic acids and Sulfanilamide as. Mandelic acid acts only in acid urine; sulfanilamide acts best in an alkaline urine. The former is the drug of choice in infections due to *Streptococcus fæcalis*. The latter, because of the ease of administration, is the best drug in the average case. It is the drug of choice in acute infections, in *proteus* infections, and in patients with reduced renal function. The author points out that organic acids and sulfanilamide supplement each other according to the types of organisms producing the urinary infection.—H. HELMHOLZ. *Acta Paediat.*, 23 (1938), 1; through *Brit. Med. J.*, 4067 (1938), 1296D. (W. H. H.)

BOTANY

Aconitum Napellus—Morphologic Study of Underground Organs of. A detailed illustrated discussion is presented. The following conclusions are given: In the case of *A. napellus* the tuberization of the results root essentially from a proliferation of the fundamental internal tissue, with multiplication of the phloem bundles and development of the secondary vessels. The tendency toward tuberization is shown at an early stage of growth but is never very great. Tuberization always occurs to a much greater extent in cultivated aconites than in the wild plants. The dislocation of the bundles followed by an intense production of fundamental internal tissue seems to be the dominant cause of the appearance of supernumerary bundles. In the lower non-tuberous portions and in the lateral roots where the corona of secondary vessels is not yet formed, the increase in the number of bundles is caused by the division of preëxisting phloem bundle and the

appearance of a vessel between the two poles. This is the first vessel of a supernumerary bundle. Where the corona of secondary vessels exists, the increase of the number of ligneous bundles always occurs by division of a preëxisting bundle. In the older portion, tuberous or not, starting from the time that a continuous cambial zone exists, the increase in ligneous bundles occurs by dislocation of the anterior ligneous part as above. The particularly numerous phloem bundles are arranged in concentric circles and radial series. Their appearance always precedes that of the corresponding ligneous bundles.—F. STERNON, L. NIHOUL and J. GOFFART. *Bull. sci. pharmacol.*, 45 (1938), 433–452. (S. W. G.)

Delphinium—Possibilities of Synonymy in Genus. A study has been made of species, sub-species and varieties of *Delphinium*. The authors feel that there is justification for considering *D. carolineanum*, *D. Azureum*, *D. albescens*, *D. virescens*, *D. camporum*, *D. Penardi* and *D. Nortonianum* as synonyms of one another rather than as separate species.—JOAN COONS and C. W. BALLARD. *J. Am. Pharm. Assoc.*, 28 (1939), 223. (Z. M. C.)

Fungicides. Cupric oxide was not effective against tomato leaf mould, but its action was improved by incorporation with an oil emulsion. An ammonium silicate preparation containing copper and zinc gave promising results, which were further improved by combination with oil emulsion. A colloidal cupric hydroxide petroleum preparation controlled both leaf mould and rose mildew.—W. H. READ. *Ann. Rept.* (1937), *Exptl. Research Sta., Cheshunt*, (1938), 57–58; through *J. Soc. Chem. Ind.*, 57 (1938), 1473. (E. G. V.)

Hemicelluloses from Plant Materials—Extraction of. The course of the extraction of hemicelluloses from beet pulp, rice hulls and peanut shells was studied. Extraction by both acid and alkaline solutions was investigated. Normal extraction curves were obtained for rice hulls and peanut shells, but certain peculiarities (breaks in the curve) in the behavior of beet pulp were noted on extraction with both acid and alkali. That this phenomenon is due to the presence of pectin in beet pulp is advanced as a probable explanation.—E. YANOVSKY. *Ind. Eng. Chem.*, 31 (1939), 95–100. (E. G. V.)

Maples and Buckthorns—Meaning of Names Associated with. The author gave the meaning of the several names used to designate a number of plants belonging either to the maple or the more pharmaceutically important buckthorn family. The meaning of synonyms, generic names as well as names used to identify the different species of the above mentioned families were included.—WILLARD N. CLUTE. *Am. Botanist*, 45 (1939), 60–66. (W. T. S.)

Parasiticidal Composition. An emulsifiable anhydrous parasiticidal composition consists essentially of lauryl thiocyanate and cyclohexyl diethyl ammonium lauryl sulfate in substantially equal proportions, and is characterized as a homogeneous solution readily dispersible in aqueous medium to form a stable emulsion for use as a plant spray.—EUCLID W. BOUSQUET, assignor to E. I. DU PONT DE NEMOURS & Co. U. S. pat. 2,139,256, Dec. 6, 1938. (A. P.-C.)

Poison Ivy—Leaves of, with Five Leaflets. The author stated that he found two leaves of the poison ivy, *Rhus Toxicodendron*, with five leaflets caused by a division of the two lower leaflets of the ordinary 3-parted leaves. This was significant since poison ivy is usually distinguished from harmless woodbine, *Ampelopsis quinquefolia*, by the presence of three leaflets while in the latter there are generally five.—EDWIN D. HULL. *Am. Botanist*, 45 (1939), 71–72. (W. T. S.)

Soils—Study of the Absorption of Brazilian. Analyses of samples of soil from various regions of Brazil were made. It was found that the climate and location influence the colloidal content of the several soils studied.—EUMENES MARCONDES DE MELLO. *Rev. soc. brasil. quím.*, 6 (1937), 70. (G. S. G.)

Starch—Microscopy of, by the Spierer Lens. Photographs of partially and fully swollen wheat and corn starches are given, together with pictures of wheat amylose and wheat amylopectin.—SYBIL WOODRUFF. *Ind. Eng. Chem.*, 30 (1938), 1409–1413. (E. G. V.)

Tobacco Insecticide and Method of Making Same. A horticultural insecticide comprises a finely ground tobacco powder, a petroleum sulfinic salt and a small amount of free acid.—WM. H. VOLCK, assignor to CALIFORNIA SPRAY-CHEMICAL CORP. U. S. pat. 2,139,340, Dec. 6, 1938. (A. P.-C.)

Walnuts—American. The different types of walnut trees are classified. A botanical summary of the genus *Carya* or hickories is given. Those species which have been transplanted and acclimated in Europe are indicated.—R. GIRARD. *Bull. trav. soc. pharm. Bordeaux*, 76 (1938), 184–190. (S. W. G.)

Witch-Hazels—Blooming Habits of, Influence of Temperature on. A note concerning the influence of winter temperature on the blooming habits of two species of witch-hazel, *Hamamelis Virginiana* and *Hamamelis vernalis*, growing in Indiana, U. S. A. After the flowers of the latter species are opened they were found to avoid cold by simply rolling up in a hard cup-like calyx.—ANON. *Am. Botanist*, 45 (1939), 70. (W. T. S.)

CHEMISTRY

GENERAL AND PHYSICAL

Agar-Agar—Chemical Constitution of. For a compound so widely used in pharmacy and bacteriology it is at first sight surprising that so little is known about the constitution of agar-agar. For many years an essential part of the agar molecule was thought to be a sulfuric ester grouping. It was surprising therefore that neither agar acetate (which on de-acetylation formed a gel with ease), methylated agar, nor the washed agar used as a starting material, contained sulfur, so that the claims of certain workers that the presence of this sulfuric ester residue was the reason for the swelling power seem to be discounted. One portion of the agar molecule has been identified, and the striking thing is that it is a derivative of *l*-galactose, therefore this polysaccharide is one of the few which are, so to speak, ambidextrous, although this *l*-galactose derivative appears to occur only once to about four or five *d*-galactose units. All of the structures proposed for agar, so far, do not account for the property of agar to form a gel.—E. G. V. PERCIVAL. *Pharm. J.*, 142 (1939), 189. (W. B. B.)

Artostenone—Crystallographic Investigation of, the Stenone Isolated from the Indian Summer Fruit (Artocarpus Integrifolia) by Means of Goniometer and X-Rays. Several morphological examinations have been made by means of the goniometer. The crystal system has been found to be monoclinic. Plate faces *a* (100) of the crystals exhibit pronounced elongation along the *c*-axis. Crystallographic studies by means of X-rays gives $a = 17.3$, $b = 10.2$, $c = 7.4$ and $\beta = 100° 49'$. The molecular weight as calculated from these results comes out to be 424.2 ($C_{30}H_{50}O$ requiring 426 as the molecular weight). The improbability of the presence of the CO group in the position C_8, as in ergosterol, cholesterol, etc., has been supported. The results supply additional support to the view that artostenone has almost the same molecular structure as that of ergosterol.—M. C. NATH and P. L. MUKHERJEE. *J. Indian Chem. Soc.*, 16 (1939), 229. (F. J. S.)

Chemical Elements and Their Compounds—Classification and Correspondence of. A new table is developed based on electronic structural considerations. In the first horizontal group, numbered $n = 0$, is the neutron, placed above helium which is in the second horizontal group, numbered $n = 1$, together with hydrogen, lithium and berylium. The elements from boron to magnesium fall in the group $n = 2$, and there are then 8, 18, 18, 32 and 4 elements in the groups numbered 3, 4, 5, 6 and 7, respectively. The vertical group consisting of the rare gases is numbered $m = 0$; to the right is the alkali group, numbered $m = 1$, and next comes the alkaline earth group, numbered $m = 2$. To the left of $m = 0$ is the group containing hydrogen and the halogens, numbered $m = -1$, and then each consecutive group to the left is numbered $m = -2, -3$, etc., up to $m = -29$. The atomic number of any element, Z, is given by $Z = Z_0 + m$, where Z_0 is the atomic number of the rare gas in the same n group. Though electronic relationships are more closely associated, the elements still fall in their classical families.—R. LAUTIE. *Bull. soc. chim.*, 6, No. 4 (1939), 677–683. (E. G. V.)

Colloidal Chemistry and the Manufacturer. The influence of colloidal phenomena in clarification, filtration, dialysis, the manufacture of ointments and in percolation are discussed.—ANTON HOGSTAD, JR., *Drug Cosmetic Ind.*, 44 (1939), 162–165. (H. M. B.)

Cupric Hydroxide Sol. Cupric hydroxide sol has been prepared and its various properties with coagulation, abnormal dilution effect, ionic antagonism, etc., have been investigated.—R. N. MITTRA. *J. Indian Chem. Soc.*, 16 (1939), 175. (F. J. S.)

Density Differences—Determination of, by the Flotation Temperature Method. A description of the construction and manipulative details of a flotation temperature apparatus as used for analytical purposes is given. Of particular interest is the development of the flotation temperature determination as a density micro-method. The flotation temperature can be determined to within 0.0005 in samples as small as 0.1 cc. A method of calculating densities and com-

positions from flotation temperatures is discussed, which includes a consideration of the thermal expansion of the float, changes of the temperature of flotation in the reference sample, and deviations from ideal solution laws. The design of a special slide rule for calculating the percentage composition from the flotation temperature is indicated.—M. RANDALL and B. LONGTIN. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 44–46. (E. G. V.)

Dispersive Power for Calcium Soap—Measurement of. Kuckertz' method of measurement is preferred. The degree of dispersion is not simply related to optical properties, and relationships are derived giving the light transmission in terms of the concentration of disperse medium. Three constituents must be specified to determine the dispersive power of a given medium. —E. L. LEDERER. *Ole, Fette, Wachse*, No. 10 (1936), 1–3; through *J. Soc. Chem. Ind.*, 57 (1938), 1447. (E. G. V.)

Dissociation Constants of Some Organic Acids from Solubility Measurements. The dissociation constants of monochloro- and trichloroacetic acids, aminobenzoic and propionic acids have been recorded.—W. V. BHAGWAT. *J. Indian Chem. Soc.*, 16 (1939), 235. (F. J. S.)

Malts—Viscometer for Routine Determination of Proteolytic Activity of. The apparatus is very simple to construct and use. One temperature (40°) is used for standardization, and viscosity determinations. Better timing visibility is obtained. Absolutely constant volume is assured during a series of readings. No aliquot parts are taken from a changing substrate after digestion has started, no transfer of hot liquids to the viscometer is required as specified for the gelatin industry, there is no clogging due to evaporation at the tip, and intermediate cleaning is unnecessary between samples in a run. The simple design of the viscometer permits three simultaneous runs in less than 2 hours. The filled viscometer can be inverted at once, making accurate extrapolations possible. No buffering is required. The proteolytic activity value increases with the amount of enzyme. One minute of digestion corresponds to one point of activity.—J. R. KOCH, O. NELSON and L. EHRNST. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 35–41. (E. G. V.)

Osmotic Pressures—Low, an Apparatus for the Rapid and Accurate Determination of. An apparatus is described with which low osmotic pressures can be accurately measured on 0.2 cc. of solution and in less than eight hours. Satisfactory results are obtained on solutions as little concentrated as 0.025 *mM*, which give readings that usually check within less than 5%.—J. BOURDILLON. *J. Biol. Chem.*, 127 (1939), 617–625; through *Chem. Abstr.*, 33 (1939), 2931. (F. J. S.)

Periodic Precipitate—Formation of, in the Absence of a Foreign Gel. II. Ferric Hydroxide Sol by Different Methods. Ferric hydroxide sols have been prepared by acetate, carbonate and Krecke's methods for the study of periodic precipitation by the process of coagulation of these sols. The adsorption of sol by its own precipitate, the nature of the coagula which settle periodically and the speed of coagulation of the sols have been investigated. It has been shown that in obtaining the rings of precipitate by the coagulation of a sol, the adsorption of the sol by its own precipitate is not the only factor controlling the process.—R. N. MITTRA. *J. Indian Chem. Soc.*, 16 (1939), 165. (F. J. S.)

Photoelectric Methods in Analytical Chemistry. A review with complete bibliography. —R. H. MULLER. *Ind. Eng. Chem., Anal. Ed.*, 11 (1939), 1–17. (E. G. V.)

Physics' Contribution to Perfume Problem. A discussion of the method of Devaux for fixing flower perfumes on the surface of mercury in monomolecular layers as a means for proving the "materialness" of an odor.—L. TRABAUD. *Drug Cosmetic Ind.*, 43 (1938), 680–682. (H. M. B.)

Radioactive Contamination—Detection of, Using Geiger-Müller Counters. Situations frequently arise in which it is desirable to determine the extent of accidental contamination by radioactive materials. Such contamination occurs in research laboratories where radioactive studies are in progress and also in commercial plants where radioactive materials are handled. This article describes a portable Geiger-Müller counter operated entirely from the alternating current mains, which permits a rapid and accurate determination of such contamination wherever it exceeds the equivalent of about one-half microgram of radium per square meter. The device is also sufficiently sensitive to determine the presence of radium in amounts of micrograms in a living person and therefore may be used for routine test of workers, their garments and objects habitually handled by them. The instrument is very rugged, readily portable and silent in opera-

tion. Requiring no batteries of any kind, it is always ready for use. Commercial radio parts are used well within their ratings throughout, with the exception of the tube counter itself, so that there is little danger of failures, and the parts are easily replaced if they should fail. The indicator is a milliammeter which is arranged to have a very steady deflection under constant conditions and is yet sufficiently sensitive to measure 1 microgram of radium at a distance of 1 meter. The device may therefore be used for intercomparison by gamma radiation of samples of radium of low activity. It has been tested under practical conditions and has been found well suited for surveys of contaminated locations. It also is a very sensitive detector for finding lost radium preparations and for testing radium ores for commercial value.—LEON F. CURTISS. *J. Research Natl. Bur. Standards*, 23 (1939), 137. (F. J. S.)

Resins—Synthetic, Adsorptive Properties of. II. Adsorption of Potassium Salts of Various Anions. The adsorption of about a dozen potassium salts of various anions by an amino-resin has been studied. In similar anions the adsorption decreases with the increase in molecular weight. The same order of adsorption has also been observed for homologous series of mono- and dicarboxy fatty acids. Antibatic solubility-adsorbability relationship is not the sole determining factor. Consideration has to be paid to the molecular weight of the adsorbate and the possibility of its accommodation in the capillary structure of the adsorbent.—S. S. BHATNAGAR, A. N. KAPUR and M. S. BHATNAGAR. *J. Indian Chem. Soc.*, 16 (1939), 249. (F. J. S.)

Silver and Mercury—Colloidal Compounds of, Suitable for Therapeutic Use. A water soluble, protein-protected combination colloid of silver and mercury is prepared by dissolving a protein such as egg albumin in an alkaline solution (such as one of sodium hydroxide) and adding in the same step solution of a silver salt and a mercury salt such as the nitrates, and maintaining the resulting mixture at an elevated temperature until the silver and mercury assume colloidal form.—EARL V. VOELKER, assignor to S. M. LABORATORIES, INC. U. S. pat. 2,132,886, Oct. 11, 1938. (A. P.-C.)

Soap Solutions—Surface Tension of. A lecture. The measurement of static viscosity of soap solutions by the ring method is complicated by errors introduced by the reaction of the soap with atmospheric carbon dioxide (which can be eliminated) and by the more troublesome effect of the presence of imperfectly wetted surfaces, for example, walls of the vessel or the platinum ring itself, at which points local concentrations, and even crystallization, of solute may occur, apparently as a consequence of hydrolysis of the soap in dilute solution.—LOTTERMOSER. *Fette u. Seifen*, 45 (1938), 595–596; through *J. Soc. Chem. Ind.*, 57 (1938), 1447. (E. G. V.)

Surface-Active Agents. Six papers, given as a symposium before the Divisions of Ind. and Eng. Chem., and Colloidal Chem. Two papers place special emphasis upon conditions encountered at liquid-against-air interfaces, and disclose new methods of approach which are now being developed and used in the study of such systems. Three papers deal specifically with problems related to liquid against solid interfaces. These problems include the formation of asphalt emulsions with solid emulsifying agents, preventatives of carbonate scale formation, peptizing agents and surface-active dyeing agents. The sixth paper discusses the rapidly growing interest in wetting agents, presents a discussion of the theory underlying the nature of surface-active compounds, and gives a classification of types of the better known wetting agents.—F. E. BARTELL, *et al. Ind. Eng. Chem.*, 31 (1939), 31–57. (E. G. V.)

Zinc Hydroxide and Sodium Hydroxide—Electrical Conductivity of Solutions Containing. The measurement of electrical conductivity of solutions containing zinc oxide and sodium oxide in varying proportions has been made. It is inferred that sodium zincate exists in concentrated solutions but that it is hydrolyzed when the solutions are diluted; the zinc hydroxide set free as a consequence of hydrolysis exists in the colloidal state and when a critical dilution is reached it separates in the crystalline or amorphous form.—S. M. MEHTA and M. B. KABADI. *J. Indian Chem. Soc.*, 16 (1939), 223. (F. J. S.)

INORGANIC

Elements—Trace, in Human and Animal Nutrition. The rôles of copper, manganese, cobalt, nickel, zinc, aluminum, strontium, barium, beryllium, fluorine, bromine, iodine and selenium in the diet are discussed.—W. GODDEN. *Chemistry and Industry*, 58 (1939), 791–796. (E. G. V.)

Hydrogen Peroxide—Production of, from Persalts. A cyclic process for obtaining hydrogen peroxide in a method involving distilling solutions of persalts obtained by electrolytic oxidation comprises distilling the solution and interrupting the distillation before the maximum yield of hydrogen peroxide is obtained therefrom and while there is an appreciable amount of persalt remaining in the solution undecomposed, treating the residual liquor to obtain at least a portion of the persalt remaining therein in solid form, separating the persalt from the solution, reoxidizing the residual solution by electrolysis, and thereafter distilling the reoxidized solution.—HEINRICH SCHMIDT, assignor to PENNSYLVANIA SALT MANUFACTURING CO. U. S. pat. 2,133,210, Oct. 11, 1938. (A. P.-C.)

Iodine—Action of Fuming Nitric Acid on. Iodine pentoxide is the product obtained by the interaction of iodine and fuming nitric acid, under ordinary conditions. By removing the oxides of nitrogen from the original yellow powder, in the absence of moisture, iodine dioxide is also formed.—R. K. BAHL and S. SINGH. *J. Indian Chem. Soc.*, 16 (1939), 247. (F. J. S.)

Phosphate—Inorganic, Influence of Citric Acid on the Colorimetric Determination of. Its Significance in Phosphatase Experiments. In the colorimetric determination of phosphate, citric acid has a powerful deterrent effect upon color formation and therefore citrate buffer is not suitable in determining phosphatase. An acetic acid-acetate buffer is recommended instead.—E. LUNDSTEEN. *Enzymologia*, 5 (1939), 383–384; through *Chem. Abstr.*, 33 (1939), 2934. (F. J. S.)

Radioactivity—Artificial, and the Gaps in the Periodic Table. With the development of artificial radioactivity new possibilities in the search for missing elements have been opened up. There is now a chance of producing new elements or their isotopes by transmutations. The quantities produced will necessarily be small, probably the very limit of what can be detected with the spectroscope. But properties can be investigated when the new nuclear species are radioactive. The isotope of masurium can be produced by bombarding molybdenum with deuterons, while an isotope of illinium can be made from neodymium by a similar bombardment. Likewise it should be possible to produce elements of atomic number 85 and 87.—H. A. C. MCKAY. *Chemistry and Industry*, 58 (1939), 762–763. (E. G. V.)

ORGANIC

Alkaloids

Aconite Powder—Identification of. The following summary is given: A series of alkaloidal determinations on a commercial sample of powdered aconite gave unusually high results. Tests carried out on the alkaloidal residues indicated the presence of aconitine and the absence of pseudoaconitine. Microscopic examination showed that the young tubers had a higher percentage of the alkaloids. Spectrographic examination identified the powder as having been prepared from the species *Aconitum napellus*. The chemical, biological and spectrographic methods all indicated an aconitine content three to four times that of normal aconite. The author concludes that this sample of powdered aconite was prepared from a batch of crude drug containing a high percentage of young secondary tubers.—H. LECOQ. *J. pharm chim.*, 28 (1938), 321–334. (S. W. G.)

Alkaloids—Application of Electrodialysis to Extraction of. I. Some Drugs and Pharmaceutical Preparations. The apparatus illustrated in a previous paper (Fabre, *J. pharm. chim.*, 27 (1938), 467) is used here. The current is furnished by a commutator "Oxymetal" giving to the terminals a difference in potential of 100 volts and being able to deliver 2 amperes. Best results may be obtained by limiting the intensity of the current to 0.5 amperes, which avoids unnecessary heating of the liquids and too violent evolution of gases at the electrodes. The intensity diminishes as the operation continues owing to removal of electrolytes contained in the treated sample. The sample to be electrodialyzed is placed in the anodic compartment and the alkaloids pass into the cathodic reservoir. The time required may vary between six to twenty-four hours depending upon the nature of the sample. The sample may be placed in aqueous medium or in 40% alcohol or acetone. Addition of small quantities of ethyl acetate to the cathodic liquid assures an acetic ionization which favors the extraction of the alkaloids and avoids a too marked alkalinity of the cathodic liquid. The system should be agitated either by a current of inert gas or by mechanical means. This speeds up the extraction and in many cases prevents alteration of the separated alkaloids.—R. FABRE and P. OFICJALSKI. *J. pharm. chim.*, 28 (1938), 335–343. (S. W. G.)

Alkaloids—Styphnic and Picric Acids in the Microchemical Determination of. Oliverio claims priority in the method of determining alkaloids by means of microscopic examination of the picrate or styphnate of the alkaloids. Cf. Kofler and Muller (*Chem. Abstr.*, 31, 4449); Oliverio (*Chimica e Industria*, 19, (1937), 157).—A. Oliverio. *Ann. chim. applicata*, 28 (1938), 353–363; through *Chem. Abstr.*, 33 (1939), 2282. (F. J. S.)

Atropa Belladonna—Microchemical Reactions of the Alkaloids of. The author examined several preparations of Bulgarian and West-European Belladonna using the HI reaction described in his book. "Schema zur Mikrochenischen Identifikation von Alkaloiden." The experiments are described and photomicrographs are given. He concludes as follows: (1) The Bulgarian and West-European roots seem to show neither qualitative nor quantitative microchemical difference. (2) There is no difference in the reaction product from the various parts of the plants (leaf and root).—F. Amelink. *Pharm. Weekblad*, 75 (1938), 1196. (E. H. W.)

Cocaine—Assay of, in Raw Cocaine and Coca Leaves. In this report of the Expert Committee the sampling of raw cocaine and of coca leaves is discussed and processes are recommended for determination of the cocaine content. The moisture content of raw cocaine is determined by drying in a vacuum desiccator over sulfuric acid, and of coca leaves by drying at 103° to 105° C. Ecgonine in raw cocaine is determined by refluxing 0.5 Gm. of the sample with 15 cc. of $2N$ hydrochloric acid for five hours, cooling in ice and determining the optical rotation at 20° in a 2 dcm. tube, the percentage of ecgonine being $\frac{22\alpha}{w}$, where α is the observed rotation and w is the weight of raw cocaine taken; the percentage of cocaine is 1.64 × percentage of ecgonine. The ether-soluble alkaloids of coca leaves are determined by triturating 20 Gm. of the sample with 20 cc. of $2N$ sodium carbonate and extracting the mixture continuously with ether for eight hours. The ethereal solution is extracted with 20, 15 and 10 cc. of $N/10$ hydrochloric acid and to the combined extracts are added 30 cc. of a 2:1 mixture of ether and petroleum spirit followed by 1 Gm. of sodium bicarbonate. After shaking, the ethereal layer is separated and the aqueous layer extracted with three portions of 30 cc. of the solvent mixture. The combined ether extracts are dried with sodium sulfate, filtered and evaporated, the residue being dissolved in 5 cc. of neutralized alcohol and titrated with $N/10$ acid to the faint orange color of methyl red. Fifty cc. of boiled and cooled water is added and the titration continued to the red color. Each cc. of $N/10$ acid is equivalent to 0.0185 Gm. of ecgonine and to 0.0303 Gm. of cocaine. Processes are suggested whereby the results in each case may be checked by determining the acids combined with ecgonine. —*Bull. Health Org., League of Nations*, 7 (1938), 443; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 765. (S. W. G.)

Cocaine—New Method for the Determination of Small Quantities of, in the Presence of Procaine. In the drug traffic procaine is used as an adulterant of cocaine; in some medicolegal cases the amount of cocaine present in a sample must be stated. The percentage of cocaine can be estimated very accurately in the presence of procaine, starch, boric acid, lime, chalk, aspirin, sodium bicarbonate, sodium carbonate and antifebrin as follows: Dissolve 0.5 Gm. (accurately weighed) in 20 cc. 10% hydrochloric acid; add 2.5 cc. of 1% gold chloride solution (3 cc. or more if much cocaine is present) drop by drop with vigorous stirring until precipitation is complete. After it has settled two hours, filter through a small filter paper. Wash the residue with 15 cc. cold water (3 portions 5 cc. each) till the filtrate is free from procaine (no yellow coloration upon addition of 1 drop of *p*-dimethylaminobenzaldehyde solution made by dissolving 1 Gm. in 95 cc. absolute alcohol and 20 cc. concentrated hydrochloric acid). After perforating the filter, wash the residue with 20 cc. water into a separating funnel of 50 cc. capacity and make the contents strongly alkaline by the addition of 10% ammonium hydroxide. Extract the free alkaloid with peroxide-free ether, using 25-, 20-, 15-, 10- and 5-cc portions. Test the final extract with Meyer's reagent to see if all alkaloid has been removed. Combine the first two ether extracts, wash with 5 cc. water and transfer to a tall tared platinum crucible. Wash the remaining ether extracts with the same water and add them to the contents of the crucible. Wash the separatory funnel with a few cc. of ether; then wash this ether with the 5 cc. of water and place in the crucible. Most of the ether is removed on a steam bath and the remainder is evaporated spontaneously at room temperature. Dry the crucible in an oven at 70° to constant weight. The weight of cocaine base multiplied by 1.12 gives the amount of cocaine hydrochloride actually present in the sample analyzed. More hydrochloric acid may be necessary, if much procaine is present, to prevent re-

duction of the gold chloride (brown coloration); stronger than 10% (20%) can be used to keep the bulk down when more acid is necessary. Insoluble substances such as chalk can be removed by a preliminary filtration. The presence of lime and carbonate necessitates the use of more or stronger acid. A blank should be run on all reagents used, as gold chloride is soluble in ether; the weight should be deducted from the weight in the crucible.—K. N. BAGCHI, H. D. GANGULI, P. N. MUKERJEE and J. N. BANERJEE. *Indian Med. Gaz.*, 74 (1939), 29–31; through *Chem. Abstr.*, 33 (1939), 3069. (F. J. S.)

Ergot of Rye—Alkaloids of. A comprehensive review of the chemistry, and physical and therapeutic properties of the ergot alkaloids. A bibliography is appended.—L. LEMPEREUR. *J. pharm. Belg.*, 20 (1938), 799, 817, 835. (S. W. G.)

Morphine—Assay of, in Opium. The sampling of opium for analysis is discussed, the amount taken varying with the shape of the cakes. After investigating many processes for the determination of morphine in opium, the Expert Committee have recommended a process which is substantially that of the British Pharmacopœia, 1932. The moisture content is determined by drying the sample at 103° to 105° C. For determination of the percentages of extractives and of morphine, 4 Gm. of sample is triturated with 1 Gm. of calcium hydroxide and water and made up to 45 Gm. The suspension is filtered after thirty minutes, using suction. Three Gm. of filtrate is evaporated and the residue dried at 103° to 105° C., the percentage of extractives E, being $\frac{(1000 + F)M}{3 - M}$ where M is the weight of residue and F is the percentage of moisture. The crude morphine is isolated from 25 Gm. of filtrate using half the quantities of reagents prescribed by the British Pharmacopoeia, 1932, the crystals being collected on a glass suction filter washed with 3 cc. of ether and then with morphinated water. The crude morphine is dissolved in warm methyl alcohol, using three quantities of 10 cc., impurities in the morphine remaining in the filter. The alcoholic solution is titrated with $N/10$ acid to the orange color of methyl red, 120 cc. of boiled and cooled distilled water is added and the titration continued to a reddish orange color. To the burette reading of A cc., 1 cc. is added to correct for the loss of morphine, the percentage of morphine in the original opium being $\frac{(1000 + E + F)(A + 1)\ 0.114}{100}$ and in the dried opium being $\frac{(1000 + E + F)(A + 1)\ 0.114}{100 - F}$.—*Bull. Health Org., League of Nations*, 7 (1938), 429; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 767. (S. W. G.)

Morphine and Codeine from Plant Materials. A process of obtaining morphine and codeine from aqueous extracts of ripe or unripe poppy plants, or portions thereof, consists in transferring the alkaloid bases morphine and codeine from these solutions, without considerable evaporation and without removing the impurities, at a p_H of about 9 by direct extraction into an organic solvent immiscible with the aqueous extracts which dissolves morphine and codeine and which easily releases these alkaloids again, and recovering the morphine and codeine from the solvent. Butyl alcohol and benzene may be used as solvent.—ALBERT FREY and HEINZ M. WÜEST, assignors to HOFFMANN-LAROCHE INC. U. S. pat. 2,132,945, Oct. 11, 1938. (A. P.-C.)

Opium Ash. I. Determination of the Principal Alkaloids in Pipe-Ash. Opium ash, termed *Yen-Hui* in Manchurian is the black-brown residue remaining in the opium pipe after smoking. Analysis according to (1) the Kanewskaja method, (2) a modification using an extraction with warm 1% acetic acid and (3) Machiguchi's method for morphine, narcotine, papaverine, thebaine and codeine gave 4.76, 0.00, 0.00, 0.00 and 2.57; 4.58, 0.00, 0.03, 0.00 and 2.65; and 5.00, 0.00, 0.00, 0.00 and 2.67%. Thus about 50% of the morphine and 60–80% of the codeine in opium remain unburnt after opium smoking whereas the other principal alkaloids are totally consumed. It is of pharmacological and particularly of industrial interest that the codeine in the ash amounts to more than 2%.—Z. ARIMA and M. IWAKIRI. *Rept. Inst. Sci. Research Manchoukuo* 2 (1938), 231–236 (in German 44); through *Chem. Abstr.*, 33 (1939), 1875. (F. J. S.)

Opium—Manchurian. I. Analysis of the Main Alkaloids of Opium. Analysis of Manchurian opiums by the method of Kanevskaya (cf. *C. A.* 19, 522) showed the following contents of morphine, narcotine, papaverine, codeine and thebaine in first class; third class; and inferior grade Jeholz: first class Changpaishan: third class; and inferior grade Kirin: 11.33, 3.87, 0.62 3.30 and 2.45; 7.22, 2.74; 0.16, 3.80 and 1.43; 3.71, 4.52, 0.03, 3.22 and 1.07: 11.71, 3.92, 0.84, 2.92 and 2.68: 9.11, 1.47, 0.57, 3.98 and 4.21; 0.65, 0.76, 0.21, 2.12 and 1.21%. Manchurian

opiums contain a relatively larger amount of lower alkaloids, particularly codeine (2–4%).—Z. ARIMA and M. IWAKIRI. *Rept. Inst. Sci. Research Manchoukuo*, 2 (1938), 221–230 (in German, 43); through *Chem. Abstr.*, 33 (1939), 1875. (F. J. S.)

Quinine Alkaloids—Bromine Method for the Determination of. The alkaloids from an ether-chloroform extract are transferred to 1% hydrochloric acid and titrated with bromine water (standardized with pure quinine hydrochloride) with rhodamine as indicator. The result is multiplied by 1.6, since related alkaloids present consume less bromine than quinine.—O. EFINEMKO. *Biokhimiya*, 3(1938), 792–795; through *Chem. Abstr.*, 33 (1939), 3965. (F. J. S.)

Quinine Hydrochloride-Sarcosine Anhydride—Double Compound of. Sarcosine anhydride, which is almost inactive pharmacologically, and quinine hydrochloride form a double compound which is very soluble in water and can be injected in concentrated aqueous solutions. From a study of the solubility in hot benzene of mixtures of the two substances, each of which is only slightly soluble in hot benzene, it was found that mixtures of one molecule of quinine hydrochloride with two or with three molecules of sarcosine anhydride were readily soluble. The marked increase in the solubility of the quinine hydrochloride by the sarcosine anhydride is apparently due to the formation of an addition compound. The therapeutic effect of the quinine in this addition compound on the malaria parasites is not increased, but corresponds to the amount of quinine in the compound.—F. SCHONHOFER. *Arch. Schiffs-u. Tropen-Hyg.*, 41 (1937), 735–736; through *Chem. Abstr.*, 33 (1939), 3965. (F. J. S.)

Strychnine—Toxicologic Determination of. Applications of Electrodialysis to Extraction of Alkaloids. II. The apparatus described by Fabre (*J. pharm. chim.*, 27 (1938), 467) is utilized. About 70 Gm. of the thinned pulp prepared from the organ is placed in the central compartment of the electrodialyzer with 50 cc. of distilled water acidified with 15 drops of acetic acid. The anodic and cathodic baths are filled with distilled water and the current is limited to 0.5 amperes. The anodic liquid is replaced with distilled water four times: after the first, fourth, eight and eighteenth hours. Frequent mixing of the pulp mixture should be maintained. At the end, when the amperage drops to about 0.05, the reaction mixture should be neutral or slightly acid; the anodic liquid is slightly acid; the cathodic liquid containing the alkaloid is basic. The alkaloid is extracted from the cathodic liquid with chloroform, the chloroform removed by evaporation, the residue dissolved in $N/10$ sulfuric acid and the strychnine is determined in this solution after suitable dilution as follows: To 4 cc. of the diluted solution add 4 cc. of hydrochloric acid and 3 Gm. of zinc amalgam. The mixture is brought to boiling at fifteen-minute intervals during one hour, then allowed to cool. Add 1 drop of 1:1000 sodium nitrite solution and compare the rose coloration with that of a known standard run at the same time. A solution containing 9 mg. of strychnine per liter is convenient for preparing standards.—R. FABRE and P. OFICJALSKI. *J. pharm. chim.*, 28 (1938), 369–375. (S. W. G.)

Essential Oils and Related Products

Aromatic Oils—Production of, in French Guinea. The conclusion of an extensive review on 10 volatile oils with their constants and the production of concretes using volatile solvents.—L. TRABAUD. *Riechstoff Ind. Kosmetik*, 13 (1938), 243–251. (H. M. B.)

Chamomile—Moroccan, Oil of. The chamomile oil is derived from a sub-species of *Ormenis mixta* L. peculiar to Morocco: *Ormenis multicaulis*, Bran-Blanquet and Maire. It is a common annual member of the *Compositæ*. The whole plant was distilled in steam and yielded 0.1% of an essential oil which when freshly prepared, had a green color with a slightly bluish tinge. This color, however, becomes gradually and progressively yellowish as the age of the oil increases. The odor of the oil is powerful and pleasant and recalls that of other chamomile oils. It has a rosy tone and at the same time a honeyed character. The taste is burning and bitter. Exposed to the action of air and light, the oil resinifies fairly rapidly. The analytical constants of the freshly distilled oil are given.—L. TRABAUD and S. SABETAY. *Perfumer Essent. Oil Record*, 30 (1939), 13. (A. C. DeD.)

Essential Oil of Fagara Lemærei. Steam distillation of the fruits gives 2.29% of a yellow oil (density at 20°, 0.8956, index of refraction at 20°, 1.4760, specific rotation 14° 23′, boiling point up to 190°, acid value 2.01, saponification value 82.65, ester value 80.64, soluble in 6 volumes of 90% ethyl alcohol) of bitter taste and lemon odor, containing citral and citronellal (removal of

which leaves an oil fluorescing blue-violet), esters and alcohols.—M. DENIS. *Congr. chim. ind. Bruxelles*, 15 (1935), 162–165; through *J. Soc. Chem. Ind.*, 57 (1938), 1500. (E. G. V.)

Essential Oil of Japanese Oranda Hakka (Crape Mint). II. Carvone. Reduction of *l*-carvone (derived from the oil) with platinum-hydrogen, sodium-ethyl alcohol, zinc-potassium hydroxide and aluminum propionate yields *cis*- and *trans*-carbomenthones, and *l*-, *l*-neo, *l-iso* and *l*-neoiso-carvomenthols. The values of specific rotation are 10.5°, 43.9°, −26.5°, 20.2° and −33.0°, respectively.—T. NAGASAWA. *J. Soc. Chem. Ind. Japan*, 41 (1938), 252B; through *J. Soc. Chem. Ind.*, 57 (1938), 1500. (E. G. V.)

Essential Oils—Application of the Raman Effect to the Analysis of. The identification of oils and study of their constitution (for example, the distinction between isomerides) with the use of Raman frequencies is suggested.—L. M. LABAUNE. *Rev. marques parfum. savon.*, 14 (1936), 145–146; through *J. Soc. Chem. Ind.*, 57 (1938), 1501. (E. G. V.)

Lavender Oil—Bulgarian. The plant is a low shrub about forty to sixty centimeters high, with a greenish steam about half a centimeter thick and has a small leaf. In July the stems are covered with bunches of the characteristic bluish tinted flowers with their pleasant aroma. The plant is cultivated from seedlings which after planting have to be carefully nursed. During the second year the seedling has an abundant growth. The life of the plant is from 7 to 8 years, after which it has to be reserved. In the second and third year it begins to produce oil. From 90 to 130 kilos of stems and flowers one kilo of oil is obtained. The lavender plant has other uses than in perfumery, such as in pharmacy and for domestic purposes. The flower is largely used in Austria for certain medicinal drinks and specifics. It is also in demand by housewives for wardrobes against moths and in "sachets" for ladies' handbags, etc.—KANTCHO P. SHIPKOFF. *Perfumery Essent. Oil Record*, 30 (1939), 23. (A. C. DeD.)

Lippia Adœnsis Hochst—Study of Essential Oil of. The oils examined by the author differ from those reported by Rovesti (*Ann. chim. applicata*, 17 (1927), 553) in that in the present study large quantities of *l*-camphor were found. Also the rotatory power of the oils reported in both cases had the same absolute value, but in opposite directions. No explanation is given for this difference.—J. RABATÉ. *J. pharm. chim.*, 28 (1938), 437–442. (S. W. G.)

Litsea Cubeba Persoon.—Essential Oil of the Fruits of. I. The oil, d_4^{30} 0.8669, n_D^{30} 1.4702, α_D^{24} 5.8, acid number 0.9, ester number 6.72 (after acetylation 62.75), consists mainly of citral (70%) and methylheptenone (20%) with small amounts of limonene, dipentene and linalool.—K. KAHUJU and R. KATO. *J. Chem. Soc. Japan*, 59 (1938), 1096–1098; through *Chem. Abstr.*, 33 (1939), 1878. (F. J. S.)

Orange Oil—Florida. A review of the methods now being used in Florida to produce orange oil and the data relative to the physical contents of the oil manufactured by different producers during the 1937–1938 season is given.—ANON. *Perfumery Essent. Oil Record*, 30 (1939), 251. (A. C. DeD.)

Pine Oil from Wood Stumps. A recent account by the author deals with the technical treatment and products obtained from pinewood stumps. The wood, after shredding is usually extracted with a solvent when the constituents are separated by distillation and fractionation of the solution. This leads to rosin and a complex mixture of liquids with a boiling range from 150–240° C. A pharmaceutical interest lies in the fact that the high boiling fraction of the crude oil after suitable treatment gives a "pine oil" which is very powerful permecide and is, in addition, non-toxic and non-irritant. This oil is stated to have the following approximate composition: α-terpineol, 68.5%; menthanols, 4.2%; fenchyl alcohol, 8%; borneol, 9%; methyl chavicol, 10%; phenol ethers, moisture, 0.3%; distillation range, 212–220° C.—W. GARVIE. *The Chemical Age*, 39 (1938), 387; through *Perfumery Essent. Oil Record*, 30 (1939), 16. (A. C. DeD.)

Glycosides, Ferments and Carbohydrates

Ascorbic Acid—Enzymic Oxidation of. The optimum p_H for ascorbinase from cabbage leaves was 5.5–5.9. With a constant quantity of the enzyme and increase in the concentration of the substrate has little effect on the speed of the oxidation. This may indicate: (1) that the concentration of ascorbic acid was at such a level where the enzyme was at a maximum activity and the index *Km* was less than 10^{-4}; (2) the action of ascorbinase is not direct; the limiting factor is the formation of an intermediate compound which in the end acts as a hydrogen acceptor at the dehydration of the ascorbic acid. A 95% concentration of carbon monoxide has no depressing

effect on the ascorbinase. It thus differs from phenolase and indophenol-oxidase and resembles hemino-enzymes with iron, stable in the trivalent state like catalase and peroxidase. It appears that the ascorbic acid is capable of carrying all the hydrogen in the process of respiration.—V. A. ENGELHARDT and V. N. BUKIN. *Bull. Applied Botany, Genetics, Plant Breeding* (U. S. S. R.), *Suppl. 84, Vitamin Problems*, 2 (1937), 255–269; through *Chem. Abstr.*, 33 (1939), 1767. (F. J. S.)

Cobra Venom—Study of the Protease in. The authors referred to several previous reports concerning the enzymes of cobra venom which are responsible for its action on tumor cells. Since all known proteases are characterized by their p_H optima and their behavior in the presence of inactivators, the protease of cobra venom was investigated from the above mentioned standpoints. A p_H of 8 was found to be the optimum p_H for the digestion of casein and the amount of casein digested was proportional to the square root of the duration of digstion. The protease was found to be inactivated by KCN and HCN and the indications were that it belongs to the group of tryptases.—N. K. IYENGAR, K. B. SCHRA and B. MUKERJI. *Indian J. Med. Research*, 26 (1938); through *J. Trop. Med. Hyg.*, 42 (1939), 154–155. (W. T. S.)

Dextrose—Hydrate. A flow sheet and pertinent information concerning the production of high-purity hydrate dextrose are given. The process in general is the production of a raw sugar. The raw sugar is melted and refined over bone black. The process of refining to obtain the maximum bone black efficiency in the combined process, including raws and refined dextrose, is given Many developments in the construction of equipment of corrosion-resistant metals are discussed. Conditions leading to specks of foreign matter in sugar are discussed and solutions given.—W. B. NEWKIRK. *Ind. Eng. Chem.*, 31 (1939), 18–22. (E. G. V.)

Enzymes—Crystalline, Chemistry of. The past year's advances in the chemistry of the hydrolytic enzymes pepsin, trypsin, chymotrypsin, carboxypeptidase, papain and ficin proteinase are discussed. Also included are the reduction-oxidation enzymes catalase, cocarboxylase, cozymase, acetaldehydase, reductase, the yellow respiratory enzyme and the enzyme systems concerned with oxidation and reduction in the cell.—J. H. NORTHROP and R. M. HERRIOTT. *Ann. Rev. Biochem.*, 7 (1938), 37–50; through *Chem. Abstr.*, 33 (1939), 3831. (F. J. S.)

Enzymic Material from the Pancreas. Pulped pancreas is extracted at ordinary temperature with anhydrous acetone or anhydrous azeotropic mixtures containing acetone. The extract is subjected to reflux distillation to free the solvent from water and extracted substances; the solvent is recycled until the pulp is dehydrated and defatted, and the pulp is freed *in situ* from the residual solvent. The liquid residue remaining after removal of the solvent by distillation is precipitated, *e. g.*, by addition of neutral salts, whereby substances of the nature of protective colloids are recovered, which may be added in liquid or solid form to the dry gland or its aqueous preparations.—HANS HUBER and ROBERT LASTER, assignors to HAUSER & SOBOTKA A.-G. U. S. pat. 2,132,167, Oct. 4, 1938. (A. P.-C.)

Glucose—Determination of 0.3 to 50 Mg. of, by the Hagedorn-Jensen Procedure. With 0.1*M* and 0.25*M* $K_3Fe(CN)_6$, glucose can be determined in amounts of 0.3 to 14 mg. and of 5 to 50 mg., respectively. The reagents are prepared essentially as in older procedures, the titration with 0.05*M*–0.10*M* sodium hyposulfate being carried out in the presence of sufficient solid sodium chloride to keep the solution saturated. The results are said to be practically stoichiometric, 1 cc. of 0.05*M* and 0.10*M* ferricyanide corresponding to 1.42 and 2.275 mg. glucose, respectively. The error does not exceed 5% and is usually below 1%.—A. ZELLER. *Biochem. Z.*, 300 (1938), 78–81; through *Chem. Abstr.*, 33 (1939), 2932. (F. J. S.)

Hydroquinone-beta-Glucoside—Preparation of, from Crude Arbutin and Its Reaction Products with Diacetylorthonitric Acid. The only hydroquinone-beta-glucoside available has been prepared synthetically. The first isolation of pure hydroquinone-beta-glucoside from crude arbutin was accomplished by the authors by treating a slightly alkaline, aqueous-methyl alcohol solution of crude arbutin with a methanol solution of 2,4-dinitrochlorobenzene. After 12 hours, the crystallization was complete and the 2,4-dinitrophenyl ether of the hydroquinone-beta-glucoside was filtered off. Recrystallization from absolute alcohol gave pale yellow needle-like crystals melting 188.5–189° and from boiling water gave white needles ($3H_2O$) melting 173°. The ether showed a negative Zeisel determination indicating the absence of methylarbutin. By carefully heating the ether with a slight excess of sodium hydroxide, the ether is split and pure arbutin, entirely free of methylarbutin, crystallized from acetone-petroleum ether as white rosettes

melting 199.5° to 200°. Directions are given for the preparation of the following derivatives: 2,4-dinitrophenyl-arbutin-tetraacetate melting at 148–149°; 4-acetyl-2,6-dinitroarbutin, melting at 152°; 2,6-dinitro-arbutinpentaacetate melting at 145°; 2,6-dinitro-4-methylarbutin-tetra-acetate melting at 101°; 2-nitro-4-methylarbutin-tetra-acetate, melting at 162–163°; 2-nitro-tetra-acetylarbutin-2,4-dinitrophenyl ether, melting at 173°; 2,6-dinitro-hydroquinone-4-(2′,4′-dinitrophenyl ether), melting at 195–196°.—BENNO REICHERT and WILHELM TURKEWITSCH. *Arch. Pharm.*, 276 (1938), 397. (M. F. W. D.)

Maltose—Fermentation of. Dried yeast prepared from Baker's yeast contains maltase and the addition of such dried yeast or an extract made from it to a yeast–maltose system will cause a sharp increase in the initial rate of fermentation. Small quantities of dextrose when added to the system caused a sharp increase in the initial rate of fermentation. This may be used as a means of estimating dextrose when present as a minor constituent of maltose preparations. The initial rate of fermentation of maltose is dependent upon the p_H and shows an optimum in the region of p_H 4.5. Small quantities of maltase and dextrose, either separately or together, may be responsible for some of the action of the various accelerators of maltose fermentation.—A. S. SCHULTZ and LAWRENCE ATKIN. *J. Am. Chem. Soc.*, 61 (1939), 291. (E. B. S.)

Pectin from Various Sources. Determination of the Strength of Gels. Data of a preliminary character on the extraction, analysis and gel-forming properties of pectins from various fruits are presented. The results obtained, although insufficient to enable any definite conclusions to be drawn, show that the pectins have widely differing jelling properties, and indicate certain of the difficulties likely to be encountered in such an investigation.—L. H. LAMPITT and R. W. MONEY. *J. Soc. Chem. Ind.*, 58 (1939), 29–32. (E. G. V.)

Sorbitol and Mannitol—Metabolism of. Sorbitol is much more readily converted into glucose and glycogen than mannitol. Glycogen is deposited in the livers of fasted rats fed over a 72-hour period on mixtures of cacao butter and either sorbitol or mannitol but intravenous injection of the two leads to an increase in blood sugar only with sorbitol. With sorbitol the peak in blood sugar in dogs is reached shortly after the injection of 50 cc. of a 50% solution and there is a rapid decrease within the first hour, values close to the basal figure being reached after two hours. A slight elevation remains for several hours. About 40–50% of the injected sorbitol can be recovered from the urine in 24 hours. The remainder is apparently utilized. Glycogen deposition in the liver follows within eight hours the administration of sorbitol to fasted rats by stomach tube or by intraperitoneal injection. No such deposition follows the similar administration of mannitol. Twenty-seven references are given.—W. R. TODD, J. MYERS and E. S. WEST. *J. Biol. Chem.*, 127 (1939), 275–284; through *Chem. Abstr.*, 33 (1939), 1795. (F. J. S.)

Starch—Sublimate Microconcentration and Breakdown of, by Saliva Amylase. Persson (*Deut. Z. fur Homoöpathie*, 9, 241 (1930)) found at certain concentrations of $HgCl_2$ up to 10^{-120} a restraining effect upon the breakdown of soluble starch by the saliva amylase but found an acceleration with intermediate concentrations of $HgCl_2$. Aside from the fact that a concentration of $HgCl_2$ of 10^{-120} would mean less than 1 molecule per cc., the results of Persson were contrary to previous data published by Hata (*C. A.*, 3, 1773) who found that $HgCl_2$ at a concentration of 10^{-6} had a restrictive effect upon the saliva amylase and at a lower concentration practically no effect. The results of the new experiments corroborate the findings of Hata.—T. SABALITSCHKA and R. CRZELLITZER. *Mikrochemie*, 25 (1938), 225–227; through *Chem. Abstr.*, 33 (1939), 1767. (F. J. S.)

Strophanthus Kombé—Process for the Preparation of a New Glucoside of. An extract of strophanthus seed is dissolved, the glucoside is precipitated by addition of an organic solvent that is immiscible with water, the precipitate is separated, and the treatment is repeated until crystallization takes place.—FABRIQUE DE PRODUITS CHIMIQUES CI-DEVANT SANDOZ. Belg. pat. 427,431, May 31, 1938. (A. P.-C.)

Sucrose Content of Natural Honey—Lowering of. During the first 10–12 days' keeping at 40°, the sucrose content falls rapidly, and thereafter more slowly. The effect is due to invertase. The diastase suffers slight inactivity when kept at this temperature.—R. F. KARDOS. *Z. Untersuch. Lebensm.*, 76 (1938), 354–357; through *J. Soc. Chem. Ind.*, 57 (1938), 1492. (E. G. V.)

Sugar Determinations—Biochemical. II. Starch Syrup and Massé. Starch syrups and massé can be analyzed satisfactorily by fermentation of sucrose (I), glucose (II), fructose (III),

maltose (IV) with *Sacch. cerevisiae;* I, II, III and lactose with *Sacch. frogilis,* Joergensen or *Torula cremoris,* followed by determinations of the reducing powers before and after inversion. There is sufficient difference in the chemical compositions of starch syrups (II 22.5, IV 20, unfermentable 9.5%) and massé (II 63, IV 4, unfermentable 5%), to permit their recognition in mixtures.—F. T. VAN VOORST. *Chem. Weekblad,* 35 (1938), 677–678; through *J. Soc. Chem. Ind.,* 57 (1938), 1477. (E. G. V.)

γ-Sugars—Structure of. I. Parachor Studies of Partially and Fully Methylated Derivatives of γ-Fructose. The following summary is given: (1) Redetermination of the parachor of furfuraldehyde and determination for the first time of the parachor of piperonal confirms the general belief that no anomaly occurs in the parachor of compounds due to the presence of oxygen atoms in five-membered rings. (2) The parachor values of sucrose, fructose and dextrose determined from measurements of aqueous solutions lead to anomalous and irregular values. (3) The determined parachor values of tetramethyl-γ-fructose and tetramethyl-γ-methyl fructoside are significantly lower than the values to be expected on structures at present assigned to γ-fructose.—F. HARTLEY and W. H. LINNELL. *Quart. J. Pharm. Pharmacol.,* 11 (1938), 714–721. (S. W. G.)

Wines—Oxidation Processes in. New wine readily acquires the characteristics of aged wine (color, flavor, bouquet) after addition of peroxidase. Addition of hydrogen peroxide yields an inferior product.—S. M. MANSKAJA. *Compt. rend. acad. sci. U. R. S. S.,* 20 (1938), 159–162; through *J. Soc. Chem. Ind.,* 57 (1938), 1480. (E. G. V.)

Other Plant Principles

Arbutin Content of Some Native Pyrola Species. For the detection of arbutin (A) in these species the following new reagent is recommended: Heat for a short time 0.002 Gm. of titanium sulfate with 3 cc. water and 1 cc. concentrated sulfuric acid and then add 1.8 cc. of concentrated sulfuric acid. The reagent contains an excess of undissolved titanium sulfate which is not filtered off. This reagent gives with A a dark red-brown color. For the quantitative determination of A the method of Zechner (*Pharm. Monatsh.* (1929), page 169) is used. The leaves of the following species were assayed:

	% (A) in Dried Plant.	% (A) in Fresh Plant.
Pyrola chlorantha (1938)	3.0	....
Pyrola chlorantha (1937)	4.2	1.53
B. rotundifolia (1937)	4.8	2.05
P. uniflora (1937)	1.6	0.66
P. secunda (1937) (old and young leaves)	2.1	0.87
Monotropa hypophegea (entire plant)	0.0	0.00

K. DRAHTSCHMIDT and L. ZECHNER. *Scientia Pharm.,* 9 (1938), 137–138. (H. M. B.)

Bergamot Oil—New Constituents of. A large quantity of coumarin was extracted from oil of bergamot. The extractive consisted primarily of bergaptin and in addition, two new nonphenolic coumarin compounds were isolated from the petroleum ether solution. The first nonphenolic coumarin extract resembled very closely the compound limettin; the second compound was colorless, soluble in methyl alcohol-potassium hydroxide solution from which it could be recovered without any change. This compound is almost identical with bergaptin and for this reason it was named bergamottin. It is chemically the geranyl ether of bergaptol. Geranium oil is present in bergamot oil in very small quantities; however, it contains large quantities of linalool, an isomer of geranium oil. Bergamottin is optically inactive as it is not a linalool derivative but a geranium oil derivative. Linalool is optically active because its structural formula contains an asymmetric carbon atom.—E. SPATH and P. KAINRATH. *Ber. deut. keram. Gesell.,* 70 (1937), 2272; through *Chem. Zentr.,* 109 (1938), 1588. (G. B.)

Bourbonal from Vanillin—Reactions which Distinguish. A correction of nomenclature and reference to work of Stadler and Wagner.—F. HOEKE. *Chem. Weekblad,* 35 (1938), 364–365; through *J. Soc. Chem. Ind.,* 57 (1938), 1098. (E. G. V.)

Flavones—Natural. III. Constitution of Tambulin. From the fruits of *Zanthoxylum acanthopodium* DC., two yellow crystalline substances have been isolated in poor yields. One of

these, named tambulin, $C_{18}H_{16}O_7$, has been shown to be a dihydroxytrimethoxyflavone. Alkaline hydrolysis of tambulin gives anisic acid. Dimethyltambulin is not identical with tangeretin and tambulin is either 5:7-dihydroxy-3:8:4'-trimethoxyflavone or 5:7-dihydroxy-4':6:8-trimethoxyflavone.—P. K. Bose and J. Bose. *J. Indian Chem. Soc.*, 16 (1939), 183. (F. J. S.)

Rotenone—Colorimetric Determination of. Rotenone crystallizes readily, but the methods of determination based upon this property are far from satisfactory; difficulty is encountered in determination of small quantities of rotenone in leaves and fruits. Rotenone reacts with nascent nitrous acid to yield a stable red color. The author utilizes this reaction in a quantitative procedure which requires at most two hours and gives results concordant with results obtained by biologic procedures for insecticide determinations. The rotenone is extracted in a Soxhlet by means of acetone, and a portion of the acetone solution is used in the determination. The reaction takes place in a water bath maintained at a temperature between 25° and 30° C.—S. Schomberg. *Ann. fals.*, 354 (1938), 290; through *J. pharm. Belg.*, 20 (1938), 944. (S. W. G.)

Styrax Japonicum—New Constituent of. The fruits of *Styrax japonicum* were collected and the seeds were removed; later the seeds were pressed and the oil so obtained was saponified. An unsaponifiable portion of the oil separated out in crystalline form and when sulfuric acid was added, a compound resembling phytosterin was obtained. The authors named this new compound egonol ($C_{19}H_{18}O_5$), m. p. 116°, optically inactive, iodine value 88.5. The structural formula contains an OH and one OCH_3 group; it gives an orange-yellow color with a mixture of acetic and sulfuric acid; it cannot be hydrated and it is probably present in the oil of the seed as a fatty acid ester. Further investigation revealed that the formula for egonol should be $C_{20}H_{18}O_5$. Upon oxidizing egonol with $KMnO_4$, pipernylic acid was obtained which has either a secondary or tertiary OH group in its structure. It is assumed that egonol found in the plant as such contains an asymmetric carbon atom which is completely racemized after the compound is recovered from the oil. The oil which is obtained under high pressure remains clear indefinitely when kept at the proper temperature.—S. Kawai and T. Miyoshi. *Ber. deut. keram. Gesell.*, 71 (1938), 1457; through *Chem. Zentralb.*, 109 (1938), 1615. (G. B.)

Fixed Oils, Fats and Waxes

Acid Oils. Acidified Residues of Vegetable Oils. "Acid" oils consist of free fatty acid and neutral oil (which should be estimated directly), water and about 0.6% of sulfuric acid which prevents drying and initiates decomposition.—R. Biazzo. *Olii min.*, 16 (1936), 66–67; through *J. Soc. Chem. Ind.*, 11 (1938), 1322. (E. G. V.)

Croton Oil from Nyasaland. The seeds of *Croton megalobotrys* Muell. Arg. (also *C. gubouga* S. Moore) yielded to light petroleum 29.6% (49.8% from moisture free kernels) of a golden-yellow clear oil of the "semi-drying" type. The physical characters of the oil are compared with those of two other species.

	C. megalobotrys	*C. liglium*	*C. elliotianus*
Sp. gr. 15.5°/15.5°	0.9292	0.937–0.960	0.9266–0.927
$n^{20°}_{D}$ C.	1.4756	1.4774–1.4804	...
Acid value	1.5	...	3.6–4.2
Saponification value	196.5	200–220	191.6–201.5
Iodine value (Wijs, half-hour)	129.2	102–118	138.5–147.0
Unsaponifiable matter, per cent	0.9	0.6	...

It is considered that the oil would not be likely to find an outlet for medicinal use, but that in large quantities it might find a market for soap manufacture.—Anon. *Bull. Imp. Inst.*, 36 (1938), 151; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 773. (S. W. G.)

Fat Production—Problems Connected with Increasing the, and Opening Up New Fat Sources, with Special Reference to New Achievements in this Sphere. A review dealing with problems connected with (1) increased butter and pig fat production; (2) increased cultivation of oil plants, for example, soya bean, rape, flax, mustard, poppy, sunflower; (3) increased fat production from fish; (4) increased fat production from waste materials, for example, coffee grounds and seeds such as grape and tobacco seeds, walnuts and hazel nuts; (5) fat production from albumin-sugar solutions by means of microörganisms. The last method is theoretically possible, but the great difficulty in practice is due to the large surfaces required.—O. Engels. *Allgem. Oel- u. Fett-Ztg.* 35 (1938), 329–333, 379–383; through *J. Soc. Chem. Ind.*, 11 (1938), 1321. (E. G. V.)

Fats—Mixed, Fractional Crystallization of. Theoretical and practical conditions for the proper crystallization of *premier jus* prior to expression of the oleo oil are discussed.—T. HINKO. 3, No. 8 (1938), 1–3; through *J. Soc. Chem. Ind.*, 57 (1938), 1443. (E. G. V.)

Fats. LXIV. Selective Oxidation of Unsaturated Compounds. I. Detection of Erucic Acid in Mixed Fatty Acids. The alkaline permanganate oxidations of oleic acid (I) and erucic acid (II) to the $(OH)_2$-acid stage proceed at about the same rate, but the further oxidation, causing splitting at the site of the original double linking, proceeds much more rapidly in the case of I than of II, and still more rapidly in the case of more unsaturated acids. These results have been applied to the detection of II in fatty oils by means of an oxidation test, the conditions being controlled so that I and linoleic acid are destructively oxidized, while II is recovered in high yield as dihydroxybehenic acid, which may be identified by its melting point and molecular weight. In this way the presence of, for example, 2% of rape oil in admixture with soya bean, olive, arachis, or linseed oils (which, like lupin-seed, whale and shark oils, are free from II) can be detected qualitatively by using a 2–20 Gm. sample of Italian grape seed oil, but II was absent from other Italian and 4 laboratory-prepared samples of this oil.—H. P. KAUFMANN and H. FIEDLER. *Fette u. Seifen*, 45 (1938), 465–473; through *J. Soc. Chem. Ind.*, 57 (1938), 1444. (E. G. V.)

Fatty Acids and Glycerides of Solid Seed Fats. VI. Borneo Tallow. The component glycerides of Borneo tallow (the seed fat of *Shorea stenoptera, Dipterocarpeæ*) have been reinvestigated by the more detailed methods recently made available. The results confirm and extend those of previous study in which the general character of the components was established. The chief glycerides in the fat were "oleo"-distearins (about 40%), "oleo"-palmitostearins (about 31%) and stearodi-"oleins" (about 13%), with about 8% of "oleo"-dipalmitins and about 5% of fully-saturated glycerides. Apart from the presence of the last-named, the fat conforms to the usual "evenly-distributed" type; the amounts of palmito- and stearo-di- "oleins" are calculable (within a few units %), from the proportions of fatty acids present in the whole fat, but, as in cacao butter, the amount of "oleo" palmitostearins falls short of the maximum possible as calculated by this method.—W. G. BUSHELL and T. P. HILDITCH. *J. Soc. Chem. Ind.*, 57 (1938), 447–449. (E. G. V.)

Fish Liver Oils. Cod livers, or other fish livers, after washing with a saline solution, are disintegrated, mixed with a smaller proportion of beet pulp or a dehydrated cereal grain pulp, the first oil which separates is permitted to run off, and substantially all the remaining oil is pressed out and recovered, being of high vitamin content. The residue is suitable for use as a stock and poultry feed.—HARTLEY A. WENTWORTH. U. S. pat. 2,134,163, Oct. 25, 1938. (A. P.-C.)

Fish Oil—Partial Hydrogenation of. IX. Hydrogenation of Herring Oils. Onishin oil (from adult herrings) and konishin oil (from young herrings) are hydrogenated to various degrees of iodine value by hydrogen at 200–210°/1 atmosphere, using a nickel-kieselguhr catalyst, and the hydrogenated oils converted into fatty acids; these are then separated into saturated and unsaturated acids with 1, 2 and 3 or more double linkings. In both cases the highly unsaturated acids are first hydrogenated, and only when these have disappeared is saturated acid formed in appreciable quantity.—M. TAKANO and F. KIKUYA. *J. Soc. Chem. Ind. Japan*, 41 (1938), 238–240B; through *J. Soc. Chem. Ind.*, 57 (1938), 1446. (E. G. V.)

Hydnocarpus Oil from Mauritius. Three samples of *Hydnocarpus wightianus* oil prepared by (1) expression, (2) extraction with ether, (3) extraction with petroleum ether, in Mauritius were examined and the physical characters compared with those stated in the British Pharmacopœia.

Oil Filtered through Paper at 100° C.	(1)	(2)	(3)	B. P. Requirements
Sp. gr. 25°/25°	0.9566	0.9550	0.9550	0.950–0.960
M. p.	23.0° C.	23.3° C.	23.5° C.	20–25° C.
$[\alpha]_D^{20}$ C°.	+57.0°	+56.1°	+55.25°	+53° (min.)
$n_D^{40°}$ C.	1.4743	1.4741	1.4741	1.474–1.476
Acid value	1.7	1.7	0.7	25.0 (max.)
Saponification value	203.6	201.3	199.3	198–204
Iodine value (Wijs, half-hour)	99.4	98.6	98.3	97–103

These oils had a relatively limited solubility in hot alcohol, probably owing to their low acidity. The expressed sample would probably be accepted as meeting the official requirements, but the

extracted oils, provided that they are completely freed from solvent, should prove of equal value in the treatment of leprosy.—ANON. *Bull. Imp. Inst.*, 36 (1938), 317; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 773. (S. W. G.)

Ketone Rancidity in Fats—Use of Substituted Salicylaldehyde for Determination of. Of a large number of substituted salicylaldehydes, only the acetyl derivative, *o*-homosalicylaldehyde and *o*-vanillin give red colors with ketones and ketone-containing fats in hydrochloric acid solution, while yielding no color with ketone-free fats or acid; the tints are rather weaker than with salicylaldehyde itself, but suffice for the detection of 10/μg. of ketones in 1 Gm. of fat.—E. GLIMM and A. SEMMA. *Fette u. Seifen*, 45 (1938), 500–503; through *J. Soc. Chem. Ind.*, 57 (1938), 1444. (E. G. V.)

Oil From Olives—Extraction of. Processes are discussed. An easily bleached product, of good quality, with low fatty acid content can be obtained by extraction of the olives with benzene, carbon disulfide or trichlorethylene, without drying.—C. KERKHOVEN. *Öle, Fette, Wachse*, No. 9 (1938), 7–8; through *J. Soc. Chem. Ind.*, 75 (1938), 1445. (E. G. V.)

Quince Seed Oil. Two samples of oil from Swiss and Spanish or Russian seeds, respectively, had density at 15° 0.9262, 0.9118; refraction value (40°) 60.3, 52.3; acidity 38.1, 223.7; acid value 21.4, 125.5; ester value 164.9, 59.7; saponification value 186.3, 185.2; iodine value (Hanus) 113.4, 114.5; unsaponifiable matter (Spitz and Honig) 1.64, 0.96 and (Bertram) 1.54, 0.86%; phytosterol (minimum) 0.66, 0.39%; melting point of phytosterol acetate (first crystallization) 118, 116°. The Reichert-Meissl and Polenske values of the second specimen were 0.5 and 0.3, respectively. The total fatty acids were 95.5 and 95.4%; solid acids (Grossfeld) 16.4, 17.8 and (Bertram) 9.4, 8.9% of the oil, having refraction value 48.5, 49.0; neutralization value 195.0, 194.1; and mean molecular weight 287.7, 289.0; they were yellowish green in color and liquid at room temperature.—J. PRITZKER and R. JUNGKUNZ. *Z. Untersuch. Lebensm.*, 76 (1938), 40–41; through *J. Soc. Chem. Ind.*, 11 (1938), 1321. (E. G. V.)

Rancid Fats—Is Diphenylcarbazide Suitable For Detection of? Diphenylcarbazide (I) is intensely sensitive to oxidation, which may be induced by presence of traces of iron, copper or nickel. Glycerides, solvents, ketones, aldehydes, acetic acid, fatty acids, OH acids or hydrogen peroxide do not give any color with I when fresh or pure, but give reddish blue tints if impure or stale, and, in case of hydrogen peroxide, if traces of copper, iron or nickel ions are present. The color obtained with rancid fats, etc., is intensified if acetic acid is present, while ketones, which alone remain colorless, give a positive reaction if acetic acid or fatty acids be added. The color from rancid fats, however, appears to be due to the liberation of catalytically activated oxygen, traces of metal ions, aldehydes, etc., acting as catalyst. The test is therefore only qualitative and limited in scope, but is very useful for testing solvents for purity.—E. GLIMM, L. KLUDZINSKI and H. FLEISCHHAUER. *Fette u. Seifen*, 45 (1938), 496–503; through *J. Soc. Chem. Ind.*, 57 (1938), 1444. (E. G. V.)

Seed Oils—Extraction of, with Hot Solvent. The optimum temperature for benzine extraction of soya bean, cottonseed, and sunflower seed oils is 60°.—A. A. LESIUIS. *Masloboĭno Zhirovoe Delo*, 4 (1938), 5–7; through *J. Soc. Chem. Ind.*, 57 (1938), 1444. (E. G. V.)

Stearin—Preparation of, without Distillation. 94–95% of the fatty acids of fat are liberated with the aid of Petrov's contact, and the acids are washed free of organic impurities. An equal volume of 10% sodium chloride is added to the brown product so obtained, and air is bubbled into the suspension at not greater than 80° for 6 hours. The stearin fraction is collected and pressed, to afford light yellow products. Crude oleic acid is obtained as a by-product.—I. O. LARIUKOV, V. F. SOKOLOV and A. I. NENASCHKINA. *Masloboĭno Zhirovoe Delo*, 4 (1938), 23–25; through *J. Soc. Chem. Ind.*, 57 (1938), 1444. (E. G. V.)

Vegetable and Animal Oils—Continuous Refining of. The oil is mixed with alkali and passed through a heater, for example, at 50° or 60°; the amount of soap in solution is then greatly reduced by passing the mixture through a cooler, for example, at 20° or 30°, before separating the soap in a centrifugal separator; if required, the oil may then be washed and recentrifuged. For oils not yielding difficult emulsions, such as coconut oil, the oil storage tank may be heated by steam coils, so that the mixing with alkali takes place in the warm and the subsequent heating unit may be omitted.—AKTIEB. SEPARATOR. Brit. pat. 485,975; through *J. Soc. Chem. Ind.*, 57 (1938), 1448. (E. G. V.)

White Mineral Oil—Uses, Grades and Manufacturing Procedure of. Mid-Continent and Gulf Coast oils which contain upward of 60% naphthanes are most suitable for white-oil refining in America. Recoveries are in the order of 60–85%. For medicinal purposes the oil must be stable, containing no unsaturated, sulfur or nitrogen compounds, will not cloud at the temperature of melting ice, can withstand oxidation for an indefinite period and is odorless, tasteless and water-white in color. The batch method of manufacture is outlined and the flowsheet is shown.—W. E. KEMP. *Can. Chem. Process Inds.*, 23 (1939), 107–108; through *Chem. Abstr.*, 33 (1939), 3965. (F. J. S.)

Unclassified

Acridine Derivatives as Antimalarials. Recent research on antimalarials has shown that activity is dependent on the presence of a quinoline nucleus linked to a dialkylamino chain or ring. Several 5-aminoacridine derivatives have been found to possess antimalarial activity and the authors have prepared twelve such compounds by condensation of 5-chloro-acridine derivatives with 4-aminoantipyrine, with 2-amino-4-methyl-5-β-hydroxyethylthiazole (a derivative of vitamin B_1) and with 2-amino-4-phenylthiazole. All the acridine derivatives prepared were reddish crystalline substances whose hydrochlorides were readily soluble in water. The molecular weights (400 to 450) lie within the limits suggested for antimalarial activity and the compounds are being examined pharmacologically.—V. P. BASU and S. J. DAS-GUPTA. *J. Indian Chem. Soc.*, 15 (1938), 160; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 781. (S. W. G.)

Alcohols—Preparation of Unsaturated Higher, from Seed Oil. The ethyl ester of *Thea sasanqua* seed oil may be hydrogenated to give greater than 90% yield of the unsaturated alcohol with 20% of zinc-chromium oxide catalyst (but prepared by decomposition of zinc chromate under reduced pressure) in one and one-half hours at 330°, the initial pressure being 100 atmospheres. Good yields are obtained also with 10% of catalyst at 60 atmospheres. The oil had n_D^{20} 1.4512, d_4^{20} 0.8690, saponification value 182.8, iodine value 73.3.—S. KOMORI. *J. Soc. Chem. Ind. Japan*, 41 (1938), 219–220B; through *J. Soc. Chem. Ind.*, 57 (1938), 1445. (E. G. V.)

***p*-Aminobenzenesulfonamide—Purifying Crude.** Purification is effected by reprecipitation from aqueous solution containing an alkaline substance the basicity of which is not sufficient for salt formation with the *p*-aminobenzenesulfonamide.—FRITZ MIETZSCH and JOSEF KLARER, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,132,178, Oct. 4, 1938. (A. P.-C.)

Amino Compounds—Soluble Aromatic, Possessing Therapeutic Value. Unsaturated aliphatic aldehydes, aromatic aldehydes and arylaliphatic aldehydes (which may be either saturated or unsaturated in the aliphatic side chain) are made to react with bisulfite and *p*-aminobenzenesulfamide or its derivatives substituted in the nucleus.—SOCIÉTÉ DES USINES CHIMIQUES RHÔNE-POULENC. Belg. pat. 425,014, Jan. 31, 1938. (A. P.-C.)

Antimalarials. I. Derivatives of 4-Acetoacetyl-6-Methoxyquinoline. The authors decided to prepare a series of compounds having a quinoline nucleus and a strongly basic center consisting of an aliphatic or alicyclic tertiary amine. The 1:3-diketone, 4-acetoacetyl-6-methoxyquinoline was prepared by the condensation of the ester of quininic acid with acetone in the presence of sodium ethoxide. This compound was prepared as a starting compound for the preparation of different derivatives. The compound crystallizes from light petroleum in a bulky form consisting of pale yellow masses of minute needles. It is soluble in alcohol, ether, benzene and hot light petroleum; insoluble in water but soluble in dilute mineral acids, alkalis and aqueous ammonia. The behavior near the melting point is peculiar in that if it is heated gradually from room temperature it melts sharply at 99° C. (corr.) without previous sintering, but it melts at once if plunged into a bath at any temperature above 90° C. This suggests that two crystalline forms exist, the one stable at ordinary temperature and melting at about 90° C. being converted on heating into the one melting at 99° C. The preparation of different derivatives of this compound are described, but no report on their antimalarial activity is given.—W. H. LINNELL and W. RIGBY. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 722–728. (S. W. G.)

Antimalarials—Synthetic. Analogs of plasmoquin were synthesized by condensation of diethylaminoheptyl chloride, diethylaminooctyl chloride and diethylaminononyl chloride with 6-methoxy-8-aminoquinoline. All the compounds showed pronounced antimalarial activity, attacking the gametes in infected Java sparrows and canaries, the chemotherapeutic index in Java sparrows increasing with increase in the length of the diethylaminoalkyl chain. The chemothera-

peutic index in canaries was about six times as great as that in Java sparrows, but showed no relation to the length of the side chain. Derivatives of quinine were prepared in which the secondary alcoholic group was replaced by dimethylamino- and diethylamino-groups and others in which the vinyl group was oxidized to carboxyl, the resulting acid being esterified with methyl and ethyl alcohols. All the quinine derivatives were inactive against bird malaria.—R. F. A. ALTMAN. *Rec. trav. chim.*, 57 (1938), 941; through *Quart. J. Pharm. Pharmacol.*, 11 (1938), 784.

(S. W. G.)

Arsonium Compounds. It has been discovered that tetraphenylarsonium chloride is a unique and very stable analytical reagent. It serves for the quantitative precipitation of pershenate, periodate, perchlorate, permanganate and other anions. It is believed that theraphenylarsonium permanganate is the only insoluble permanganate known. A number of new arsonium halides and nitrates have been prepared but they have not been found satisfactory substitutes for the valuable analytical reagent tetraphenylarsonium chloride.—F. F. BLICKE, H. H. WILLARD and J. T. TARAS. *J. Am. Chem. Soc.*, 61 (1939), 88. (E. B. S.)

Benzol—Chlorination of. The authors perfected a method in which *o* and *p*-dichlorobenzol were obtained in the proportion of 2 to 1. The method was as follows: Chlorine gas was passed directly into the benzol solution in the presence of iron which was used as a catalyzer. As the result of continued chlorination, a new compound, 1,2,4-trichlorbenzol, was formed. 1,2,3-Trichlorbenzol could not be recovered during the chlorination process.—G. B. SILBERMAN and SLOBODNICK. *Chem. J. Ser. B. J. Ang. Chim.*, 10 (1937), 1080; through *Chem. Zentralb.*, 109 (1938), 1580. (G. B.)

Cacao and Its Products. A list of the contents of the author's thesis dealing with the technology of cacao.—A. DI BAJA. *Rev. facul. cienc. quim.* (Univ. nac La Plata), 11 (1936), 37–42; through *J. Soc. Chem. Ind.*, 57 (1938), 1493. (E. G. V.)

Carcinogenic Hydrocarbons. Cholanthrene and its 20-methyl derivative are particularly interesting carcinogenic hydrocarbons because they are among the most active cancer producing materials. A comparison of fluorescence and carcinogenic activity indicates that the two are roughly parallel. The intensity of fluorescence, measured under comparable conditions, shows the methyl cholanthrene derivatives to be strongest and the isopropyl member weakest.—W. F. BRUCE and F. TODD. *J. Am. Chem. Soc.*, 61 (1939), 157. (E. B. S.)

Cevitamic Acid—Aliphatic Amine Salts of. Salts such as the cevitamates of methylglucamine, ethylenediamine or monoethanolamine and various similar cevitamates which are mentioned, are suitable for therapeutic purposes. Solutions of a suitable p_H may be used hypodermically.—ERNEST H. VOLWILER and MARJORIE B. MOORE, assignors to ABBOTT LABORATORIES. U. S. pat. 2,132,662, Oct. 11, 1938. (A. P.-C.)

Coumarin-Carboxylic Acid Salts of Ephedrine-Like Compounds. Therapeutic compounds of relatively slight irritating by-effects comprise salts of coumarin-3-carboxylic acid formed by combination with racemic *trans*-ephedrine, *l*-ephedrine, *l*-1-phenyl-2-methylaminoethan-1-ol, 1-*p*-aminophenol-2-methylaminopropanol, *l*-adrenaline base, 1-*p*-hydroxyphenyl-2-methylaminoethan-1-ol or the like (various details of the formation of these salts being given.—OTTO DALMER and FRITZ VON WERDER, assignors to MERCK & Co. U. S. pat. 2,133,977, Oct. 25, 1938.

(A. P.-C.)

Glycerides—Synthesis of, with the Help of Trityl Compounds and Applications of This New Method. A coördinated discussion is given of the work of Verkade and Helferich and their collaborators and others on (*a*) the preparation of monotritylglycerol (trityl = CPh_3) and its use in the synthesis of authentic $\alpha\gamma$- and $\alpha\beta$-diglycerides (containing like or unlike acyl radicals), and of triglycerides (3 unlike acyl radicals) of desired configuration; (*b*) the use of ditritylglycerides for the synthesis of α and β monoglycerides; and (*c*) the application of de-acylation and detritylation of mixed acyltritylglycerides to determine the configuration of mono- and di-glycerides. In order to correct misconceptions in connection with the use of trityl compounds in studying the structure of poly-OH-compounds, it is emphasized that secondary, as well as primary, hydroxyl groups may readily react to yield trityl derivatives.—P. E. VERKADE. *Fette u. Seifen*, 45 (1938), 457–465; through *J. Soc. Chem. Ind.*, 57 (1938), 1446. (E. G. V.)

Glycyrrhizic Acid—Recent Work on Constitution of. The literature is reviewed briefly and the following conclusions are given: Glycyrrhizic acid has the formula $C_{42}H_{62}O_{16}$ and hydrolyzes to give a molecule of glycyrrhetic acid and two molecules of uronic acid which may unite to

form an aglycone. Glycyrrhetic acid has the formula $C_{33}H_{46}O_4$ and may be classed as a triterpene. The four oxygen atoms are present in the forms of a carboxyl group, a hydroxyl group and an oxide. Other information is tabulated.—R. VIRATELLE. *Bull. sci. pharmacol.*, 45 (1938), 346–352. (S. W. G.)

Hydantoins. LII. Synthesis of *N*-3-Phenyl-5-*p*-Hydroxybenzylhydantoin-*N*-1-Acetic Acid from Tyrosine-*N*-Acetic Acid. Tyrosine-*N*-acetic acid was allowed to react with phenyl isocyanate in alkaline solution and the product obtained on neutralizing the cold alkaline reaction mixture was the closed hydantoin, *N*-3-phenyl-5-*p*-hydroxybenzylhydantoin-*n*-1-acetic acid which is stable only in the form of its salts or esters. The ester was obtained by treating the dimethyl ester of tyrosine-*N*-acetic acid with phenyl isocyanate in ether solution. When boiled for half an hour with 25% hydrochloric acid, the ester was completely converted into the hydantoin derivative. This *N*-3-phenylhydantoin will break down under alkaline hydrolysis to form tyrosine-*N*-acetic acid, carbon dioxide and analine.—ELINOR WARE. *J. Am. Chem. Soc.*, 60 (1938), 2653. (E. B. S.)

Hydrogenated Oils—Fractional Distillation of Saturated Acids of Completely. Fractional distillation of the fatty acids of completely hydrogenated olive oil yields palmitic (13), stearic (87%) and arachidic acid (trace). Similarly treated, hydrogenated rapeseed oil yields stearic (44), behenic (55) and lignoceric acid (1%).—S. UENO and M. IWAI. *J. Soc. Chem. Ind. Japan*, 41 (1938), 256–257B; through *J. Soc. Chem. Ind.*, 57 (1938), 1445. (E. G. V.)

Keratin Degradation Products—Process for the Preparation of Gold Compounds of High Therapeutic Value from. Water-soluble alkaline-earth or magnesium salts are allowed to act on the alkali salts of gold keratinates.—SCHERING A.-G. Belg. pat. 425,391, Jan. 31, 1931. (A. P.-C.)

γ-Ketonic Acids—Studies in. II. Methyl succinic anhydride has been condensed with phenol, anisole, resorcinol dimethyl ether and pyrogallol trimethyl ether giving rise to β-aroylpropionic acids, which have been reduced to the corresponding γ-arylbutyric acids. The latter have been cyclized to ketotetrahydronaphthalenes from which the corresponding naphthalenes have been obtained by dehydrogenation.—P. C. MITTER and L. K. DE. *J. Indian Chem. Soc.*, 16 (1939), 199. (F. J. S.)

β-Methylcholine Salts—Arylmethyl Ethers of. Therapeutic compounds such as the benzyl ether of β-methylcholine chloride are produced by the reaction of silver chloride with a compound such as the benzyl ether of β-methylcholine iodide (various details of reactions being described in examples given).—RANDOLPH T. MAJOR, assignor to MERCK & CO., INC. U. S. pat. 2,133,999, Oct. 25, 1938. (A. P.-C.)

Myristic Acid. The preparation of myristic acid (I) from coconut oil fatty acid is described. Technical (80%) I contains 10% of lauric, 5% of palmitic and stearic and 5% of oleic acid. It is suitable for the preparation of shampoos and, with oleic acid, toilet soaps.—J. SCHAAL. *Seifens. Ztg.*, 63 (1936), 695–696; through *J. Soc. Chem. Ind.*, 57 (1938), 1446. (E. G. V.)

Pantothenic Acid. II. Its Concentration and Purification from Liver. Pantothenic acid is a growth determinant substance found in liver which is highly hydrophilic and as yet has not been crystallized. It is unstable and can be handled safely only as a neutral salt. Pantothenic acid cannot be tested for chemically because it has no color, reducing properties or any other property which could be used as a guide during isolation. Attempts to purify it by esterification proved unsuccessful although it is possible to esterify and hydrolyze it without great loss. The concentration and purification of pantothenic acid from liver are described. Because of the character of the material this has proved an unusually difficult task. Further fractionation of the material resulted in no increased purity indicating it to be substantially pure.—R. J. WILLIAMS, J. H. TRUESDAIL, H. H. WEINSTOCK, JR., EWALD ROHRMANN, CARL M. LYMAN and C. H. MCBURNEY. *J. Am. Chem. Soc.*, 60 (1938), 2719. (E. B. S.)

Phenylmethyl Carbinol—Arsenic Derivatives of. A number of new aromatic arsonic acids were prepared by standard synthetic methods, including arsenic derivatives of phenylmethyl carbinol and alpha-phenylethylamine. They were obtained by hypophosphorous acid reduction of the parent compounds. The arsonphenylmethyl carbinol which was isolated as the sodium salt proved to be optically inactive, showing the synthesis to be nearly symmetric. When solutions of the sodium salt were acidified, dehydration occurred in the side chain giving a styrene polymer

which retained the properties of the arseno and arsono groups.—C. K. BANKS and CLIFF S. HAMILTON. *J. Am. Chem. Soc.*, 61 (1939), 357. (E. B. S.)

Piperazine—Method of Garelli and Racciu for Preparation of. An attempt to prepare piperazine disulfate by heating monoethanolamine with sulfuric acid yielded a product similar to β-aminoethylsulfuric acid which did not form an insoluble derivative with benzenesulfonyl chloride. Both piperazine disulfate and piperazine hexahydrate form an insoluble derivative with the same reagent. The authors obtained piperazine hydrate from the base so isolated, by cooling over sulfuric acid the residue obtained by evaporating to dryness on a water bath the condensate formed in isolating the free base by steam distillation.—DEAN B. ROLLINS and H. N. CALDERWOOD. *J. Am. Chem. Soc.*, 60 (1938), 2751. (E. B. S.)

Reducto-Dehydrocholic Acid Esters—Preparation of. Hydrogen is made to act on a simple ester of dehydrocholic acid in neutral medium in presence of a cobalt or nickel catalyst at a temperature of at least 70° C. and under a pressure of at least 10 atmospheres.—MAX BOCKMÜHL and HEINRICH RUSCHIG, assignors to WINTHROP CHEMICAL CO., INC. U. S. pat. 2,143,676, Jan. 10, 1939. (A. P.-C.)

Resonance Reaction. II. The formation of fumaric acid from maleic acid by resonance reaction has been completely established and the methyl ester characterized. The best yield of fumaric acid (50%) is obtained when maleic acid and MnO_2 exist in the proportion of 4:1. The conversion of citraconic acid to mesaconic acid by resonance reaction has been confirmed.—P. NEOGI and K. L. MONDAL. *J. Indian Chem. Soc.*, 16 (1939), 239. (F. J. S.)

Stearates and Oleates—Preparation and Uses of. A review with special reference to the alkaline-earth and heavy-metal compounds.—ANON. *Oil and Colour Trades J.*, 94 (1938), 447–449; through *J. Soc. Chem. Ind.*, 57 (1938), 1446. (E. G. V.)

Thiazole Compounds. By reaction such as the condensation of 3-chloro-(or bromo- or iodo-)-3-aceto-propanol-ol with thioformaldehyde, products are obtained which resemble or comprise the thiazole portion of vitamin B_1 and may serve as intermediates for combining with pyrimidine groups to form the anti-neuritic vitamin or related compounds.—EDWIN R. BUCHMAN, assignor to RESEARCH CORP. U. S. pat. 2,133,969, Oct. 25, 1938. (A. P.-C.)

Vinyl Barbituric Acids—Substituted. Syntheses of disubstituted malonic and cyanoacetic esters, in which one substituent is the *l*-methylpropenyl group, have been prepared and have been converted into barbituric acid derivatives. A pharmacological assay of these preparations has been made by administration of their sodium salts to white mice and the results indicate a higher therapeutic ratio than the isopropenylalkyl barbituric acids possess.—A. C. COPE and E. M. HANCOCK. *J. Am. Chem. Soc.*, 61 (1939), 353. (E. B. S.)

BIOCHEMISTRY

Acetonuria—Simple Reaction for Detection of. A simple reagent consisting of 1 Gm. of 2-4-dinitrophenylhydrazine with 45 cc. of concentrated hydrochloric acid and 250 cc. of distilled water is useful in detecting the presence of acetone in the urine; 2 cc. of reagent is mixed with 2 cc. of urine, and in the presence of acetone a thick yellow cloud appears. The author assesses the sensitivity of the test as 1:5000.—W. LIBBRECHT. *Wiener Klin. Wochenschr.*, 51, 1938; through *Brit. Med. J.*, 4044 (1938), 106C. (W. H. H.)

Acid-Base Equilibrium—Disturbances of. There are two possible deviations of acid-base equilibrium from normal, namely, acidosis and alkalosis. The signs and symptoms by which acidosis and alkalosis are detected mean little unless there is an understanding of their mode of production and a realization that they form part of the body's adaptation to disease.—N. MORRIS. *Pharm. J.*, 141 (1938), 654. (W. B. B.)

Adrenal Cortex—Constituents of. Substances J, K, N and O. The isolation of three new substances: K, N and O is described. Substances J and O are isomers, allopregnane-3,17,20-triols as they both, on oxidation with periodic acid, yield trans-androsterone and with chromic acid androstane-dione. The steric arrangement of carbons 17 and 20 is not definitely established. Substance K is an allo-pregnane-3,17,20,21-tetrol. Substances J, K and O are the first sterol derivatives, besides cholesterol itself, isolated from the adrenals which are not substituted with oxygen in the 11-position.—MARGUERITE STEIGER and T. REICHSTEIN. *Helv. Chim. Acta*, 21 (1938), 546. (G. W. H.)

Alcohol Combustion in Chronic Alcoholic Subjects, and the Relation between the Degree of Drunkenness and the Alcohol Content of the Blood and Urine. The time required for the absorption of alcohol by chronic alcoholic subjects is shorter than for total abstainers. In the former the curve rises more rapidly, reached its maximum in 60 minutes, and is higher than in the latter, in whom the maximum is reached in about 120 minutes. In the subjects examined, the urine and blood curves were parallel. The action of alcohol in chronic alcoholic subjects manifests itself in about 30 minutes, and usually symptoms of drunkenness appear during the first hour after the taking of the alcohol and last about an hour. This stage is in most cases followed by sleep and some slight late symptoms; as a rule no traces of drunkenness remain 6 hours after the beginning of the symptoms. No definite idea of the amount of alcohol taken can be judged from the condition of drunkenness.—K. SIEGMANN. *Deut. Z. ges. gerichtl. Med*, 29 (1937), 181; through *Medico-Legal Criminol. Rev.*, 6 (1938), 195–196. (A. P.-C.)

Alcoholic Intoxication. Diagnosis and medicolegal implications of importance in automobile accidents, involving drunken drivers. Alcohol detectable in body fluids, blood saliva, spinal fluid, urine and in expired air. Urinary alcohol does not always represent saturation at time sample is taken but blood alcohol does. Blood alcohol is always available and does not necessitate active participation of subject. It has definite correlation to clinical manifestations of alcoholism. Subclinical intoxication can produce sufficient interference with psychomotor activity and neuromuscular coordination to render affected individual a potential public menace. Blood alcohol determinations can detect these degrees of alcoholic intoxication which ordinarily escape observation.—SYDNEY SELESNICK. *J. Am. Med. Assoc.*, 110 (1938), 775. (G. S. G.)

Anemia Due to Blood Loss—Adequate Protein Needed for the Recovery of. It has been found that in anemia due to blood loss the output of new hemoglobin can be kept at a very low level by restricting the intake of iron. When the iron stores of the body are removed, the iron intake becomes the absolute limiting factor for the formation of new hemoglobin in experimental dogs. It was decided to investigate the other components of hemoglobin to find if they may be manipulated in a similar quantitative way. Hemoglobin was considered to be made up of iron, a protein fraction (globin) and a pigment fraction. As expected, it was found that even in the presence of an adequate iron intake, hemoglobin failed to be regenerated in the anemic animals unless the protein intake was kept at a suitable level. Under such conditions, the proteins of salmon muscle, banana and carrot are well utilized, and it requires only 7 to 8 Gm. of these to produce one Gm. of hemoglobin. The iron content of liver is not the only reason for its potency in hemorrhagic anemia.—P. F. HAHN and G. H. WHIPPLE. *J. Exptl. Med.*, 69 (1939), 315; through *Abbott Abstract Service*, (1939), No. 464. (F. J. S.)

Antacids. A detailed discussion with nineteen references.—M. A. LESSER. *Drug Cosmetic Ind.*, 43 (1938), 673–676. (H. M. B.)

Antihemorrhagic Vitamin (K)—Estimation of. Conditions have been examined for increasing the precision of the method of assay of vitamin K by measuring the clotting time of the blood of chicks. Experiments were devised to test the influence of the age of the birds and period of depletion of vitamin K on the clotting time, using a hexane extract of alfalfa as the standard reference. From the results, it is concluded that the simplest method of assay of vitamin K is as follows. Ten or more chicks, maintained for one week after hatching on the basal diet devoid of vitamin K, receive the diet supplemented by the dose of vitamin preparation for three weeks. It is found that the clotting power of the blood as expressed by the reciprocal of its clotting time is a simple function of the logarithm of the vitamin K concentration in the diet. The slope of this line is 3.6 for a three weeks' test decreasing to 2.8 in four weeks. The authors do not define a unit but prefer to express the results of assays in terms of their laboratory standard until an International unit becomes available.—H. J. ALMQUIST, E. MECCHI and A. A. KLOSE. *Biochem. J.*, 32 (1938) 1897; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 286. (F. J. S.)

Ascorbic Acid Content of Milk of Various Species as Influenced by Ascorbic Acid Injection and Diet. Values of ascorbic acid in ewe milk ranged from 25 to 40 mg. per quart. The intravenous injection of ascorbic acid resulted in a marked temporary rise in the vitamin content of the milk of the ewe and the cow. Mare milk gave values from 27 to 115 mg. per quart. The nature of the feed appeared to be a factor in the wide variations. Values obtained with guinea pig milk ranged from 108 to 711 mg. per quart.—RUSSEL RASMUSSEN, RALPH BOGART and L. A. MAYNARD. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 502. (A. E. M.)

Ascorbic Acid—Failure of, to Influence Albuminuria and Hematuria in Nephritis. The administration of ascorbic acid in massive doses for 6 to 10 days had no influence on hematuria and albuminuria in acute nephritis.—MAX MILLER, S. M. JOHNSTON and J. M. HAYMAN, JR. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 428. (A. E. M.)

Ascorbic Acid in Commercial Yerba Maté. Dried yerba maté contains very little, if any, ascorbic acid.—J. R. MENDIVE. *Rev. inst. bacteriol. dept. nacl. hig.* (Buenos Aires), 8 (1938), 400–411; through *Chem. Abstr.*, 33 (1939), 2283. (F. J. S.)

***d*-Ascorbic Acid—Preparation of, from *d*-Sorbose.** The *d*-sorbose used as the starting product was obtained from *d*-gulose by rearrangement with pyridine. This was readily converted into the acetone compound which in the oxidation with permanganate yielded directly pure di-acetone-*d*-gulonic acid. From this, the free gulonic acid was prepared, the methyl ester of which, by alkali rearrangement was converted into *d*-ascorbic acid.—K. GÄTZI and T. REICHSTEIN. *Helv. Chim. Acta*, 21 (1938), 456. (G. W. H.)

Ascorbic Acid—Use of Cyanide in the Determination of. The use of potassium cyanide as recommended in plasma ascorbic acid analyses does not necessarily invalidate the results and may cause no error. Certain lots of potassium cyanide may decolorize 2,6-dichlorophenolindophenol, the decolorizing power of a particular lot depending on the concentration of the salt and the p_H of the dye-salt solution. Reduced ascorbic acid is stable in whole blood or metaphosphoric acid plasma filtrates for as long as 24 hours. There is a significant loss of reduced ascorbic acid when plasma stands for more than 4 hours. This loss is not prevented by the presence of potassium cyanide in concentrations recommended in plasma ascorbic acid analysis. These observations indicate that there is no reason for the addition of potassium cyanide in the determination of plasma ascorbic acid.—M. CUSHMAN and ALLAN M. BUTLER. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 534. (A. E. M.)

Bile Acid—Modification of Abe's Method for the Microdetermination of. The accuracy of the method has been extended to 0.1 mg. cholic or desoxycholic acid with 1% error by a modification of the original Abe procedure. A definite amount of an alcohol solution of pure cholic or desoxycholic acid is measured into an Erlenmeyer flask, the alcohol distilled off and the residue treated with 0.4 cc. of a 2% vanillin solution in 95% alcohol. The alcohol is again distilled off carefully and 2.5 cc. of H_3PO_4 (specific gravity 1.75 at 22°) is added and the mixture kept for eight minutes at 70°. The color is measured in the step photometer with filter L_{11}. Similar determinations are made with cholic acid by using more dilute H_3PO_4 (specific gravity 1.625 at 22°) and heating ten minutes at 50°. By use of the specific extinction values obtained under these strict experimental conditions, it is possible to calculate the amount of cholic and of desoxycholic in a mixture of both acids.—S. KAWAGUTI. *J. Biochem.* (Japan), 28 (1938), 445–449; through *Chem. Abstr.*, 33 (1939), 2932. (F. J. S.)

Biochemistry—Molecular Architecture in. An address, with special reference to the rôle of anabolizing, metabolizing, regressive and defensive pigments in plant and animal organisms.—C. A. SAGASTUME. *Anales soc. cient. argentina*, 125 (1938), 205–221, 351–369; through *Chem. Abstr.*, 33 (1939), 3833. (F. J. S.)

Blood—Relation of Clotting Power of, to Vitamin K. The clotting power of blood may be expressed in terms of the amount of a standardized tissue extract (containing thrombokinase) which it is necessary to add to a heparinized blood sample to cause coagulation. This may be called K. If the amount of tissue extract required to cause clotting of a similar sample of normal blood is represented by K_n, then an equation can be set up as follows: $R = \frac{K}{K_n}$, where R expresses the coagulation deficiency. A normal R value should be close to unity; a large R value indicates a large deficiency in coagulating power. A method of this type has been used to determine the clotting deficiency of patients with various hemorrhagic diseases. In essential thrombopenia and hemophilia, R was normal, while in obstructive jaundice, R was high. In five jaundiced cases the administration of vitamin K concentrate restored R values to normal.—H. DAM and J. GLAVIND. *Acta Med. Scand.*, 96 (1938), 108; through *Abbott Abstract Service*, (1938), No. 401. (F. J. S.)

Blood Cholesterol—Clinical Method for the Determination of. Mix 1 cc. of serum plus 9 cc. of isopropyl alcohol, shake, let stand 15 minutes, filter, transfer 2 cc. to a porcelain dish and evaporate on a water bath. Put the dish in a 100° oven for ten minutes. Let it cool in a sulfuric acid desiccator. Dissolve the residue with small portions of chloroform (5 cc. total volume) and

collect in a graduated tube. Treat the solution with 2 cc. of Ac_2O and 0.1 cc. of sulfuric acid as in the Lieberman-Burchard reaction. Compare in a colorimeter with a standard solution. This simple method gives values which agree with those obtained by the method of Myers and Wardell (*Chem. Abstr.*, 12, 2592).—J. GASCON and E. R. SCHEGGIA. *Rev. facul. cienc. quím.* (Univ. nac. La Plata), 12 (1937), 31–36; through *Chem. Abstr.*, 33 (1939), 2927. (F. J. S.)

Blood Group Investigations—Spectrophotometric and Chemical. There are differences in the absorption spectra of the serum globulin of blood groups A and B; for example, the absorption maximum of the serum globulin A increases markedly in alkaline solution (alkaline increase), whereas the serum globulin of blood group B does not show this increase. Both globulin fractions of the sera of blood group O differ according to the sex. In men the first fraction, and in women the second fraction of type A show definite alkaline increase; conversely in type B the second fraction in men, and in women the first fraction show no alkaline increase or only a slight one. The alkaline increase of an α-serum globulin is not caused by β-agglutinin, nor through the group substance A. The A-group substances show practically no alkaline increase. No difference in the amino acid content in the serum globulin and serum albumin is proved. In explanation of their findings the authors assume that the spectroscopic differences are to be traced to the isomerism of the albumin substances concerned, but they do not regard their investigations as in any way complete.—J. GRÖHL, L. SZELYES, M. WELTNER, P. BALINT, G. CZERMAK, J. KOVACS and J. SIMON. *Deut. Z. ges. Gericht. Med.*, 29 (1937), 42; through *Medico-Legal Criminol. Rev.*, 6 (1938), 93. (A. P.-C.)

Blood Lipoids—Studies on the Changes of, of Normally Fed and Vitamin C Deficient Guinea Pigs. There is a significant rise in the cholesterol content of the blood of guinea pigs in vitamin C deficiency.—BAIDYANATH GHOSH. *J. Indian Chem. Soc.*, 16 (1939), 47. (F. J. S.)

B Vitamins. A review discussing vitamin B_1 (thiamin HCl), B_2 (riboflavin), P-P factor (pellagra preventing), F-F factor (filtrative factor), B_3 (growth factor for pigeons), B_4 (paralysis preventing in rats and chickens), B_5 (pigeon maintenance factor), B_6 (rat antidermatitis factor), W (rat growth factor). The chemistry of thiamin and of riboflavin is discussed. Standardization of B_1 by the pigeon method, rat growth method and bradycardia method is considered. Calculation of standard deviation, standard error and probable error is considered. Bioassay of the B_2 complex is also reviewed. Further paragraphs are devoted to the P-P factor and the rat antidermatitis factor, B_6.—H. LINDSTROM. *Arch. Pharm. Chemi*, 45 (1938), 637, 678. (C. S. L.)

Calcium—Microchemical Determination of, in Blood Plasma and Serum. Calcium determination made by direct precipitation of calcium oxalate from blood plasma with subsequent titration with potassium permanganate give distinctly higher results than are obtained after careful ashing; the high results seem to be due to adsorption by the oxalate precipitate of something that reacts with permanganate. For accurate results, therefore, it is necessary to ash the samples. Then, with the necessary described precautions, the results should be accurate to within 0.2%.—H. WAELSCH and S. KITTEL. *Mikrochimie Acta*, 2 (1937), 97–106; through *Chimie & Industrie*, 40 (1938), 243. (A. P.-C.)

Calcium Cevitamate—Comparison of, to Calcium Gluconate. From comparative studies, calcium cevitamate shows markedly greater solubility than the calcium gluconate, the content of calcium ion per cc. of solution being from twenty to sixty times greater. Cevitamic acid participates with the parathyroid hormone in forming the diffusible ionized calcium of the serum calcium. —SIMON RUSHKIN. *Am. J. Pharm.*, 110 (1938), 64. (R. R. F.)

Calculi and Gallstones—Urinary, Detection of the Most Frequent Constituents of, by Means of Microchemical Tests. Reactions are described for the detection of carbonates (baryta water), ammonia (Nessler's reagent), calcium (dilute sulfuric acid), magnesium phosphate (formation of ammonium magnesium phosphate, coloration by chrysazine), oxalic acid (resorcinol and sulfuric acid), uric acid (*o*-phenylenediamine hydrochloride plus sodium acetate), cholesterol (digitonone) and fatty acids (saponification by means of alcoholic potash).—L. ROSENTHALER. *Mikrochimie Acta*, 2 (1937), 1–2; through *Chimie & Industrie*, 40 (1938), 243. (A. P.-C.)

Carbon Monoxide—Infra-red Test for, in Blood. Eggerth and Merkelbach showed that carbon monoxide hemoglobin is very transparent to infra-red rays (920 mμ), while hemoglobin is almost opaque in this spectral region. Thus the presence of carbon monoxide hemoglobin can be easily detected by means of infra-red photography. Two photographs should be taken, one on an infra-red-sensitive plate and the other on a panchromatic plate. If the infra-red sensitive plate is

blacker than the panchromatic, it shows that the blood under examination contains carbon monoxide. The test is also still positive if, for example, in a state of decomposition, the hemoglobin is all ready transformed into porphyrin.—S. SCHILLING-SIENGALEWICZ. *Deut. Z. ges. gerichtl. Med.*, 29 (1938), 339; through *Medico-Legal Criminol. Rev.*, 6 (1938), 196. (A. P.-C.)

Carbonate Excretion in Urine as an Indication of Alkalosis. A simple test for alkalosis in patients with peptic ulcer under treatment with soluble carbonates is described. The reagent used is nickel sulfate. Patients who are taking sodium bicarbonate or other soluble carbonates excrete demonstrable amounts of carbonate in the urine, as shown by this test. Should alkalosis develop, the carbonate excretion is reduced or absent, but reappears on a return to a normal acid-base equilibrium.—L. C. GATEWOOD. *Am. J. Digestive Diseases Nutrition*, 5 (1938), 461; through *Brit. Med. J.*, 4068 (1938), 1350D. (W. H. H.)

Carotene—New Method for the Determination of. When a petroleum ether solution of plant pigments is adsorbed chromatographically on magnesium oxide only α- and β-carotene pass through unadsorbed. The product to be analyzed for carotene is ground well with sand, filtered and washed with ethyl alcohol and 9:1 petroleum ether-absolute ethyl alcohol to extract the pigments. The combined solutions are shaken with water to remove ethyl alcohol, dried by filtration through a column of anhydrous sodium sulfate and evaporated to 3 to 5 cc. The solution then is adsorbed on magnesium oxide and the chromatogram developed with petroleum ether. The filtrate is made up to a definite volume and compared colorimetrically with a standard solution of azobenzene (Kuhn) or potassium dichromate (Russell).—G. ROZENBERG. *Bull. biol. med. exptl. U. R. S. S.*, 5 (1938), 363–364 (in English); through *Chem. Abstr.*, 33 (1939), 2930. (F. J. S.)

Cholesterol—Determination of. The method described for the determination of cholesterol involves the formation of insoluble cholesterol digitonide, either from the original extract or from the saponified sample which, after purification with petroleum ether, is decomposed by boiling in benzene and the free sterols are isolated by petroleum ether extraction and assayed by the Liebermann-Burchard reaction. No tricky procedures are involved and no special apparatus other than an ordinary colorimeter is required. Both free and total cholesterol can be determined in the same sample and the naturally occurring contaminants which usually affect the reaction are absent.—F. E. KELSEY. *J. Biol. Chem.*, 127 (1939), 15–22; through *Chem. Abstr.*, 33 (1939), 1774. (F. J. S.)

Copper and Iron—Mode of Action of, in Anemia. The authors produced a nutritional anemia in young puppies by placing them on milk diets with the rigorous exclusion of copper and iron. After anemia had developed the dogs were placed on diets containing various proportions of iron and copper, but hemoglobin regeneration was quite slow and the conclusion was reached that either insufficient doses of copper and iron were being administered or some unknown essential factor was missing from the diet. After the hemoglobin levels had been restored to normal, some of the dogs were made anemic by bleeding, and were found to be unable to regenerate hemoglobin on the iron- and copper-free diet. When iron alone was added to the diet, hemoglobin regeneration was still extremely poor, but the addition of copper as well caused a satisfactory rise in hemoglobin. This is considered to be important evidence that dogs are no exception to the general rule that copper must be supplied for proper iron utilization.—V. R. POTTER, C. A. ELVEHJEM and E. B. HART. *J. Biol. Chem.*, 126 (1938), 155; through *Abbott Abstract Service*, (1939), No. 493. (F. J. S.)

Corticosterone into Allo-Pregnane—Conversion of. Of all the compounds isolated from the adrenal cortex in a pure form, corticosterone and dehydrocorticosterone have the strongest "cortin" activity. Structural formulae have been proposed but not proved. By converting corticosterone into allo-pregnane, the carbon framework has been established. Corticosterone was first completely hydrogenated with platinum, the tetrol obtained was oxidized with periodic acid to an aldehyde which was transposed with methyl-magnesium bromide. The resulting triol was oxidized with chromium trioxide to a triketone which was reduced to allo-pregnane.—MARGUERITE STEIGER and T. REICHSTEIN. *Helv. Chim. Acta*, 21 (1938), 161. (G. W. H.)

Creatinine—Compounds of, with Alkali Hydroxides. Compounds of creatinine with sodium, potassium and rubidium hydroxides were prepared by dissolving creatinine in alcoholic solutions of the respective hydroxides. On pouring into ether, white crystalline precipitates were formed having the composition: creatinine, 1 mol. alkali hydroxide, 1 mol. and water 2 mols. When absolute alcohol was used as solvent a compound containing only 1 mol. of water was ob-

tained.—A. BOLLIGER. *Proc. Roy. Soc., N. S. W.*, 71 (1937), 40; through *Quart. J. Pharm. Pharmacol.*, 11(1938), 634. (S. W. G.)

22,23-Dihydroergosterol. *2,128,198*—A process of producing compounds such as 22,23-dihydroergosterol (from 22,23-dihydroergosteryl acetate) comprises subjecting an ergosterol compound selected from the group consisting of addition compounds of ergosterol and addition compounds of its esters with an ethylene-*cis*-dicarboxylic acid anhydride to catalytic hydrogenation until 1 molecule of hydrogen has been taken up, splitting the addition compound of the hydrogenation product formed by thermal decomposition and distilling under a high vacuum. *2,128,199*—An antirachitically active product obtained by ultraviolet irradiation of 22,23-dihydroergosterol.—ADOLF WINDAUS, assignor to WINTHROP CHEMICAL CO. U. S. pats. 2,128,198 and 2,128,199, Aug. 23, 1938. (A. P.-C.)

Endocrine Compounds. The Adrenal Glands. A review.—A. RICHARD BLISS, JR. *Drug Cosmetic Ind.*, 44 (1939), 158–160, 170. (H. M. B.)

Endocrine Compounds. The Islets of Langerhans. The completion of a review.—A. RICHARD BLISS, JR. *Drug. Cosmetic Ind.*, 43 (1938), 670–672. (H. M. B.)

Endocrine Compounds. The Pineal Gland. A review.—A. RICHARD BLISS, JR. *Drug Cosmetic Ind.*, 44 (1939), 38–39. (H. M. B.)

Erythritol and Erythritan—Fate of, in the Animal Body. Sugar Alcohols. XVI. The following summary is given: (1) Erythritol does not possess the capacity to be stored as glycogen in the liver of the white rat. (2) Erythritol is incapable of significantly increasing the respiratory quotient of the white rat. (3) The removal of one molecule of water from erythritol with the formation of its anhydride, erythritan, does not alter these effects. (4) The acute toxicity of erythritol and erythritan in mice has been determined.—F. F. BECK, C. J. CARR and J. C. KRANTZ, JR. *Quart. J. Pharm. Pharmacol.*, 11 (1938), 234–239. (S. W. G.)

Estrone and Estradiol Monobenzoate—Comparison of Intravaginal and Subcutaneous Tests for. The intravaginal unit of estrone is approximately $^1/_{50}$ of the subcutaneous unit, while the intravaginal unit of estradiol monobenzoate is $^1/_{100}$ to $^1/_{200}$ of the subcutaneous unit. Whereas estradiol monobenzoate is about ten times as potent as estrone when tested subcutaneously in rats, it is approximately 30 times as potent by the intravaginal method.—LAWRENCE B. STADLER and W. R. LYONS. *Proc. Soc. Exptl. Biol. Med.*, 39 (1938), 562. (A. E. M.)

Fish Oil Fractions—Potency of Different, in Animals. Since the discovery of the fact that there were several forms of vitamin D present in natural fish liver oils, it has been customary to assay vitamin D preparations on chicks as well as on rats. Certain forms of vitamin D are much more effective, rat unit for rat unit, in chicks than others. For example, the vitamin D obtained by irradiating cholesterol and certain other animal sterols is much more antirachitic in the chick than irradiated ergosterol. The principal form of vitamin D found in the official U. S. P. cod liver oil is apparently identical in its effect on chicks with this irradiated animal provitamin D. The authors compared the effects of several commercial samples of tuna fish liver oil with U. S. P cod liver oil in rats and chicks, using the body weight and the bone ash weight as criteria for measurement. Their tests revealed that the various samples of tuna oil were found to be only 40 to 60% as effective in chicks, rat unit for rat unit, as the standard cod liver oil.—J. T. CORRELL and E. C. WISE. *J. Biol. Chem.*, 126 (1938), 573; through *Abbott Abstract Service*, (1939), No. 494. (F. J. S.)

Follicular Hormone Series—New Compounds of the. Esterification of estradiol in the 17-position increases its activity, by producing a slower resorption during hypodermic injection. The hormone is thus better utilized and produces maximum effect. The slowing down of resorption is due to more difficult diffusion, which is in part a function of the length of the side chains.—K. MIESCHER and C. SCHOLZ. *Helvetica Chim. Acta.*, 20 (1937), 1237–1253; through *Chimie & Industrie*, 40 (1938), 309. (A. P.-C.)

Folliculin—Inhibition of Lactation by. Action was attributed by various authors to substance originating in corpus luteum; inhibition of lactation obtained by parenteral administration of folliculin. Useful in cases of still-births. Injections of 1000 units of folliculin were given daily for three days following parturition.—W. DE SOUZA RUDGE. *Rev. Gyn. Obst. Brasil.*, 31 (1937); through *Rev. sud.-americana endocrinol. inmunol. quimioterap.*, 21 (1938), 42. (G. S. G.)

Formic Acid—Chemico-Toxicological Investigation of. The tissues are treated with sodium carbonate solution, and after allowing to react for some time the alkaline liquid is sepa-

rated, acidified and distilled. The distillate is refluxed with powdered magnesium to convert formic acid into formaldehyde; the liquid is distilled and the first few drops of distillate are tested for aldehyde by the violet color which it produces with concentrated sulfuric acid containing a trace of morphine.—F. BALLOTTA. *Boll. chim.-farm.*, 75 (1936), 577–580; through *Chimie & Industrie*, 38 (1937), 665. (A. P.-C.)

Gluten—Fractional Solubility of, in Sodium Salicylate Solutions. The amount of gluten protein dispersed by sodium salicylate solution is proportional to the concentration of the salt, while the completeness of extraction with any concentration depends on the penetration of the salicylate solution into the gluten particles. The higher concentrations (5 to 10%) penetrate rapidly because they disperse most of the protein and automatically expose fresh surface for attack. The lower concentrations penetrate slowly unless the nondispersed protein is occasionally removed by vigorous stirring or shaking. The amount of protein in dispersed form in any specific concentration of salicylate is the same whether determined by extraction or by dilution of a dispersion in 8% salicylate. The amide nitrogen of protein fractions obtained by fractional solubility is the same as that of corresponding fractions obtained by precipitation. Results confirm an earlier conclusion that, except for the most soluble 15%, gluten protein consists of a single complex that can be progressively fractionated.—E. Y. SPENCER and A. G. MCCALLA. *Can. J. Research*, 16, C (1938), 483–496; through *Chem. Abstr.*, 33 (1939), 2551. (F. J. S.)

Hair Roots—Simple Color Reaction for Use in the Examination of. The following method of coloring hair is an aid to its microscopical examination. Any fat is removed by placing the hair in a mixture of equal parts of alcohol and ether. It is then transferred for 5 to 10 seconds to 5% zinc acetate solution, rinsed in distilled water, and submerged for a further 10 to 30 seconds in a 5 to 10% solution of sodium nitroprusside, after which it is treated with pure alcohol and mounted in Canada balsam. Storage in the dark in a cool place stabilizes the color. The papillary hair bulb and the unhorned part of the root will be of a bright cherry-red color and yet remain transparent, while the epidermis cells attached to the hair shaft will remain uncolored. Clean hair or hair that has fallen out, does not react; torn-out or combed-out hair bulbs show only colored striations corresponding with the cells of the inner root sheath, or a slight reaction in the residue of the unhorned cells at the base of the hair bulb. The advantages claimed for this method are its simplicity, the ease and rapidity with which it can be carried out, and the characteristic effects produced. The hair does not become so deeply colored as to interfere with its examination in transverse section.—W. LAVES. *Deut. Z. ges. gerichtl. Med.*, 29 (1938), 399; through *Medico-Legal Criminol. Rev.*, 6 (1938), 299. (A. P.-C.)

Hemoglobin—Preparation and Properties of. Purification of horse hemoglobin by adsorption on γ-aluminum hydroxide cream yields samples of hemoglobin which give a higher percentage saturation with oxygen than whole blood. No minimum effect on the percentage saturation at 1 mm. is observed within the p_H range of 5.5 to 8.7. Two zones of color were observed in a Tswett column, suggesting the possibility of two forms of hemoglobin. Both layers were identical spectroscopically in the presence of air when eluted with phosphate buffer but it was impossible to determine the capacity of the upper layer to absorb oxygen. It appears that hemoglobin is either in a different form in the erythrocytes than that obtained by aluminum hydroxide adsorption or is associated with some other substance.—A. M. ALTSCHUL, A. E. SIDWELL, JR. and T. R. HOGNESS. *J. Biol. Chem.*, 127 (1939), 123–129; through *Chem. Abstr.*, 33 (1939), 1768. (F. J. S.)

Honey from Conifers—Sulfate Content of. All specimens of coniferous honey examined contained sulfate in amounts varying from 1.3 to 73.5 mg.-% (sulfuric acid). Its presence in ordinary honey may be detected not only by the characteristic flavor, but also by Griebel's test.—G. BUTTNER. *Z. Untersuch. Lebensm.*, 76 (1938), 351–353; through *J. Soc. Chem. Ind.*, 57 (1939), 1492. (E. G. V.)

Hormone Production—Intermediate for. A process for the production of 3-chloro-17-etioallocholanone comprises the complete reduction of $\Delta^{5,6}$-3-chloro-17-etiocholenone with hydrogen in the presence of a platinum catalyst, and subsequent oxidation of the reaction product with chromic acid in glacial acetic acid.—JOHN WEIJLARD, assignor to MERCK & CO. U. S. pat. 2,131,082, Sept. 27, 1938. (A. P.-C.)

Hormones. A process for the recovery of pituitary and sexual hormones from natural raw materials containing them comprises adding to hormone-containing aqueous liquid having a p_H value of from 3 to 7 a soluble ferrocyanide or ferricyanide, and a metal salt forming therewith

an insoluble precipitate containing the corresponding ferrocyanide or ferricyanide radical and having adsorbing properties, and thereafter treating the precipitate with a solvent for the hormones to be recovered.—HOLGER L. P. KJEMS, assignor to AUGUST J. H. KONGSTED. U. S. pat. 2,129,584, Sept. 6, 1938. (A. P.-C.)

Hormones, Etc.—Short Path, High-Vacuum Distillation of. A process of short path, high-vacuum distillation of solid distillable material comprises passing a mixture of solid distillate material dispersed in a nonvolatile liquid over a heated surface which is maintained under a high vacuum, condensing vaporized molecules derived from the material upon a condensing surface which is near to the heating surface and which is separated therefrom by substantially free unconstricted space.—HEIN I. WATERMAN and CORNELIUS VAN VLODROP, assignors to IMPERIAL CHEMICAL INDUSTRIES, LTD. U. S. pat. 2,129,596, Sept. 6, 1938. (A. P.-C.)

Hydrogen Arsenide and Hemoglobin—Reaction between. Inhalation of arsine causes hemolysis and converts hemoglobin into methemoglobin. In the absence of oxygen, blood corpuscles are not hemolyzed, nor is the hemoglobin converted into methemoglobin. This double action of arsine occurs chiefly in the erythrocytes and to a far less extent in the plasma or serum. The author has proved that water, physiological saline solution, fresh and stale serum, white of egg and buffer solution have a similar absorptive capacity for arsine, and that the solubility is proportional to the external pressure. Strong solutions of alkalis do not absorb arsine. Hematin solutions absorb more arsine than water, *i. e.*, in proportion to the concentration of hematin. Blood corpuscles previously treated with potassium bisulfate showed the same absorptive capacity as water for arsine. The combination with arsine is not caused by the hemoglobin but probably by small amounts of methemoglobin which originated from auto-oxidation of the hemoglobin. Blood corpuscles containing methemoglobin are completely reduced by arsine and thereby partly hemolyzed.—F. GEBERT. *Deut. Z. ges. gerichtl Med.*, 29 (1938), 292; through *Medico-Legal Criminol. Rev.*, 6 (1938), 209–210. (A. P.-C.)

Insulin—Effect of Zinc on Iodine Absorption of. The addition of zinc prolongs the blood sugar lowering action of insulin. Clinical disturbances followed the substitution of crystalline insulin (containing zinc) for zinc-free material. The iodine-consuming power of insulin at p_H 7.2 was found to be decreased by zinc, but not by calcium, aluminum or lead. The magnitude of this effect is a function of the physiological activity of the insulin preparation used.—E. H. VOGELENZANG. *Nature*, 143 (1939), 161; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 287. (F. J. S.)

Intoxication—Rapid Chemical Test for, Employing Breath. Alcohol is rapidly absorbed and brain, blood and liver reach equilibrium almost at once. Close correlation between alcohol concentration in brain, in blood and in liver. Constant relationship between amount of alcohol in blood and in alveolar air. Ratio of carbon dioxide to alcohol in breath is a measure of alcohol in blood. Description is given of gas apparatus used to measure alcohol in expired air (amount necessary to decolorize a solution of potassium permanganate and sulfuric acid) and also to measure ratio of carbon dioxide to alcohol in patient's breath.—R. N. HARGER. *J. Am. Med. Assoc.* 110 (1938), 779. (G. S. G.)

Inulin—Direct Colorimetric Method for the Determination of, in Blood and Urine. The method described for the determination of inulin in blood and urine gives very precise results in filtrates containing 4γ or more per cc. and also yields satisfactory values on plasma filtrates containing as small an amount as 2γ per cc. Fermentable carbohydrate is removed by fermentation and the protein precipitant is $Cd(OH)_2$. The blue color developed between levulose and Ph_2NH is measured. The Evelyn photoelectric colorimeter gives the most precise results but a Zeiss-Pulfrich step photometer may be used and also a Duboscq colorimeter for inulin concentrations above 5 mg. %.—A. S. ALVING, J. RUBIN and B. F. MILLER. *J. Biol. Chem.*, 127 (1939), 609–16; through *Chem. Abstr.*, 33 (1939), 2931. (F. J. S.)

Lipoid Phosphorus—Titration Method for the Microdetermination of. Lipoids are extracted with an ether-alcohol mixture (1:1) according to Endo and the extract is digested with sulfuric acid-30% hydrogen peroxide. The details of the procedure are discussed. The digestion is carried out 1–3 hours at 150°, and the phosphorus in the clear solution is precipitated as $(NH_4)_3PO_4$-$24MoO_3$. CH_2O is added to bind the ammonia set free when the precipitate is dissolved with 0.04*N* sodium hydroxide, then titrated back with 0.04*N* sulfuric acid. Correction is made

for a blank determination.—Z. KOYANAGI. *J. Biochem.* (Japan), 28 (1938), 371–382; through *Chem. Abstr.*, 33 (1939), 2932. (F. J. S.)

Liver Extract—Parenteral Anaphylactic Reactions Following Medication with. Parenteral administration of liver extract was used for patients refractive to oral liver therapy. But occasional anaphylactic reactions occur, sometimes due to preservative in extract, sometimes because patient is allergic. Report of a case of anemia in which blood picture returned to normal after oral liver therapy, but muscular weakness developed. Parenteral liver therapy instituted, and patient improved, but later urticarial rash appeared after injections. Brand of liver extract for oral medication was changed, and no further reactions occurred. Patient possibly allergic to source of liver whether horse, beef or pork.—CLEMENT K. KRANTZ. *J. Am. Med. Assoc.*, 110 (1938), 802. (G. S. G.)

Male Hormone-Like Substance of Musk. Musk contains a substance similar to male sex hormones, which is not muskone. Ether extracts of musk give the cockscomb reaction, but react negatively in the Allen-Doisy test.—T. SANO. *J. Pharm. Soc. Japan*, 57 (1937), 229; through *Chimie & Industrie*, 40 (1938), 309. (A. P.-C.)

Mammary Tumors and Hormones. Patients suffering breast tumors benefited by injections of ovarian hormone. Suggest relationship between breast tumor and ovarian disfunction as cause. Majority of breast tumors appear at time of menopause. Lutein is hormone most active in pregnancy and premenopause, and stimulates development of mammary glands, and hyperstimulation may produce cancer. Folliculin moderates formation of mammary tissue and influences regression after lactation and menstruation. Therefore is the logical hormone to check proliferation of tissue cells to cancerous growth.—EDWARDO BELLO. *Reforma Medica*, 24 (1938), 27. (G. S. G.)

Manganese Content of Indian Foodstuffs and Other Materials. Manganese contents of a number of vegetable and animal materials have been determined. Rohit fish scales have been found to be richest in manganese content (8.831 mg./100 Gm. dry) and tender amaranth leaves are richest among vegetable materials. Milk is poor in manganese content.—N. N. RUDRA. *J. Indian Chem. Soc.*, 16 (1939), 131. (F. J. S.)

7-Methyl-3-Hydroxythionaphthene—Preparation of, and Its Condensation with Isatin. 7-Methyl-3-hydroxythionaphthene has been prepared and condensed with isatin. 3-Indole-2'-,(7'-methyl)-thionaphtheneindigo, thus obtained, has been compared with its isomeric 4'-,5'-, and 6'-methyl derivatives, prepared before by the present author and also the parent compound, Thioindigo Scarlet R.—S. K. GUHA. *J. Indian Chem. Soc.*, 16 (1939), 219. (F. J. S.)

Milk and Milk Preparations—Treatment of. The digestibility of milk and milk preparations is improved by adding thereto an alkali metal tripolyphosphate.—CHARLES SCHWARTZ, assignor to HALL LABORATORIES, INC. U. S. pat. 2,135,054, Nov. 1, 1938. (A. P.-C.)

Nessler's Reagent. Nessler's reagent was prepared by the methods of the Swed. Phar., Dan. Phar., Swiss Phar., U. S. P. and B. P., and variants thereof, and by the method of Folin (*Laboratory Manual of Biological Chemistry*, (1923), p. 283). The Danish, the British and Folin's methods use NaOH, added as solution except in the B. P. method where it is added as solid. The other technics use KOH, added as solution except in the U. S. P. method, where it is added as solid. Use of solid NaOH or KOH was found unsatisfactory, for the reagent was less sensitive if the solid alkali was dissolved into the preparation. KOH solution was superior to NaOH solution, giving a clearer reagent solution, and forming less deposit. Swed. Phar. X had specified use of mercuric chloride instead of mercuric iodide and it was found equally satisfactory. Folin's reagent was more dilute than the others, but was found as sensitive as the same dilution of the other preparations. Recommended preparation method for Nessler's reagent (alkaline potassium mercuric iodide reagent): 2.5 Gm. KI and 3.5 Gm. HgI_2 are dissolved without heating in 3 cc. of water. To the solution are added 60 cc. of 5*M* KOH solution and 37 cc. of water. After some days the clear light yellow solution is decanted from the deposit. Keep in a well-stoppered bottle shielded from light. Two drops of the reagent with 2 cc. of ammonia standard and 8 cc. of water should give a yellow or yellow-brown color. Ammonia standard: 5.00 cc. of ammonium chloride stock solution diluted with water to 100 cc. One cc. is equivalent to 0.005 mg. of NH_3. Ammonium chloride stock solution: 0.315 Gm. NH_4Cl made to 1000 cc. with water. One cc. equals 0.1 mg. NH_3. The reagent may also be used for the determination of aldehyde, for example, in ether or chloroform for anaesthesia.—N. THORN. *Farm. Revy*, 38 (1939), 53. (C. S. L.)

Nicotinic Acid—Estimation of. A modification of the reaction of König has proved suitable for the quantitative estimation of nicotinic acid in biological materials. An aqueous solution containing 0.005 to 0.25 mg. of nicotinic acid is treated at 75° to 80° C. with 1 cc. of 4% aqueous cyanogen bromide. After five minutes the solution is cooled, and 10 cc. of saturated aqueous metol (*p*-methylaminophenol) added, and water to 20 cc. After one hour in the dark, the yellow color is measured with a Pulfrich photometer using filter S. 43. Under these conditions the color developed is reproducible, but smaller amounts of the reagents give weaker colors. The color remains unchanged in intensity after seventy-two hours in the dark. Strong acids and bases, acetates, alcohol and acetone interfere. Nicotinamide gives a strong but inconstant color and if present in biological material must be hydrolyzed, satisfactorily by boiling for half an hour with 2*N* sodium hydroxide. Many unsuccessful attempts were made to remove the dark color from hydrolyzed yeast without also removing the nicotinic acid. Finally, precipitation with nine volumes of acetone was found to leave all the nicotinic acid in the almost colorless acetone solution. Dry yeast samples were found to contain from 16 to 61 mg. per cent of nicotinic acid. Nicotinic acid and amide added to yeast were quantitatively recovered.—E. BADIER and J. HALD. *Biochem. J.*, 33 (1939), 264; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 287. (F. J. S.)

Nucleosides—Production of, by Fermentation. Guanosine and adenosine are produced by causing emulsin to act on nucleic acids at a p_H value of 4 to 5.5 at slightly elevated temperature, *e. g.*, 30° to 40° C., crystallizing and separating the guanosine, precipitating the adenosine as picrate and decomposing the picrate with a basic substance, preferably one forming a difficultly soluble picrate such as potassium hydroxide or ammonia. The action of the emulsin should be continued preferably until the splitting off of phosphoric acid ceases, that is, about 8 to 14 days. The nucleic acids may be preliminarily degraded by the action of alkali.—HELLMUT BREDERECK, assignor to GEORG HENNING, *Chem.-Pharm. Werk G. m. b. H.* U. S. Pat. 2,130,061, Sept. 13, 1938. (A. P.-C.)

Oestrogenic Hormones and Diethylstilboestrol—Difference between. Oestrogenic hormones act antagonistically to testosterone, inhibiting its comb-growth action. Diethylstilboestrol has a similar action to the natural oestrogens in this capon test when it is given by injection. When, however, the substances are smeared on the comb, the natural oestrogens still exhibit the antagonistic action, whereas diethylstilboestrol does not. This affords a biological means of distinguishing the two groups of substances.—O. MÜHLBROCK. *Nature*, 143 (1939), 160; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 289. (F. J. S.)

Oestrogenous Products and Methods of Producing the Same. Oestrogenous compounds having biological properties similar to but chemical properties different from those of the follicle hormones are obtained by subjecting vegetable material derived from plants belonging to the species *Butea superba* to the action of an approximately neutral, aqueous extracting agent which is a solvent for the oestrogenous compounds, isolating the latter from the extract, dissolving it in water, adding a highly soluble metal salt capable of producing a salting-out effect, and removing the precipitated oestrogenous compound from the solution.—WALTER SCHŒLLER, MAX DOHRN and WALTER HOHLWEG, assignors to SCHERING-KAHLBAUM A. G. U. S. pat. 2,136,397, Nov. 15, 1938. (A. P.-C.)

Oestrone—Derivatives of. Oestrone-β-naphthoate and oestrone diethylaminoethyl ether have been prepared and examined for oestrogenic activity. Oestrone-β-naphthoate was prepared by the action of β-naphthoyl chloride on oestrone in pyridine solution and was soluble in water and sparingly soluble in alcohol, ethyl acetate and light petroleum. Recrystallized from dioxan it had m. p. 262° to 264° C. Doses of 600 and 100γ produced oestrus in rats after 100 hours lasting for ten days; doses of 24, 12 and 6γ produced oestrus after 100 hours lasting for four days. The threshold dose was 1 to 2.5γ. The naphthoate resembled oestrone benzoate in producing a prolonged period of oestrus, the onset being in each case longer delayed than with oestrone itself. Oestrone diethylaminoethyl ether yielded water-soluble salts, but when tested in rats showed no oestrogenic activity in doses of 6, 100 or 1000γ.—F. BERGEL and A. R. TODD. *Biochem. J.*, 32 (1938), 2145; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 288. (F. J. S.)