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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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PHARMACOLOGY, TOXICOLOGY AND THERAPEUTICS

THERAPEUTICS (*Continued*)

Distibinyl—Use of, in the Treatment of Chinese Kala-Azar. This compound, the diethylamine salt of di-*p*-aminophenylstibinic acid, was discussed from the standpoints of composition, toxicity and the manner in which it is used against Kala-Azar. Intravenous injections of 0.1 to 0.3 Gm. of distibinyl alleviated the symptoms of this disease and caused a disappearance of its causative agent, *Leishmania donovani*, from the liver. Distibinyl is as effective and less costly than the other antimony preparations used in Kala-Azar.—C. JUNG SUN and S. CHANG. *Chinese Med. J.*, 57 (1940), 442-448. (W. T. S.)

Enuresis and Its Treatment with Male Sex Hormone. A discussion.—P. ZEHN. *Deut. Med. Wochschr.*, 65 (1939), 1831. (L. K.)

Estrone in the Treatment of Papilloma of Larynx. In this preliminary investigation local application of estrogenic hormone seems to have had a definitely beneficial effect in the treatment of multiple laryngeal papillomata in five children. The treatment is simple and results were better than in the past. The papillomata are common benign tumors of the larynx which tend to multiply. The applications were made to the larynx through a direct laryngoscope or by spraying the solution directly into the larynx once or twice a week. It is estimated that 0.1 cc. of the hormone was applied to the larynx at the time of each treatment. The dosage used did not cause any constitutional disturbances and no secondary sex changes were noted. The growths have a tendency to disappear around puberty and since estorgenic hormone is known to have power to change infantile to adult type of epithelium, it was thought that local applications of the hormone might be beneficial.—E. N. BROYLES. *Bull. Johns Hopkins Hosp.*, 66 (1940), 319; through *Abbott Abstract Service*, (1940), No. 735. (F. J. S.)

Estrone—Relation of Hyperemia to the Action of. The actions of estrin may be divided into two sorts: (1) those specific ones which do not depend upon hyperemia and (2) those which are secondary to the production of hyperemia and which are associated with the acetylcholine-liberating action of estrin. Some of the effects of group two can be inhibited with atropine. The proliferation and hypertrophy of cells of the lining epithelium and hypertrophy of the endometrial glands depend chiefly on the specific action of estrin, though to get a maximal effect some hyperemia is required. The only uterine elements which can be stimulated by hyperemia without the specific action of estrin are the endometrial stroma cells and the muscle fibers. Vaginal cornification is not a specific effect of estrin and, therefore, the vaginal smear alone in not a reliable index of estrogenic action. A large proportion of the estrous phenomenon is dependent upon hyperemia including the periodic menstrual bleeding in the human female.—O. HECHTER, M. LEV and S. SOSKIN. *Endrocrinology*, 26 (1940), 73; through *Abbott Abstract Service*, (1940), No. 733. (F. J. S.)

Estrone Treatment of Fifty Cases of Senile Vaginitis. In a study of fifty cases of senile vulvovaginitis the authors report their experience with the administration of estrogen. Most of the patients presented, in addition to the local symptoms, varying degrees of vasomotor and mental disturbances. The selection of the type of therapy to be used varies from patient to patient and depends on the severity of the symptoms, the local condition present and the coöperation of the patient. Varying degrees of improvement in local and general symptoms resulted from all four routes of administration. The greatest relief from general symptoms came from intramuscular injections. Oral medication in adequate doses gave similar relief. Most of the fifty patients improved. Incomplete response or failure was seen in twelve patients with complicating medical conditions such as diabetes, eczema, extensive leukoplakia, atrophy due to radiation therapy and vulvectomy, and psoriasis.—R. S. FINKLER and Z. I. MARKS. *New Jersey Med. Soc. J.*, 37 (1940), 99; through *Abbott Abstract Service*, (1940), No. 734. (F. J. S.)

Folliculin and Cancer. Experiments have shown the possibility of producing mammary cancer in mice by the use of estrin. This is important since estrin may be used in a few well-spaced doses over a year without danger, except to women with a family history of cancer. Large doses, while they may not provoke cancer, may cause endocrine disturbance. Ovarian hormones normally stimulate breast tissue, but in excessive amounts they may develop a malignancy.—E. BELLO. *Reforma Medica*, 25 (1939), 577. (G. S. G.)

Gold Keratinates—Alkaline Earth Metal. By the reaction of a gold keratinic acid with calcium hydroxide, etc., products are obtained which are suitable for therapeutic uses.—ADOLF FELDT and ADOLF SCHMITZ, assignors to SCHERING A.-G. U. S. pat. 2,197,795, April 23, 1940. (A. P.-C.)

Guanidine Hydrochloride—Use of, in Myasthenia Gravis. Observations were made on seven cases of myasthenia gravis and five of them were studied over a long period. Guanidine hydrochloride given either intravenously or by mouth, and either with or without prostigmine, induced marked improvement of the functions of the muscles, and exhibited no untoward results. However, if gastro-intestinal ymptoms appear they may be relieved by atropine, though it is best to reduce or to stop guanidine medication temporarily. It is equally effective orally or intravenously but is too irritating to use subcutaneously or intramuscularly. The hypothesis of its action is that it enhances the activity of acetylcholine in transmitting nerve impulses to the muscles even more so than prostigmine.—ANN S. MINOT, *et al. J. Am. Med. Assoc.*, 113 (1939), 553. (G. S. G.)

Haffkinine (Acriquine)—New Acridine Derivative. Effectiveness of, against Indian Strains of Malaria. Workers in the Haffkine Institute, Parel, Bombay, have prepared a new atebrin-like compound which was first called haffkinine, now changed to acriquine. Daily doses of 0.1 Gm. of the compound for five days destroyed all forms of malarial parasites, except the gametocytes of *P. falciparum*, in 8 patients. The drug showed no untoward symptoms and apparently is equal to atebrin in effectiveness.—R. N. CHOPRA, R. T. M. HAYTER and B. SEN. *Indian Med. Gaz.*, 75 (1940), 200-201. (W. T. S.)

Inhalant—Therapeutic. An oil-soluble inhalant medicinal agent such as ephedrine is used with a lung-absorbable vehicle such as ethyl oleate or other lower alkyl ester of a higher fatty acid or aliphatic polyhydroxy compound incompletely esterified with higher fatty acids such as ethyl stearate and isobutyl laurate.—FERDINAND W. NITARDY and WALTER G. CHRISTIANSEN, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,196,322, April 9, 1940. (A. P.-C.)

Insulin Preparations—Therapeutic. For prolonging its hypoglucemic action, insulin is used with camphor or camphoric, camphonic or camphoronic acids, their salts or derivatives or the like, such as α-bromo-*l*-camphorsulfonic acid (suitably in a solu-

tion, the p_H of which is adjusted to 3.0 to 3.5 as with lactic acid and a buffer such as potassium dihydrogen phosphate, and which is filtered).—MELVILLE SAHYUM and MYRON HEYN, assignors to FREDERICK STEARNS & Co. U. S. pat. 2,192,386, March 5, 1940. (A. P.-C.)

Malaria—Chemotherapy of. 6-Methoxyquinoline-8-Hydrazine and Synthesis of Some Heterocyclic Compounds from It. Starting with 6-methoxyquinoline-8-hydrazine a few heterocyclic compounds, *e. g.*, thiazole, benzopyrrole, pyrazolone and a pyrrole, have been prepared. Some of the compounds have been found to be ineffective against avian malaria.—B. K. NANDI. *J. Indian Chem. Soc.*, 17 (1940), 449. (F. J. S.)

Malaria Control by Spray-Killing Adult Mosquitoes. An account is given of certain experiments in the control of malaria by spraying dwellings with a pyrethrum insecticide, carried out in a village in Southern India. The method proved effective in reducing the transmission of the disease, though the per capita expenditure was greater than that which such a community could be expected to pay.—P. F. RUSSELL and F. W. KNIPE. *J. Malaria Inst. India*, 2 (1939), 229. (A. C. DeD.)

Malaria Treatment and Prophylaxis—Recent Researches on. As a member's annual report to the Chairman of the Subcommittee on Medical Research of the National Malaria Committee, Clark abstracts some 32 papers dealing with prophylactic measures and the choice of therapy for malaria. Representative reports from various parts of the world showed that atabrin is the drug of choice when cost is not a factor.—HERBERT C. CLARK. *Southern Med. J.*, 33 (1940), 879–882. (W. T. S.)

Male Sex Hormones—Clinical Use of. In 36 patients with pre- or post-puberal hypogenitalism, injections and innuctions of testosterone propionate produced the general signs of masculinity. Ejaculations were made possible in adult patients but no spermatozoa were found. Discontinuance of the treatment resulted in a diminution of some of the masculine traits but this does not appear permanent in the pre-puberal type in which adolescence progresses normally. Eight typical cases are described in detail.—HENRY M. TURNER. *Southern Med. J.*, 33 (1940), 818–822. (W. T. S.)

Male Sex Hormones—Influence of, on Diabetes or Extra-Insular Glycosuria. In about two-thirds of the cases of diabetes of several years' duration, there are disturbances in sexual functions. In 7 cases, puberty brought no essential change in metabolism. Creatinuria of diabetic origin cannot be influenced by androsterone benzoate or testosterone propionate. In depressed functioning of the testes, the accompanying creatinuria can be diminished in isolated instances by use of the male sex hormones. The hormones are, in the forms and doses administered in this experiment, not suitable for the exercise of a favorable action on metabolic processes in diabetics. The theoretically assumed influence of the male sex hormones on extra-insular glycosuria (caused by over-function of the hypophysis) on the assumption that there would be an inhibition of the secretions of the hypophysis could not be observed by the authors in the patients investigated. This is to be explained by the fact that an inhibition of the gonadotropic function does not at the same time produce a diabetogenic or contra-insular function of the hypophysis.—W. KUHLMEY. *Deut. Med. Wochschr.*, 65 (1939), 5–8. (L. K.)

M. & B. 693—Treatment of Pneumonia with. The authors have described a series of 234 cases of lobar pneumonia, of which 78 were controls with 21 deaths; 119 were treated with M. & B. 693 alone, giving a case mortality of 6.7%; and 37 cases of either Type I or Type II treated with M. & B. 693 plus specific serum, with 3 deaths. The case mortality in patients aged fifty-five or over was more than halved by treatment with M. & B. 693, and a similar reduction was noted in the smaller number of Type III cases. They were impressed by the favorable outlook in Type I and Type II pneumonias treated with M. & B. 693 alone, 1 death taking place in 49 cases. The case mortality in Type I and Type II infections was slightly better in the cases treated with M. & B. 693 alone than in those treated with the drug plus serum, but in view of the comparatively small numbers it is inadvisable to draw conclusions from this. Of 15 control patients with positive blood cultures (any type of pneumococcus) 9 died, whereas of 16 patients who had positive blood cultures and were taking M. & B. 693 only 4 died. A striking feature was the considerably reduced case mortality in Type I and Type II infections with positive blood cultures, as compared with similar control cases, in patients treated with "693" alone and with "693" plus serum. Complications were fewer in the cases treated with M. & B. 693 and in those given the drug plus serum than in the controls.—C. S. D. DON, *et al.* *Lancet*, 238 (1940), 311. (W. H. H.)

Meningitis Epidemica—Treatment of, with Prontosil Album and Eubasin. The mortality in 25 cases treated with prontosil album was 32%. Of 5 cases treated with eubasin, all recovered.—J. W. CAMERER. *Deut. Med. Wochschr.*, 65 (1939), 1568–1570. (L. K.)

Migraine—Hormone Treatment of. The extent of action of the hormone given in a single injection period depends on the severity and on the frequency of the migraine attacks. Migraines occurring at the climacteric are most favorably influenced; here, attacks may be absent for months after just a few injections of progynon or testoviron. However, migraines of young women with regular periods are favorably affected for a longer time or are made to disappear altogether. Only in a small number of very severe cases is long continued and repeated hormone treatment necessary. In these latter cases, as well as in lighter cases, it is recommended that, in the interval between injections, the hormone be applied percutaneously in the form of a salve or an oil.—F. BÜHLER. *Deut. Med. Wochschr.*, 65 (1939), 1739–1741. (L. K.)

Minor or Rare Elements and Their Uses. Among the elements mentioned is helium, of which 200,000 cu. ft. were used in the U. S. for medical purposes in 1938.—L. LORTIE. *Chemistry and Industry*, 58 (1939), 1122–1123. (E. G. V.)

M_3 in Prophylaxis of Indian Strains of Malaria. M_3, a new drug manufactured by the Italian Biochemical Institute, Milan, failed to prevent the development of sporozoites of Indian strains of *P. falciparum* in the human host, when infected mosquitoes were fed during a course of treatment by this drug and at varying intervals after the full course had been completed.—R. N. CHOPRA and B. C. BASU. *J. Malaria Inst. India*, 2 (1939), 253. (A. C. DeD.)

Pastes—Use of, in Ulcer Therapy. The term "paste" is used to include a class of water-soluble gels. The paste is applied to the ulcer and is then covered with a double thickness of cellophane fastened with two-inch strips of adhesive tape. The dressing should not be changed oftener than once a day. The formulas and the preparation of the following pastes are given: (1) Dense Pectin Paste. (2) Thin Pectin Paste. (3) Tragacanth Paste. (4) Carbamide (Urea) Paste. (5) Ethyl Aminobenzoate Paste. (6) Sulfanilamide Paste. (7) Zinc

Peroxide Paste.—H. A. DYNIEWICZ. *Merck Report*, 49 (1940), No. 3, 12–13. (S. W. G.)

Pellagra among the War Refugees in Shanghai—Its Associated Deficiencies and Nicotinic Acid Therapy. Nicotinic acid treatment was more or less specific for the symptom-complex of pellagra, 40 cases of which occurred in Shanghai in February–November 1939. Associated deficiencies were reported with special studies on sternal biopsies, gastric acidity and serum albumin, globulin concentration of the pellagrins. The relationship of pellagra to other symptoms of avitaminosis was discussed and recommendations made concerning the diets of war refugees in Shanghai.—H. H. MORRIS, M. S. HWANG and P. T. KUO. *Chinese Med. J.*, 57 (1940), 427–441. (W. T. S.)

Pharmaco-Theraputic Institute—Report of. The Government Institute for Pharmaco-Therapuetic Investigation of the Netherlands is organized to investigate medicaments. This, its 32nd report, includes the annual report for 1938, a report of the investigation of A. B. C. Bandages, the determination of arsenic in neoarsphenamine; a substitute for Ichthyol and the investigation of several specialities and domestic remedies on the Dutch market.—L. VAN ITALLIE and A. J. STEENHAUER. *Pharm. Weekblad*, 76 (1939), 1207. (E. H. W.)

Plant Toxins—Significance of, in Infectious Diseases. A review—GAEDE. *Deut. Med. Wochschr.*, 66 (1940), 437–438. (L. K.)

Polyhydrocyclopentanophenanthrene Series—Therapeutic Compounds of the. Various examples are given of a process which involves transforming a compound of the general formula $CH_3CHR(CH_2)_x$-CO_2H (where R represents a polyhydrocyclopentanophenanthrene radical substituted at least by one member of the group consisting of oxo, hydroxyl and esterified hydroxyl, and x stands for zero, 1 or 2) into the corresponding acid chloride, causing a diazomethane to act upon the acid chloride and transforming the diazo ketones thus obtained with the aid of an acid into an ester. In a suitable procedure, the acid chloride, obtainable from the carboxylic acid used as parent material, for instance by treatment with thionyl chloride, is introduced into an excess of an ethereal diazomethane solution and the whole is allowed to stand until the evolution of nitrogen has ceased. In most cases the diazo ketone then separates in the form of crystals. The diazo ketone is transformed into the corresponding acetoxymethyl ketone, for instance, by boiling with glacial acetic acid. The free hydroxy compound may be obtained therefrom by saponification. By cautious saponification, however, it is possible to saponify only acyloxy groups present in the polyhydrophenanthrene nucleus; the hydroxy groups thus formed may then be transformed by oxidation into the oxo groups. By saponification, the ester group in the side chain is also split off.—MAX BOCKMÜHL, GUSTAV EHRHART, HEINRICH RUSCHIG and WALTER AUMÜLLER, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,202,619, May 28, 1940. (A. P.-C.)

Procaine Injection—Treatment of Trigeminal Neuralgia by. An extensive description of the clinical features of trigeminal neuralgia is given and the theories which have been proposed as to the origin of the pain are discussed in detail. Therapeutic measures are reviewed. The author has had good success in preventing recurrence of the attacks by the injection of 2% procaine into the exact point located by the patient as the "trigger zone." The temporary relief obtained often becomes permanent after the injections have been repeated two or three times. In some cases the anesthetization of one trigger zone will unmask a second zone which is likewise infiltrated with the local anesthetic. The degree of relief obtained varies, but the patients are grateful even for slight respite from the severe pain. The fact that relief can be obtained from such local treatment lends support to the theory that the pain in trigeminal neuralgia may have a local cause, at least in part.—W. K. LIVINGSTON. *Western J. Surg., Obstet. and Gynecol.*, 48 (1940), 205; through *Abbott Abstract Service*, (1940), No. 680. (F. J. S.)

Progesterone in the Treatment of Habitual Abortion. Habitual abortion is still one of the most discouraging conditions to deal with in the field of medicine. Important chemical investigations in endocrinology have been responsible for such advances in therapy as the use of progesterone in treating these cases. This selected series of experimental studies of thirteen cases presents little doubt as to the value of progesterone and corpus luteum extracts in the treatment of habitual spontaneous abortion. Since there is such a diversity of causes, each patient used in the study was very carefully checked by physical examination to exclude every possible non-endocrine causative factor. The dosage was higher in earlier years, but the author feels at this time that one or two rabbit units weekly is a safe dose of progesterone as far as therapeutic effect is concerned. Some investigators combine this treatment with wheat germ oil which has proved effective as a treatment in itself.—R. E. CAMPBELL and E. L. SEVRINGHAUS. *Am. J. Obst. Gynecol.*, 39 (1940), 573; through *Abbott Abstract Service*, (1940), No. 736. (F. J. S.)

Prostigmine—Use of, in Myasthenia Gravis. Until 1930 treatment was nearly always unavailing in cases of myasthenia gravis. Then ephedrine sulfate and aminoacetic acid had moderate success. Physostigmine and, later, prostigmine produced immense improvement within the last three years. The incidence of myasthenia gravis is fairly steady between 10 and 70 years, but is highest in the second and fifth decades. The ergograph is the most frequent diagnostic test. Prostigmine methylsulfate was used intramuscularly at first, but oral administration of prostigmine bromide was promptly substituted. It is given in doses of 20 to 25 pills of 15 mg. each daily, without serious results; but spacing is more important than the size of the dose. Ephedrine sulfate increases the effect of prostigmine. Guanidine is useful in some cases and potassium chloride in others. The results for 44 patients so treated over two and a half years are 5 deaths, 7 full remissions and others benefited.—HENRY R. VIETS and ROBERT S. SCHWAB. *J. Am. Med. Assoc.*, 113 (1939), 559. (G. S. G.)

Psychic Medicine. This general term applied to methods of treating disease through mental impressions is treated under the following heads: music, royal touch, laying on of hands, metal therapy, hypnotism, mesmerism, Christian science, autosuggestion, psychic medicine's limitations and mental health. The paper is illustrated.—CHARLES WHITEHEAD. *Jour. A. Ph. A.*, 29 (1940), 330. (Z. M. C.)

Pyrogenic Substance in Fever. A description is given of the chemical and biological properties of a specific, pure pyrogenic substance which is active in quantities less than 10–15γ and which, in its fever-provoking capacity, approaches the activity of hormones.—EUGENIO CENTANNI. *Deut. Med. Wochschr.*, 66 (1940), 263–265. (L. K.)

Quinine and Atebrin in the Control of Malaria with Special Emphasis on the Practical and Economic Viewpoints. Quinine and atebrin were given prophylactically to determine the method by which a given sum of money could best be expended to prevent malaria among the coolies on a tea estate. The report is divided into: local incidence

of malaria, date and period of treatment, dosage, controls used, results obtained, conclusions drawn on clinical prophylaxis, and the economic factor. From the data obtained only general conclusions could be drawn.—B. A. LAMPRELL. *Indian Med. Gaz.*, 75 (1940), 266–274. (W. T. S.)

Radix Ononidis and Herba Equiseti—Diuretic Action of. A criticism of the report published by Jaretzky and co-workers.—HUBERT VOLLMER. *Arch. pharm.*, 278 (1940), 42–44. (L. K.)

Radix Ononidis and Herba Equiseti—Diuretic Action of. A reply to Hubert Vollmer. *Cf. Arch. pharm.*, 278 (1940), 42–44.—R. JARETZKY. *Arch. pharm.*, 278 (1940), 44–47. (L. K.)

Rockefeller Foundation—Review of Work of, in Public Health during 1939. A review of the public health work supported by the Rockefeller Foundation during the year 1939 with particular reference to the control of malaria and yellow fever. The entire program cost about eight million dollars and involved coöperative efforts in 47 different countries.—RAYMOND B. FOSDICK. *J. Trop. Med. Hyg.*, 43 (1940), 169–171. (W. T. S.)

Stibonyldiarylthiocarbamido Compounds. By the reaction of an aryl stibonic acid substituted in the aryl nucleus by one or more amino groups with a thiocarbonyl halide such as thiocarbonyl chloride, or by the reaction of such an amino-substituted aryl stibonic acid with an aryl mono- or poly-thiocarbimide, products are obtained suitable for use as intermediates or in preparing sterile therapeutic solutions for injection. The products may be prepared as the free acids or as salts with alkali or alkaline earth metals, or ammonia, urea, aliphatic amines, amino alcohols, etc., the salts being more soluble than the free acids and more suitable for injection.—G. M. DYSON and ARNOLD RENSHAW, assignors to PARKE, DAVIS & CO. U. S. pat. 2,195,885, April 2, 1940. (A. P.-C.)

Sulfanilamide and Sulfapyridine. This is an editorial discussing the use, toxicity and dosage of these new important synthetic drugs.—ANON. *Chinese Med. J.*, 57 (1940), 388–392. (W. T. S.)

Sulfanilamide Derivatives—Dosage of, for Children. A method is described of estimating the concentration of sulfanilamide and its derivatives in the blood. Such estimations were made on 81 children, and the results are correlated with dose, age and weight. A table is given suggesting the dosage at various ages. For the best results, the dosage must nevertheless be controlled by estimations of the concentration of the drug in the blood.—M. HYNES. *Lancet*, 238 (1940), 261. (W. H. H.)

Sulfanilamide—Giving of Bicarbonate with, Not Recommended. Hartmann shows that the effect of sulfanilamide on the acid-base balance is to produce a carbon-dioxide deficit alkalosis by overventilation. The increased urinary excretion of basic carbonates which has been observed under these circumstances is considered to be merely a mechanism whereby the body tries to compensate for this alkalosis and therefore the administration of more alkali in the form of bicarbonate is considered irrational. The author believes that the only reason why the widespread custom of administering sodium bicarbonate with sulfanilamide has not done more harm is that the amounts given have not been sufficiently large. As soon as enough base has been excreted in the urine to compensate for the carbon-dioxide deficit, it is stated that the reaction of the urine will shift to the acid side. If it is then wished to maintain an alkaline urine, Ringer's-lactate solution may be given; this would make a chloride deficiency unlikely.—A. F. HARTMANN. *Ann. Internal Med.*, 13 (1939), 940; through *Abbott Abstract Service*, (1940), No. 690. (F. J. S.)

Sulfanilamide—Pelvic Instillation of, in Renal Infections. In this paper the results of treatment of ten patients having upper urinary tract infection are presented. Direct pelvic instillations of a sulfanilamide compound were practiced. The drug was well tolerated in all except one case. A definite clinical and bacteriological improvement was noted in eight cases, a bacteriological cure in one case, and no improvement in one case. In cases of urinary tract infection, the action of sulfanilamide is a direct antiseptic one on the organisms, so that direct instillation of the drug into the renal pelvis should be of value in cases in which the drug is poorly tolerated by the usual routes of administration; or in those in which renal function is reduced or in which there is interference with renal drainage. The drug is absorbed from the renal pelvis into the blood stream in appreciable amounts and is also excreted in the urine from the uninjected kidney. The author feels that the direct pelvic instillation of sulfanilamide is a worth-while procedure in certain selected cases.—G. AUSTIN, JR. *J. Urology*, 43 (1940), 637; through *Abbott Abstract Service*, (1940), No. 732. (F. J. S.)

Sulfanilamide—Structure and Action of. A review of the work since 1935 on sulfanilamide and its derivatives.—ANON. *Schweiz. Apoth.-Ztg.*, 77 (1939), 197–201. (M. F. W. D.)

Sulfanilamides—Substituted. By treating a compound of the general formula acyl—NHC:C(O*R*).CH:CH.C(CH_3):CH (where *R* stands for a substituent from the group consisting of lower alkyl groups and their phenyl and nitro-, amino- and halogen-substituted phenyl derivatives, and acyl stands for the radical of a lower aliphatic or benzene carboxylic acid) with chlorosulfonic acid and treating the sulfonic acid derivative formed with ammonia, a lower aliphatic primary or secondary amine, pyrrolidine or piperidine products are obtained having therapeutic activity against ascarid infections. Details are given of the production of a number of such compounds.—FRITZ MIETZSCH and JOSEF KLARER, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,202,219, May 28, 1940. (A. P.-C.)

Sulfanilamidoaminopyridine. 2-Sulfanilamido-5-aminopyridine (of low toxicity and suitable for therapeutic uses) is produced by treating *p*-acetaminobenzenesulfonyl chloride with 2-amino-5-acetaminopyridine, hydrolyzing off the acetyl groups by heating the reaction product in an acid or alkaline solution, neutralizing the solution thus produced, removing the precipitate formed and purifying it by recrystallization. It melts at 157° to 159° C.—EDMOND T. TISZA, BERNARD F. DUESEL and HARRIS L. FRIEDMAN, assignors to NEPERA CHEMICAL CO. U. S. pat. 2,202,933, June 4, 1940. (A. P.-C.)

Sulfapyridine—Agranulocytosis Complicating Treatment of Acute Pemphigus with. A case of acute pemphigus developing nine days after an uncomplicated burn is reported. The condition responded favorably to the administration of sulfapyridine. Agranulocytosis was detected after a total dose of 38 Gm. of sulfapyridine and the patient made a complete recovery.—D. ERSKINE and J. E. ROYDS. *Lancet*, 237 (1939), 1366. (W. H. H.)

Sulfapyridine—Effect of, on the Antibody Production in Pneumonia. The mode of action of sulfanilamide and drugs related to it is still the subject of lively dispute. Theories attempting to explain the action must necessarily take into consideration any effects which these drugs may have in enhancing or diminishing the natural immune mechanisms of the body. Kneeland and Mulliken studied the production of type-specific antibodies in nineteen

cases of lobar pneumonia in which sulfapyridine was given. The blood serum was titrated to determine the concentration of antibody and the results were compared with the findings in other cases of pneumonia which received no chemotherapeutic treatment. Only four of the cases treated with sulfapyridine showed an antibody response comparable with that in untreated pneumonia, yet hitherto the formation of antibody has been thought an essential step in the progress of recovery from the disease. With sulfapyridine, some antibody is doubtless formed, but the amount appears small.—Y. KNEELAND and B. MULLIKEN. *J. Clin. Invest.*, 19 (1940), 307; through *Abbott Abstract Service*, (1940), No. 684. (F. J. S.)

Sulfapyridine—One Case of Typhoid Fever Treated with. In one case of typhoid fever in a young adult male, orthodox treatment was followed for three days but little change could be observed clinically in the patient's condition. It was decided to administer sulfapyridine, and accordingly this drug was given in doses of 15 grains with 50 grains of sodium bicarbonate every four hours. This medication was continued for 24 hours, and at the end of this time the temperature began to fall. It continued to fall and in 48 hours was almost normal. The dose of the drug was then reduced to $7^1/_2$ grains every four hours and within the next day the temperature reached normal. Thereafter there was no recurrence of the fever and the patient rapidly improved. Recovery took place without untoward happenings. Since the usual course of typhoid fever is considerably longer than that observed in this case, the evidence would appear to suggest that the drug was responsible for modifying the course of the infection.—J. H. STANYON. *Can. Med. Assoc. J.*, 42 (1940), 66; through *Abbott Abstract Service*, (1940), No. 683. (F. J. S.)

Tannins—Precipitating, from the Air as for Hay Fever Prevention. A composition suitable for application to the nasal mucous membrane is formed of ingredients such as slaked lime 0.5 grain, gelatin 1 grain and water 1 oz.—ROBERT R. MEANS and HARRY E. LEDERER. U. S. pat. 2,176,592, Oct. 17, 1939. (A. P.-C.)

Testosterone Propionate. The injection of large doses of testosterone propionate into both men and women with normally functioning gonads causes flushes. This action can be inhibited by the estrogens. In castrate women, on the other hand, spontaneous flushes are stopped by testosterone propionate, even when massive doses are used. Similar results have been reported in castrate men. The apparent contradiction of the effect of testosterone propionate in producing flushes in normal subjects and inhibiting them in castrates is probably due to a difference in action, depending on whether the gonads are present or not. The relationship of these findings to the mechanism of the flushes of gonadal deficiency is discussed.—E. P. SHARPEY-SCHAFER. *Lancet*, 238 (1940), 161. (W. H. H.)

Therapeutics—Recent Developments in. Sulfanilamide, hypnotics and analgesics are discussed—F. PRESCOTT. *Chemist and Druggist*, 133 (1940), 114, 171. (A. C. DeD.)

Thymol and Tetrachloroethylene—Comparison of, against Hookworm Infections. Among other drugs, chenopodium and $Cl_2C=CCl_2$ have been used during the last twenty-five years as a substitute for thymol in hookworm infections. To determine whether this substitution is advisable, a comparison of these agents was made under the following conditions. Seventy-five heavily infected patients, who could be held under observation, were employed for the test. The stools were examined daily, supplemented by an egg count according to the method of Stoll. A dose of 60 gr. per 150 pounds body weight of finely powdered thymol was given to one group of patients. Another group received 4 cc. of $Cl_2C=CCl_2$ shaken well with two fluid-ounces of a saturated solution of sodium sulfate. The $Cl_2C=CCl_2$ treatment was superior, less trouble and cheaper. Even a mixture of $Cl_2C=CCl_2$ in chenopodium proved more effective than thymol. Ancylostomes were more difficult to remove than necators. The results of the experiment are fully tabulated and illustrated by graphs.—P. A. MAPLESTONE and A. R. MUKERJI. *Indian Med. Gaz.*, 75 (1940), 193–200. (W. T. S.)

Vitamin A Deficiency and Its Effect on the Eye. A review.—ERNST HEINSIUS. *Deut. Med. Wochschr.*, 65 (1939), 1547–1549. (L. K.)

Vitamin B Deficiency—Dysphagia Due to. Six cases of dysphagia are reported, in whom vitamin B deficiency was noted. The diagnosis was made on careful analysis of the dietary habits of the patients, the absence of other causes for the dysphagia and the response to adequate vitamin B therapy. Two cases of dysphagia due to other known causes used as a control did not respond favorably to vitamin B administration. In the first case reported the dysphagia disappeared in eight days with the intramuscular injections of liver extract and thiamin chloride and the oral administration of nicotinic acid. The second case was given liver extract intramuscularly for three months with practically complete relief. The third case had no discomfort in swallowing in three weeks following the administration of vitamin B complex and thiamin chloride by mouth. The fourth and fifth cases were treated with vitamin B complex and the sixth was given thiamin chloride orally. All showed satisfactory results.—I. R. JANKELSON. *Amer. J. Digest. Dis. and Nutrition*, 7 (1940), 252; through *Abbott Abstract Service*, (1940), No. 737. (F. J. S.)

Vitamin C—Influence of, on Anaphylactic Shock. Various substances are known to delay anaphylactic shock but none entirely suppress it. It has now been shown that 50-mg. doses of *l*-ascorbic acid will prevent shock symptoms and death in sensitized guinea pigs receiving the lethal dose of horse serum which is 0.02 cc. per 100 Gm. The vitamin must be given just prior to the serum. Animals were desensitized by the treatment. *l*-Ascorbic acid was thought to denature the antigen since a mixture of the two does not produce anaphylaxis in a sensitized animal. *l*-Ascorbic acid prevented the onset of the Dale-Schultz reaction in the intestine of sensitized guinea pigs and incompletely inhibited it in the uterus of the same animal. *l*-Ascorbic acid would not inhibt the lowering of blood pressure in anaphylactic shock of the rabbit. Twenty-five tracings.—SADAO YOKOYAMA. *Kitasato Arch. Exp. Med.*, 17 (1940), 17–37. (W. T. S.)

Vitamin C in Health and Disease—Evaluation of the Intradermal Dye Test for. A study of the results obtained by performing the intradermal vitamin C test in 140 apparently healthy students and 200 patients revealed these facts. In man the vitamin C content of tissue is not comparable to decolorization time, as previously reported for guinea pigs. The only reliable test for estimating vitamin C is its determination in the plasma. Healthy college students usually possess an optimum vitamin C level but various infectious diseases cause a deficiency of this vitamin. Five tables and two graphs.—I. BAKHSH, B. D. KOCHHAR and A. Q. MALIK. *Indian J. Med. Research*, 27 (1940), 695–703. (W. T. S.)

Whole Drug or Pure Constituent? A comparison of the therapeutic advantages of either the whole drug or the pure constituent in specific

ailments.—G. KUSCHINSKY. *Deut. Med. Wochschr.*, 65 (1939), 1448–1450. (L. K.)

Whooping Cough—Treatment of, with Petein. The use of petein in 100 pertussis cases among infants and very young children from similar environments resulted in the disease running a mild course without complications. Prophylactic treatment was ineffective. In ambulant cases, the consequences are not so clear, but complications fail to develop in even the youngest infants.—ANNEMARIE HEIMANN-TROSIEN. *Deut. Med. Wochschr.*, 65 (1939), 1521–1522. (L. K.)

MODERN REMEDIES

SYNTHETICS

Adrenalin in Oil (Parke, Davis & Co., Detroit, Mich.) contains in each cubic centimeter a suspension of adrenalin (2 mg.) in peanut oil (*q. s.*). It is used for the treatment of chronic bronchial asthma, serum sickness, urticaria, hay fever and other conditions in which a prolonged adrenalin effect is desired. Adrenalin in Oil is supplied in 1-cc. ampuls in boxes of 12, 25 and 100.—*Modern Pharmacy*, 24 (August 1940), 13. (F. J. S.)

Amebevan is the name given to capsules of *p*-carbamidophenylarsonic acid, each containing 0.25 Gm. This substance is a white crystalline solid, almost odorless, with a slightly acid taste, containing 28.85% of arsenic. It melts at 70°, is stable in air, slightly soluble in water and alcohol, freely soluble in alkaline aqueous solutions. For the treatment of amebiasis it is given orally, 0.25 Gm. twice daily for ten days. For retention enemas in resistant cases 2 Gm. of the arsenical compound are dissolved in 200 cc. of warm 2% solution of sodium bicarbonate. Amebevan is issued in packages of 20 capsules.—*Quart. J. Pharm. Pharmacol.*, 13 (1940), 195. (S. W. G.)

Calfos (Caldos Ltd., London) is calcium-phosphato-carbonate in excipient. It is used for the promotion of calcium-phosphorus metabolism. The dose is 1 to 2 tablets three times a day. It is supplied for prescriptions in tins of 50 tablets.—*Australasian J. Pharm.*, 21 (1940), 624. (A. C. DeD.)

Cedilanid (Chem. Fabrik Sandiz, Basel) contains "digilanid C"—a glycoside obtained from *Digitalis lanata*. It is marketed in the form of dragees, each containing 0.25 mg. and ampuls—each cc. containing 0.2 mg. of the glycoside.—*Pharm. Zentralhalle*, 80 (1939), 524. (N. L.)

Celin (Glaxo Laboratories Ltd., Greenford, Middlesex) contains in each cc. 50 mg. of pure crystalline vitamin C (ascorbic acid). It is used to ensure a normal state of vitamin C nutrition in illness. The dose for sufficient restricted diets, one tablet daily. Up to 6 tablets daily in vitamin C deficiency conditions or where specific therapeutic effect is required. It is marketed in bottles of 25, 100 and 500 tablets.—*Australasian J. Pharm.*, 21 (1940), 624. (A. C. DeD.)

Chinfortan (Chemische Fabriek Bad Homburg) is a sterile solution of solvochin and *p*-aminophenyl-sulfonamide used as an intergluteal injection in pulmonary affections.—*Pharm. Weekblad*, 76 (1939), 1260. (E. H. W.)

Citonervin (Ernst Seck, chem.-pharm. Produckte, Ulm-Donau) is a nervine and sedative. Each teaspoonful contains a peptone bromide compound 0.033 Gm., lactophenetidin 0.01 Gm., oil of peppermint 0.0083 Gm., oil of valerian 0.0067 Gm., lupulin 0.033 Gm. and a molecular compound of phenyl-ethyl-barbituric acid and aminophenazon (1:1) 0.04 Gm.—*Pharm. Zentralhalle*, 80 (1939), 587. (N. L.)

Cortenil (I. G. Farbenindustrie) is a synthetic preparation which resembles the hormone of the adrenal cortex. Each ampul contains 5 mg. desoxycorticosteron acetate. It is used in *Morbus Addisoni*, muscular weakness, asthenia, diphtheria, typhus, etc.—*Pharm. Weekblad*, 76 (1939), 1260. (E. H. W.)

Crysto-Vibex Solution (Parke, Davis & Co., Detroit, Mich.) is a sterile solution containing thiamine chloride 50 mg. (16,666 International Units of vitamin B_1) in each cc. It is for the convenience of physicians who administer a solution of crystalline vitamin B_1 by parenteral injection. Crysto-Vibex Solution (50 mg. per cc.) is supplied in 5-cc. vials (83,330 units); also available as Crysto-Vibex Solution (20 mg. per cc.) in 5-cc. vials (33,330 units).—*Modern Pharmacy*, 24 (April 1940), 13. (F. J. S.)

Eschatin (Parke, Davis & Co., Detroit, Mich.) is a highly purified extract of the adrenal cortex, biologically standardized to contain not less than 25 dog units of adrenal cortex hormone per cc. It is indicated in the treatment of conditions arising from adrenal insufficiency, and it is a specific in the treatment of Addison's disease. Eschatin is supplied in 10-cc. and 50-cc. rubber-diaphragm-capped vials.—*Modern Pharmacy*, 24 (June 1940), 12. (F. J. S.)

Hexa-Betalin (Eli Lilly and Co., Indianapolis, Ind.) consists of pure vitamin B_6 hydrochloride, synthetically prepared, each tablet containing 1 mg. of this vitamin, which is 2-methyl-3-hydroxy-4,5-di-(hydroxy-methyl)-pyridine hydrochloride. It is chemically identical with natural vitamin B_6 hydrochloride; it possesses a melting point of 212° C. (corrected); readily soluble in water but sparingly soluble in alcohol and acetone; and its aqueous solutions are acid in reaction, a 1% solution having a p_H of 2.44. It is indicated in the prophylaxis or treatment of vitamin B_6 deficiency and is intended for oral administration only. It is not suitable for making solutions for injection purposes. For prophylaxis it may be given in amounts of one to three tablets daily (1 to 3 mg.); the optimal dosage of vitamin B_6 or its hydrochloride for the treatment of B_6 deficiency has not been established; amounts as large as 50 mg. have been given as a single dose. Hexa-Betalin is supplied in the form of tablets in bottles of 40 and 500.—*Amer. Professional Pharmacist*, 6 (1940), 519. (F. J. S.)

Immune Globulin (Human) (Parke, Davis & Co., Detroit, Mich.) is a sterile, refined and concentrated globulin obtained from human placental blood and tissues and it is standardized to insure uniformly high antibody content. It is indicated for prophylaxis, modification and treatment of measles in suitably selected cases. Immune Globulin (Human) is supplied in vials of 2 cc. and 10 cc.—*Modern Pharmacy*, 24 (April 1940), 13. (F. J. S.)

Insuline Roxana (N. V. Roxane, Arnhem) is obtained from the pancreas of healthy cattle. It is standardized in the N. V. laboratories.—*Pharm. Weekblad*, 76 (1939), 1521. (E. H. W.)

Isoflav Solution Tablets (Boots Pure Drug Co. Ltd., Nottingham) is buffered proflavine sulfate isotonic solution. It is used for the prevention and control of wound infection in all delicate tissues, especially for infected recent wounds of the brain. It is prepared by dissolving one tablet in 4 fl. oz. distilled water, which makes a 1:1000 isotonic buffered solution of approximately p_H 6.3. It is supplied in bottles of 50 tablets.—*Australasian J. Pharm.*, 21 (1940), 779. (A. C. DeD.)

Lipo-Lutin Ampoules (Parke, Davis & Co., Detroit, Mich.) consist of a clear light oil solution containing progestin, the corpus luteum hormone,

and the solution is physiologically standardized. It is available in solutions of two strengths, containing one International Unit and two International Units per cubic centimeter, respectively. The ampuls are employed by physicians in the treatment of deficiencies of progestin. Lipo-Lutin Ampoules are supplied in 1 International Unit in boxes of 6 and 25; and in 2 International Units in boxes of 6 and 25.—*Modern Pharmacy*, 24 (April 1940), 12. (F. J. S.)

Liquid Citralka (Parke, Davis & Co., Sydney and London) contains disodium hydrogen citrate (25% solution) in a pleasant vehicle. It is used in cases of systemic acidosis and for rendering the urine alkaline. The dose is 3/4 teaspoonful to 2 teaspoonfuls, according to age. It is supplied in 8 fl. oz. bottles, containing disodium hydrogen citrate in a strength of 120 grains per fl. oz.—*Australasian J. Pharm.*, 21 (1940), 779. (A. C. DeD.)

Mucidan Nasal Salve (Rhenania, Pharm. Abt. der Kali Chemie A. G., Berlin-Niederschönwweide) consists chiefly of a calcium urotropine derivative, boric acid and camphor. It is recommended in the treatment of nasal catarrh.—*Pharm Zentralhalle*, 80 (1939), 567. (N. L.)

Orgacalcium (Orgachemia, Oss) is a water solution of calcium glucoheptonate-gluconate with 10% calcium, used for parenteral administration in calcium therapy. It has been known for some time that calcium glucoheptonate promotes an increase in the solubility of calcium gluconate and thus prevents troublesome crystallization in the solution. The solution of the double salt, placed on the market as Orgacalcium, has a p_H of about 7. It is found on the market in 5- and 10-cc. ampuls.—*Pharm. Weekblad*, 76 (1939), 1521. (E. H. W.)

Pituitrin (Parke, Davis & Co., Detroit, Mich.) is an aqueous extract of the posterior portion of the pituitary gland, physiologically standardized on the basis of oxytocic and pressor activities. The chief indication for the use of pituitrin in obstetric practice is to stimulate uterine contraction in cases of inertia or when labor is delayed by other than mechanical causes; also in postpartum hemorrhage and in postoperative paresis of the bladder and colon. Pituitrin is supplied as follows: Pituitrin Ampoules, 0.5 cc. (5 International Units); 1 cc. (10 International Units), in boxes of 6, 25 and 100 ampuls; also, Pituitrin Ampoules, 1 cc. ("S") Surgical, (20 International Units) in boxes of 6 and 100 ampuls.—*Modern Pharmacy*, 24 (June 1940), 12. (F. J. S.)

Proethron Forte (1:100) is a highly concentrated liver extract for intramuscular injection. The maintenance dose is 0.25 to 0.5 cc. at intervals of a week, or 1 to 2 cc. given at fortnightly or monthly intervals, respectively. For initial treatment of macrocytic anemias and pernicious anemias in relapse, a dose of 2 cc. every seven days is recommended until a normal blood count is obtained. Proethron Forte is supplied in 5- and 20-cc. sterile rubber-capped vials, also in 0.5- and 1-cc. ampuls, in boxes of 4 and 2, respectively.—*Quart. J. Pharm. Pharmacol.*, 13 (1940), 196. (S. W. G.)

Progestin (Abbott Laboratories, North Chicago, Ill.) contains partially purified materials derived from cholesterol oxidation and exerting hormonal effect of corpus luteum; and it is standardized on progestational activity by bioassay against pure crystalline progesterone in sesame oil, expressed in International Units equal to the activity of 1 mg. of progesterone. It is indicated in habitual or threatened abortion late in pregnancy, certain types of functional dysmenorrhea, amenorrhea due to subnormal function of ovaries, transformation of endometricum to secretory type in cystic ovary and for clinical effect usually produced by progesterone, in female hormonal imbalance, or where uterine mobility depressant effect is desired. The dosage is as follows: habitual abortion of endocrine origin, 1 to 2 I. U. daily, through 2 weeks prior to hazardous period (from past history), through 4th month of gestation, increased up to 3 to 5 I. U. when menstruation would have occurred in pregnancy absence; 2 to 5 I. U. daily until symptoms disappear in threatened abortion; 1 I. U. daily for 6 days prior to dysmenorrhea; contraindicated in bleeding due to mechanical, neoplastic or inflammatory factors. Progestin is supplied in 1-cc. ampuls containing 1, 2 or 5 I. U. in boxes of 2 and 25 ampuls.—*Amer. Professional Pharmacist*, 6 (1940), 521. (F. J. S.)

Progestoral is anhydro-oxyprogesterone, a crystalline substance having an oral activity similar to that of the corpus luteum hormone. Both progesterone and progestoral will induce the uterine mucosa of the immature rabbit, if previously proliferated by an estrogenic hormone, to pass into the secretory phase. Clinical experiments show that progestoral by mouth will have the same effect as intramuscular injections of corpus luteum hormone, progestin. The dosage is 6 to 10 times the optimum dosage of progestin in a similar instance. It is indicated for the treatment of metropathia hemorrhagica, habitual and threatened abortion and menstrual disorders. Progestoral is supplied in tablets containing 5 or 10 mg. of crystalline anhydro-oxyprogesterone. The average dose is 5 to 10 mg. daily. Progestoral will not deteriorate on keeping.—*Quart. J. Pharm. Pharmacol.*, 13 (1940), 196. (S. W. G.)

Pyridine-3-Carboxylic Acid Amide (Nicotinic Acid Amide) (Chem. Fabrik, E. Merck, Darmstadt) is marketed in the form of ampuls, each containing 1 cc. of a 10% aqueous solution of the amide.—*Pharm. Zentralhalle*, 80 (1939), 568. (N. L.)

Rutonal (Pharmaceutical Specialties (May and Baker) Ltd., Dagenham, Essex) is phenylmethylmalonylurea or phenylmethylbarbituric acid. It is used in cases of epilepsy, petit mal and other conditions in which central nervous system sedation is required. The dose for epilepsy is 3 grains night and morning (children pro rata). It is supplied in containers of 25 and 100 tablets, each three grains, and in 100 tablets, each 1/2 grain.—*Australasian J. Pharm.*, 21 (1940), 779. (A. C. DeD.)

Sas-Par (Ernst Bischoff Co., Ivoryton, Conn.) consists of the water-soluble saponins of sarsaparilla root and it is intended for the oral treatment of psoriasis. The dosage is five tablets before breakfast with a full glass of water; repeat at bedtime. Sas-Par is supplied in bottles of 75, 300 and 500 tablets.—*Amer. Professional Pharmacist*, 6 (1940), 518. (F. J. S.)

Sonasta Tablets contain ethylbromisovalerylamide and oxypropionylaminoethoxybenzene, and are recommended as a safe hypnotic, non-toxic, non-cumulative and non-depressant, having a rapid action, giving from six to eight hours' restful sleep. The dose as a soporific is 2 to 3 tablets swallowed whole with a hot drink, an hour before retiring. As a sedative, 1 to 2 tablets three or four times daily is the dose recommended. Sonasta Tablets are issued in bottles of 15, 50, 100 and 250.—*Quart. J. Pharm. Pharmacol.*, 13 (1940), 196. (S. W. G.)

Tetanus Antitoxin (Parke, Davis & Co., Detroit, Mich.) consists of the globulins of antitetanic serum, precipitated and purified by the elimination of non-essential serum constituents; it is water-clear in appearance, highly concentrated and possesses maximum absorbability. It is used prophylactically in the treatment of dirty or con-

taminated wounds; therapeutically, Tetanus Antitoxin must be given early and in large doses. Tetanus Antitoxin is supplied as follows: 1500 standard American Units in syringe; 1500 units in bulb; 3000 units in syringe; 5000 units in syringe; 10,000 units in syringe; 10,000 units in bulb; 20,000 units in syringe.—*Modern Pharmacy*, 24 (June 1940), 13. (F. J. S.)

Vitamin B Extract, Standardized (Parke, Davis & Co., Detroit, Mich.) is prepared from selected wheat germ by a special process of digestion and extraction and fortified with thiamin chloride (crystalline vitamin B_1) to contain 1500 International Units of vitamin B_1 per fluidounce. Also present in the wheat germ extract are the following components of vitamin B complex: vitamin B_2, B_5, B_6 and the P-P factor. It is indicated for supplementing the vitamin B content of milk for infants and for reinforcing the diet of children and adults for whom an additional supply of vitamin B is desirable. Vitamin B Extract, Standardized, is supplied in bottles of 4 fluidounces.—*Modern Pharmacy*, 24 (June 1940), 12. (F. J. S.)

SPECIALTIES

Astevan is an aqueous solution, for inhalation in asthma and hay fever, containing atropine methylnitrate, papaverine hydrochloride, sodium nitrate, pituitary extract, adrenaline, chlorbutol and glycerin. The solution is sensitive to light and to metallic contamination, and should be used in an all-glass atomizer. It is issued in half-ounce bottles.—*Quart. J. Pharm. Pharmacol.*, 13 (1940), 195. (S. W. G.)

Beta-Concemin Elixir (The Wm. S. Merrell Co., Cincinnati, O.) is a pleasant, aromatized elixir and each fluidounce contains: vitamin B_1 (thiamin chloride, 8.0 mg.), 2664 International Units; vitamin B_2 (1066 Sherman-Borquin Units), 2664 gammas; nicotinic acid amide, 28.0 mg.; pantothenic acid (Jukes-Lepkovsky factor), 600 gammas; vitamin B_6, Factor W and other components of vitamin B complex derived from liver; and benzoic acid 0.1% (as a preservative). It is used as prophylaxis for deficiencies of the vitamin B complex. The average adult dose is one teaspoonful (4 cc.) three times daily; children, proportionately less; in vitamin B deficiencies larger amounts may be prescribed. Beta-Concemin Elixir is supplied in 4-oz. and 12-oz. bottles.—*Amer. Professional Pharmacist*, 6 (1940), 451. (F. J. S.)

Calfortan (N. V. Brocades-Stheeman & Pharmacia, Meppel) are chocolate tablets containing calcium.—*Pharm. Weekblad*, 76 (1939), 1259. (E. H. W.)

Cardiazol Tablets with Glucose (Knoll A. G., Ludwigshafen) contain 0.05 Gm. cardiazol and 0.95 Gm. glucose with lemon flavor, per tablet. They are used as a first aid remedy in heart failure.—*Pharm. Weekblad*, 76 (1939), 1260. (E. H. W.)

Cardophylin (Whiffen and Sons Ltd., London, S. W. 6), formerly known as Euphyllin, is a double compound of amphoteric theophylline, with ethyldiamine. It is used as a vasodilator, diuretic, stimulant of respiratory centers. The dose: tablets, 0.1 Gm., 2 to 4 per day; suppositories, 0.36 Gm., 2 to 3 per day; intramuscular ampuls, 2 cc. containing 0.48 Gm. Cardophylin, once or twice daily; intravenous ampuls, 10 cc., containing 0.24 Gm. Cardophylin, once daily or half or one ampul containing 0.48 Gm. dissolved in 10–20 cc. distilled water or glucose solution, once daily. It is marketed as tablets in tubes of 20 and bottles of 100 and 250; ampuls, intravenous, boxes of 5; intramuscular, boxes of 6; suppositories, boxes of 10; powder for dispensing.—*Australasian J. Pharm.*, 21 (1940), 779. (A. C. DeD.)

Cas-Evac (Parke, Davis & Co., Detroit, Mich.) is a palatable liquid prepared by extraction of carefully selected and aged cascara bark; the bitter principle is removed and replaced by an equivalent amount of bitterless principle. It contains no aloes, rhubarb or other fortifying drugs, and is approximately equal to bitter Fluidextract Cascara Sagrada in potency. It is used as a laxative for the treatment of occasional or habitual constipation. Cas-Evac is supplied in 2-oz., 4-oz., 8-oz., 16-oz. and 1-gallon bottles.—*Modern Pharmacy*, 24 (August 1940), 12. (F. J. S.)

Crysto-Vibex with Vitamin C (Parke, Davis & Co., Detroit, Mich.) contains in each capsule 0.5 mg. (167 International Units) of vitamin B_1 (thiamin chloride) and 12.5 mg. (250 International Units) of vitamin C (ascorbic acid). It is indicated for the prevention and the treatment of deficiencies of vitamins B_1 and C. Crysto-Vibex with Vitamin C Capsules are supplied in bottles of 100 and 500.—*Modern Pharmacy*, 24 (August 1940), 12. (F. J. S.)

Domeboro Tabs (Dome Chemicals Inc., 250 E. 43rd St., New York, N. Y.) consist of aluminum subacetate which is used as a wet dressing or compress in the treatment of skin wounds or bruises, poison ivy irritation and insect bites, certain types of dermatoses, eczemas and tissue inflammations. The solution is prepared as follows: crush the tablet in one white (*A*) and one yellow (*B*) envelope and mix in one point of water for about a minute; the resultant solution, ready for use, is principally aluminum subacetate. Domeboro Tabs are supplied in boxes of 10 tablets (5 sets).—*Amer. Professional Pharmacist*, 6 (1940), 518. (F. J. S.)

Gluco-Fedrin (Parke, Davis & Co., Detroit, Mich.) is an isotonic aqueous solution containing ephedrine (1%), chloretone (0.5%), menthol and dextrose. It is used for the treatment of inflammation and engorgement of the nasal mucosa in hay fever, common cold, sinusitis and vasomotor rhinitis; it is also useful in preparing the nasal tract for examination, treatment or surgery. Gluco-Fedrin is supplied in 1-oz. bottles with a dropper cap and in 1-pint and 1-gallon bottles.—*Modern Pharmacy*, 24 (August 1940), 13. (F. J. S.)

Kapseals Combex with Vitamin C (Parke, Davis & Co., Detroit, Mich.) contain in each kapseal 1 mg. (333 International Units) of vitamin B_1 (thiamin chloride), 250 micrograms (100 Sherman Units) of vitamin B_2 (riboflavin), 130 micrograms of vitamin B_6 (pyridoxine chloride), 5 mg. of nicotinic acid (P-P factor), 140 micrograms of pantothenic acid, with other components of the vitamin B complex derived from liver, and 25 mg. (500 International Units) of ascorbic acid. The kapseals are used for the prevention and treatment of deficiencies of vitamins B and C. Kapseals Combex with Vitamin C are supplied in bottles of 100, 500 and 1000.—*Modern Pharmacy*, 24 (August 1940), 12. (F. J. S.)

Kapseals Digifortis (Parke, Davis & Co., Detroit, Mich.) contain in each kapseal powdered fat-free digitalis leaf, representing $1^1/_2$ gr. of U. S. P. Digitalis (1 U. S. P. Digitalis Unit) equivalent to 1 cc. (15 minims) of Tincture Digitalis U. S. P. It is used for the treatment of all conditions requiring oral administration of digitalis. Kapseals Digifortis are supplied in bottles of 100 and 500.—*Modern Pharmacy*, 24 (August 1940), 13. (F. J. S.)

Lextron (Eli Lilly and Co., Ltd., Basingstoke, England) is a liver-stomach concentrate, with ferric iron and vitamin B complex. It is used for oral treatment of anemias; reconstructive in debilitating

conditions. A daily dose of 12 pulvules is recommended for adults and from 3 to 6 pulvules for children. Administered in divided doses, three times a day. Administration immediately before meals preferred, and patient should receive well-balanced normal diet. It is supplied in bottles of 42, 84 and 500. Lextron Ferrous brand liver-stomach concentrates with ferrous iron and vitamin B complex are supplied in bottles of 84 and 500.—*Australasian J. Pharm.*, 21 (1940), 779. (A. C. DeD.)

Manibee (Endo Products, Inc., Richmond Hill, N. Y.) consists of the entire vitamin B complex, including thiamin hydrochloride, nicotinic acid, riboflavin, B_6, factor W and other B factors. It is indicated in cases of vitamin B deficiency. Manibee is supplied in $7^1/_2$-gr. tablets in bottles of 50 and 100 tablets.—*Amer. Professional Pharmacist*, 6 (1940), 519. (F. J. S.)

Ovodosyn (Menley and James Ltd., London) is stilbestrol, with calcium phosphate. It is used in cases of menopause and other forms of ovarian insufficiency. The dose is 1 to 3 tablets three times a day. It is supplied in bottles of 50 tablets (each tablet contains 0.5 mg. stilbestrol and 227 mg. calcium phosphate).—*Australasian J. Pharm.*, 21 (1940), 624. (A. C. DeD.)

Persals (McNeil Laboratories, Inc., 2900 N. 17th St., Philadelphia, Pa.) contain in each white, sugar-coated tablet sodium chloride 7 gr., calcium gluconate $^1/_4$ gr., potassium sulfate $^3/_{20}$ gr. and magnesium phosphate 110 gr. These tablets serve to replace the important mineral constituents of the blood which are lost during excessive sweating. The dose is one tablet with a glass of water and this may be repeated up to eight times a day if required. Persals are supplied in bottles of 100, 500, 1000 and 5000; also supplied in bulk.—*Amer. Professional Pharmacist*, 6 (1940), 519. (F. J. S.)

Pertussis Bacterin ("H" Strength) (Sharpe & Dohme, Philadelphia, Pa.) is prepared from freshly isolated cultures of *H. pertussis*, representing the smooth variety designated as Phase I by Leslie and Gardner; and the killed organisms are suspended in a buffered saline solution, standardized to a bacterial count of 20,000 million per cc. and preserved with 0.5% phenol. It is indicated for the prophylaxis of whooping cough. For active immunization against pertussis, three doses are given weekly or at intervals of two or three weeks. It is supplied in 5-cc. and 20-cc. vials.—*Amer. Professional Pharmacist*, 6 (1940), 315. (F. J. S.)

Symbion (N. V. Brocades-Stheeman & Pharmacia) contains vitamins B and C with grape sugar and phosphorus compounds in 8-Gm. tablets. It is a strengthening preparation.—*Pharm. Weekblad*, 76 (139), 1260. (E. H. W.)

Theogardenal (Pharmaceutical Specialties (May and Baker) Ltd., Dagenham, England) contains in each tablet 5 grains of theobromine and $^1/_2$ grain of phenobarbital. It is used for the relief of high blood pressure, cardiovascular irregularity, endocrine unbalance, migraine. The dose is one tablet three times a day. It is marketed in containers of 25 tablets.—*Australasian J. Pharm.*, 21 (1940), 779. (A. C. DeD.)

Valentrol Tablets contain keto-hydroxyestrin, 100 International Units; theobromine sodium salicylate, 0.75 grain; caffeine citrate, 0.25 grain; calcium lactate, 1.5 grains; bromo-*iso*-valerianylurea, 1 grain; aloin, 0.05 grain. It is suggested for the treatment of climacteric ailments by supplementing the sex hormones during the period of dwindling ovulation, thus tending to restore the balance of the endocrine system. The dose is 1 tablet three times a day after meals, and the average course is eight weeks, which normally brings relief, but in exceptional cases it may be necessary to repeat the treatment. In cases of ovariectomy 2 tablets should be given after each meal for four weeks. Valentrol Tablets are supplied in airtight bottles containing a 1 week, 2 weeks' or 6 weeks' course.—*Quart. J. Pharm. Pharmacol.*, 13 (1940), 196. (S. W. G.)

Vetren (N. V. Brocades-Stheeman & Pharmacia, Meppel) is a heparin preparation used as an anticoagulant in indirect blood transfusion.—*Pharm. Weekblad*, 76 (1939), 1260. (E. H. W.)

BACTERIOLOGY

Acetol—Formation of, from α,β-Propylene Glycol. A method is described for the production of acetol by the biological oxidation of α, β-propylene glycol, using *Bact. suboxydans* in a suitable nutriment medium. It is shown that with intense aeration, control of p_H of the medium and the addition of 0.5% glycerol or glucose for the carbon requirements of the organism, rapid and almost quantitative conversion of the glycol in concentrations up to 15% into acetol can be obtained.—K. R. BUTLIN and W. H. D. WINCE. *J. Soc. Chem. Ind.*, 58 (1939), 365–366. (E. G. V.)

Agar Cup Method Suitable for the Estimation of the Fungistatic Action of Powders and Ointments—Modification of. Experiments estimated the penetrating and growth-inhibiting action of compounded products on *Trychophyton*. The method which is described in detail has the advantage that the surface of contact between disinfectant and medium is considerably increased and shows the evenness of action better than in the case of the agar cup method.—ARTHUR E. MEYER. *Jour. A. Ph. A.*, 29 (1940), 316. (Z. M. C.)

Agar Cup-Plate Method and Clinical Experience—Correlation of the Evaluation of Disinfectants by. A series of germicides was studied by means of the agar cup-plate method. Method of procedure is given, a table shows widths of inhibition zones produced by twelve germicides and another gives the coefficients of diffusion of the same germicides. Relationship of coefficient of diffusion to the extent of diffusion is shown by curves. Germicides having a high coefficient of diffusion were found to be of value in obstetrics; those with a low coefficient were of little value. The authors recommend the agar cup-plate method for the evaluation of germicides where their use involves diffusion through colloidal material.—RHETT J. HARRIS and WILLIAM A. PROUT. *Jour. A. Ph. A.*, 29 (1940), 413. (Z. M. C.)

Alkyl Cresols. Antiseptic alkyl cresols, some of which are suitable for internal therapeutic use as urinary antiseptics as well as in ointments or cosmetics, etc., are obtained by reaction of pure or mixed cresols (suitably by heating in the presence of zinc chloride and hydrochloric acid) with secondary amyl alcohol (which may contain 2- and 3-pentanol), amyl alcohol, secondary butyl alcohol, secondary hexyl alcohol (which may both contain 2- and 3-hexanol), secondary heptyl alcohol, cyclohexyl alcohol, tertiary amyl and butyl alcohols. Various examples with details are given.—ROLAND R. READ, assignor to SHARP & DOHME, INC. U. S. pat. 2,198,349, April 23, 1940. (A. P.-C.)

Alkyl - Dimethyl - Benzyl - Ammonium - Chloride—Preservation of Bacteriophage, Venoms and Vaccines with. It was found that in a concentration of 1:50,000 alkyl-dimethyl-benzyl-ammonium-chloride (Zephiran) preserved the viability of staphylococcus bacteriophage for at least three months in the refrigerator. In a similar concentration it was also found to preserve the toxicity of rattlesnake venom (*Crotalus adamanteus*) and cotton-mouth

moccasin venom (*Ancistrodon mocasen*) for a period of at least six months. Zephiran was also found to be a satisfactory preservative for autogenous vaccines in concentrations of 1:50,000.—E. MAIER. *J. Bact.*, 38 (1939), 33. (T. C. G.)

Alkylated Halophenols—Germicidal. By the direct action of chlorine or bromine on alkyl phenols (heated to above the melting point or in a solvent) or by other reactions such as (1) the condensation of a halogenated phenol with an alkyl halide in the presence of a catalyst such as zinc chloride or aluminum chloride, (2) hydrolysis of a di- or tri-halogenated alkyl-substituted benzene in the presence of a suitable catalyst such as copper or cuprous oxide or (3) diazotization of a halo-alkyl aniline and decomposition of the resulting product, various compounds are produced which have a high germicidal action against *Staphylococcus aureus, E. typhi* and *B. typhosus*.—LINDLEY E. MILLS, assignor to DOW CHEMICAL CO. U. S. pat. 2,176,010, Oct. 10, 1939. (A. P.-C.)

Ammonia—Mechanism of the Microbiological Oxidation of. III. In this paper evidence is presented to show that the organisms of Winogradsky are responsible for the most part for nitrification in the soil. It is also emphasized that autotrophic organisms can flourish well in the presence of organic materials, if in the same medium heterotrophic organisms capable of acting on the particular organic substances are also present.—G. GOPALA RAO and W. V. SUNDRA RAO. *J. Indian Chem. Soc.*, 17 (1940), 340. (F. J. S.)

Anaerobic Wound Infections—Present Position of the Fight against. A review.—J. ZEISSLER. *Deut. Med. Wochschr.*, 66 (1940), 340–343. (L. K.)

Antibody Compositions—Purifying. A method of purifying a solution containing antibodies associated with proteins involves adding a proteolytic enzyme such as pepsin, active in acid media, to the solution, adjusting the p_H to about 3.0 to 3.2 and digesting the proteins without substantial destruction of the antibodies for about 2 to 6 hours after adding the enzyme, filtering and treating the filtrate with finely divided tricalcium phosphate.—IVAN A. PARFENTJEV, assignor to LEDERLE LABORATORIES, INC. U. S. pat. 2,175,090, Oct. 3, 1939. (A. P.-C.)

Antimeningococcus Serum: Its Present Status and Future Possibilities. A review of the various types of antimeningococcus sera.—SARA E. BRANHAM. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 210–218. (N. L.)

Antiseptics—Influence of Agar on Mercurial. Previous work indicated that when mercurial antiseptics were tested by the agar cup method with blood in the medium, there was a marked reduction in the potency of the antiseptics. In this study an attempt was made to determine whether the blood or agar in the medium produced this reduction in potency. Comparative tests in blood broth and blood agar showed that the agar did not cause any reduction in potency, but there was a progressive loss in potency as quantities of blood from 1% to 50% were added to the medium. In the mercurials tested, metaphen, merthiolate, mercuric chloride and mercurochrome, the potency of the antiseptic was not directy correlated with its mercury content.—R. E. MILLER and S. B. ROSE. *J. Bact.*, 39 (1939), 539. (T. C. G.)

Antiserums—Manufacture of. The constituents of antiserums responsible for anaphylactic shock are removed by digestion with amylolytic enzymes (of the type yielded by *Aspergillus oryzæ*) at less than 50° and p_H 3.5–7. Examples illustrate removal of horse protein from diphtheria antitoxin by such a preparation and by commercial takadiastase.—L. MELLERSH-JACKSON. From PARKE, DAVIS & CO. Brit. pat., 516,315; through *J. Soc. Chem. Ind.*, 59 (1940), 244. (E. G. V.)

Antitoxins against Bacterial Toxins from the Liver and Spleen. Slightly acid autolyzed spleen or autolyzed liver is extracted with water or a water-soluble organic solvent of low molecular weight such as methanol or with an aqueous mixture of such an organic solvent, and the solution thus formed is treated with a "ballast-eliminating" heavy-metal compound such as iron dialyzate and the resulting product is further purified by use of a water-soluble organic solvent such as methanol (all steps of the process being carried out at a temperature below 40° C.).—CARL L. LAUTENSCHLAGER and WILLY LUDWIG, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,171,320, Aug. 29, 1939. (A. P.-C.)

Arsenic Compounds—Organic. Compounds suitable for use in the treatment of trypanosome infections such as syphilis, such as 3-methyl-6-arsonobenzoxazine and other similar compounds, are prepared by processes which are described in detail and illustrated by means of examples.—CLIFF S. HAMILTON, assignor to PARKE, DAVIS & CO. U. S. pat. 2,202,733, May 28, 1940. (A. P.-C.)

Azo Dyes and Malaria. Some of the sulfamidocrysoidin group of dyes have proved to be of therapeutic value. Azo dyes have therefore been studied for their possible usefulness in malaria. Eight cases of acute attacks of malaria were treated intramuscularly with Rubiazol and orally with carboxysulfamido-crysoidin. The patients had had the usual medication with antimalarial drugs, quinine sulfate, atebrin, etc. There was a reduction, and in some cases a prompt disappearance of *P. vivax* and *P. falciparum*, but semilunar gametes were eliminated only by the specific plasmochin. Azo dyes are not specific for malaria, but added to specifics they hasten the elimination of parasites and reduce the fever.—PEDRO GONZALEZ BARRERAS. *Bol. Ofic. Sanit. Panamericana*, 18 (1939), 753. (G. S. G.)

Bacteria—Stability of, in Relation to p_H. The resistance to heat and alcohol and the stability in suspension of five bacterial species (*Esch. coli, Esch. cloacæ, Proteus vulgaris, Staph. aureus* and a *Lactobacillus* strain) were investigated over the p_H range 3.0–8.0. The results obtained in these experiments indicate that for a given bacterial species there is an optimum p_H value at which resistance of the organism to heat, stability in the presence of alcohol and stability in suspension are at a maximum. Thus there appears to be in operation a common factor. This factor is believed to be the hydration of the bacterial protein.—J. G. BAUMGARTNER and G. G. KNOCK. *J. Soc. Chem. Ind.*, 59 (1940), 53–56. (E. G. V.)

Bacterial Suspensions—Standardization of, by Electrophotometric Methods. The application of two electrophotometric instruments to the accurate standardization of pertussis suspensions is described. It is suggested that such methods may be suitable for the standardization of other bacterial suspensions.—L. T. CLARK, NORBERT FELL and J. M. VANDENBELT. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 227–231. (N. L.)

Bactericidal Efficiency of Certain Aniline Dyes. Addition of phenol or *o*-cresol to certain solutions of crystal violet or methyl-violet 2B greatly increased their bactericidal power toward Gram-negative but not positive bacteria. Such additions

did not alter the efficiency of brilliant- or malachite-green. The efficiency of crystal violet was increased by sodium carbonate but not by borax or secondary sodium phosphate.—F. W. TILLEY. *J. Agr. Research*, 58 (1939), 941–946; through *J. Soc. Chem. Ind.*, 59 (1940), 177. (E. G. V.)

Bactericides—Therapeutic. Compounds of the general formula p-$Z'C_6H_4SO_2NHC_6H_2XYZ''$ (where X and Y are hydrogen or lower alkyl radicals and Z' and Z'' are radicals from the group consisting of $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-NHCOCH_3$, $-NHCOC_2H_5$ and $-NHCOC_6H_5$) are obtained by a process which may involve treating an acylaminobenzenesulfonyl halide with an aromatic diamine of the benzene series or a N-monoacyl derivative and splitting off the acyl radicals, the acyl radicals being acetyl, benzoyl or propionyl.—KURT WARNAT, assignor to HOFFMANN-LAROCHE, INC. U. S. pat. 2,192,490, March 5, 1940. (A. P.-C.)

Biguanidino-Substituted Biphenylene Oxides. By the reaction upon amino-substituted biphenylene oxides with dicyanodiamide in the presence of a solvent such as water or an alcohol, bactericidal compounds are formed.—BRUNO PUETZER, assignor to WINTHROP CHEMICAL CO. U. S. pat. 2,191,860, Feb. 27, 1940. (A. P.-C.)

Brucella Vaccines—Importance of Fatty Excipient in. The author found that guinea pigs inoculated with a Brucella vaccine suspended in a mixture of lanoline and vaseline developed agglutinins in a titre two to four times higher than in animals inoculated with an aqueous vaccine. A single dose of 250 million or 500 million living, virulent *Br. abortus* organisms was given subcutaneously to rabbits. The vaccine was suspended in a mixture of 25 parts of lanoline and 75 parts of vaseline. As controls the vaccine was also given in 10% starch, in saline and mixed with *E. coli*. The highest and most lasting titres were obtained with the fatty mixture, while the lowest titre was given by the vaccine mixed with *E. coli*. When killed, instead of living, organisms were employed in the vaccine, the value of the fatty excipient was less striking. The fat is believed to act by delaying the absorption of the antigenic material in the vaccine.—G. CATALANO. *Giorn. di Batteriol. e. Immunol.*, 23 (1939), 688; through *Bull. Hyg.*, 15 (1940), 327. (T. C. G.)

Chemotherapeutics—Destruction of Bacteria in Experimental Tumors by. Experimental tumors are very often infected by bacteria and therefore their cultivation is very difficult. Experiments with Deseptyl-Chinoin (p-aminosulfamide) and Elektyl-Chinoin (aminobenzole-sulfodimethylamide) showed that these compounds were effective in preventing bacterial growth in the tumor. A description of the technique and dosage is given.—M. VANYO and M. ENGEL. *Arch. intern. pharmacodynamie*, 64 (1940), 153. (W. H. H.)

Cholera Vaccine on the Indian Market. Tests at the Cen. Resrch. Inst., Kasauli, have revealed that certain commercial samples of cholera vaccine were not prepared from true strains. Moreover, many samples were contaminated. Value of cholera inoculation and the fact that other organisms resemble those of cholera require rigid selection of the strain for preparing the vaccine. Directors of the Institute and other authorities were reported willing to issue suitable strains to all laboratories requesting them.—ANON. *Indian Med. Gaz.*, 75 (1940), 295. (W. T. S.)

N^4 - Diethylaminoalkyl - N^1 - Dialkylsulfanilamides and Related Compounds. *P. knowlesi* infections in monkeys seemed to be the only malarial parasites controllable by sulfanilamide and its hereto used derivatives. Plasmochin and atebrin, both possessing basic side chains, are most active against bird malaria. An antimalarial, it was thought, could be prepared by introducing basic side chains into the sulfanilamide molecule. Compounds of the desired type ($Et_2N-(CH_2)n-NH-$  $-SO_2-NR'R''$) were prepared by condensing the potassium derivatives of N^4-acetyl-N^1-dialkylsulfanilamides with dialkyl-substituted alkyl chlorides, followed by acid hydrolysis to remove the acetyl group. The compounds had no influence on the relapse rates in canaries infected with *P. relictum*.—JAMES WALKER. *J. Chem. Soc.* (1940), 686–692. (W. T. S.)

Diphtheria—New Method of Treating. In addition to the usual injection of antitoxin in cases of diphtheria, Ramon now gives anatoxin (formol-toxoid) which stimulates the active immunity mechanism of the patient. Doses of 0.1 cc., 0.5 cc., 1 cc. and 2 cc. of the anatoxin are given at 5-day intervals. In this way higher concentrations of antitoxin are produced in the blood of the patient which persist for a considerable length of time. Contrary to older conceptions the simultaneous injection of antitoxin with the anatoxin does not neutralize the antigenicity of the anatoxin.—G. RAMON. *Zeit. f. Immunitäts. Therap.*, 97 (1939), 194; through *Bull. Hyg.*, 15 (1940), 350. (T. C. G.)

Diphtheria—Rapid Clinical Test for. The Manzulla test for diphtheria consists in using a swab saturated with 2% aqueous solution of potassium tellurite. This is applied to the exudate in the throat. An exudate due to *Corynebacterium diphtheriæ* turns black after ten minutes. This test has been and should be confirmed by cultures, since the use of gargles such as peroxide, methylene blue or tannic acid may result in false positives.—WAYNE W. FOX, *et al. J. Am. Med. Assoc.*, 113 (1939), 675. (G. S. G.)

Diphtheria Toxoid—Alum-Precipitated. For the avoidance of non-specific reactions and the safe injection of larger amounts of specific antigen, knowledge is essential of the best methods of producing A. P. T. of high purity. The basis for purity determinations is the figure of 2146 Lf units per mg. of nitrogen obtained by Pappenheimer from diphtheria toxin isolated in apparently pure state. The present work is a study of the purity of A. P. T. obtained from various toxoids by alum precipitation at different p_H values. Toxoids from tryptic broth of high nitrogen content yielded a product with excessive non-specific nitrogen. A special broth with a nitrogen content of 2–2.4 mg. per cc. gave a much higher purity figure which was improved by initial treatment with charcoal and elution of the precipitate with 0.5% of disodium hydrogen phosphate. From ultra-filtered toxoids by the same procedure, exceptionally pure products were obtained when sodium bicarbonate was added as the necessary base prior to the addition of alum. In this way A. P. T. having 1300–1400 Lf units per mg. of nitrogen was obtained.—F. V. LINGOOD. *Brit. J. Expt. Path.*, 20 (1939), 502; through *Bull. Hyg.*, 15 (1940), 316. (T. C. G.)

Disinfectant, Therapeutic and Sterilizing Compounds Containing Gold and Silver. A method of making such substances involves precipitating the silver salt of chloroauric acid on a carrier such as silica gel or cotton, etc., and subsequently converting it with a compound of a metal which has a higher solution tension than hydrogen, is capable of existence in several valencies, and occurs in the compound as cation in a lower valency, such as manganese nitrate together with an alkaline-reacting substance such as sodium hydroxide.—FRITZ FEIGL,

assignor to INTERPUBLIC A.-G. U. S. pat. 2,192,285, March 5, 1940. (A. P.-C.)

Germicidal Compounds. *2,171,494*—Compounds are produced of high germicidal power having the general formula of a halogenated dihydric phenol substituted by an alkyl or acyl group, which groups have more than 4 and not more than 12 carbon atoms. Details are given of the production of chlorohexylresorcinol, chloro-octylresorcinol and heptylchloropyrocatechol, and general mention is made of the similar production of other chloro and bromo derivatives. *2,171,495*—Concerns monoalkyl ethers, of halogenated resorcinols in which the alkyl group contains more than 3 carbon atoms which have high germicidal properties.—LUCAS P. KYRIDES, assignor to MONSANTO CHEMICAL CO. U. S. pats. 2,171,494 and 2,171,495, Aug. 29, 1939. (A. P.-C.)

Germicides. In the production of a germicide, a nitrogen base material is treated with an inorganic acid and the soluble salts thus produced are dissolved in water, and a buffer agent is added to the aqueous solution to precipitate the bases in a fine state of dispersion.—W. N. AXE and DOUGLAS D. HENSON, assignors to UNION OIL CO. OF CALIFORNIA. U. S. pat 2,198,899, April 30, 1940. (A. P.-C.)

Germicides—Evaluation of, by the Manometric Method. The oxygen consumption of *E. coli* treated with germicides was measured by the Warburg technique at 37.5° C. When the oxygen consumption of a culture became zero, no viable bacteria remain in the culture. When sulfanilamide in a dilution of 1:100 was added to the culture oxygen consumption was reduced to 55%, as compared with the control culture, within one and a quarter hours. However, there was no reduction in the number of viable bacteria in the culture. When merthiolate in a dilution of 1:128,000 was added to the culture there was a 61% reduction in oxygen consumption within 15 minutes and only 43% of the original number of organisms were viable. Thus with sulfanilamide reduction in oxygen consumption cannot be used as an index of the killing power of the germicide; while with other germicides such as merthiolate there is a correlation between reduction in oxygen consumption and the number of viable bacteria present. The presence of serum in the cultures retarded the reduction of oxygen consumption by merthiolate, formalin, phenol, etc., but it had no effect on the action of sulfanilamide.—J. O. ELY. *J. Bact.*, 38 (1939), 391. (T. C. G.)

Immunizing Vaccine for Treatment of Range Paralysis or Leukemia in Poultry. A vaccine is prepared from cultures taken from affected parts of poultry or birds afflicted with range paralysis or leukemia and sterilized after a period of growth sufficient to establish the property of immunizing individuals from these diseases.—ORLEY J. MAYFIELD, assignor to DR. SALSBURY'S LABORATORIES. U. S. pat. 2,173,440, Sept. 19, 1939. (A. P.-C.)

M. & B. 693 in Pneumococcal Infection. In agreement with previous findings, this drug was successfully employed in a case of pneumococcal empyema but unsuccessfully with a bronchopneumonia patient who developed acute meningitis during the treatment and died. The meningeal symptoms developed even when the concentration of the drug in the cerebrospinal fluid was likely the same as in blood. The cases were described.—S. C. SEN. *Indian Med. Gaz.*, 75 (1940), 288. (W. T. S.)

Parenteral Administration—Effect on Bacteria of Substances Used in the Preparation of Solutions for. The author concludes that 0.5% chlorbutol, 0.05% parachlorometacresol and 0.001% phenylmercuric nitrate have approximately the same efficiency in sterilizing watery suspensions of *Staphylococcus aureus* and in these concentrations are more efficient than 0.5% phenol. Methylparahydroxybenzoate (0.2%) is not an efficient preservative for hypodermic injections; it is less germicidal than 5 parts per million of copper sulfate. Approximate phenol coefficients against 5 million *S. aureus* per cc. in watery suspension at 19° to 20° are: chlorbutol 1, parachlorometacresol 10, phenylmercuric nitrate 500. The use of 0.1% of parachlorometacresol as a preservative for hypodermic injections is recommended on the following grounds: it is more efficient than 0.5% phenol; the ultimate concentration of preservative in the injection is only one-fifth that of phenol in 0.5% solution; it is less caustic and less toxic than phenol. The following summary is given: (1) A quantitative bacteriological examination of the effect of common parenteral solutions on *S. aureus* and *Streptococcus pyogenes* at room temperature shows that solutions may be classified as markedly germicidal, moderately germicidal and non-germicidal. (2) The germicidal action of the solutions on *S. aureus* is not entirely due to hydrogen ion concentration. (3) *S. aureus* shows a longer survival rate in solutions of thiosulfates than in Ringer's solution or physiological saline solution. (4) The surface-viable method of counting has been used to assess the germicidal powers of some common preservatives on *S. aureus*.—H. DAVIS. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 32–48. (S. W. G.)

Pertussis Toxin and Toxoid—Preparation of. Cultures of pertussis bacilli are grown in shallow layers in a medium of soluble starch broth, vegetable extract (potato) or semisolid agar for 48 hours at 37° in an atmosphere of carbon dioxide (1 volume) and oxygen (4 volumes). The bacteria are filtered and the filtrate is employed as a toxin, which is detoxified to the toxoid by treatment with 0.3% of formalin and incubated for 2–4 weeks at 40°.—LEDERLE LABS., INC., Brit. pat. 512,196; through *J. Soc. Chem. Ind.*, 58 (1939), 1296. (E. G. V.)

2 - Phenethyl - 5 - (Phenylmercurioxy)phenol. This compound, having the formula $C_6H_5HgOC_6H_3(OH)CH_2CH_2C_6H_5$, is obtained by reaction of phenylmercuric hydroxide in hot aqueous solution with phenethylresorcinol and is a brown-yellow powder that melts at 145° C. and is useful as a disinfectant or preservative, as are also the reaction products of phenylmercuric hydroxide with pyrocatechol and pyrogallol.—KARL MEMMINGER and BERNHARD GAUDIAN, assignors to FAHLBERG-LIST A.-G. U. S. pat. 2,193,430, March 12, 1940. (A. P.-C.)

Phenolic Ointments. The report traces the changes that have been made in the official Phenol Ointment since its introduction in the U. S. P. V and reviews history. Purpose of the present work was to prepare an ointment with bactericidal potency. Emulsion types of ointment bases were prepared and used with phenol and phenolic derivatives including thymol, chlorthymol, resorcinol, hexylresorcinol, chlorearvacrol, trinitrophenol, *o*-hydroxy diphenyl, *m*-hydroxy diphenyl, *p*-hydroxy diphenyl, 3-chlor-4-hydroxy diphenyl and betanaphthol. These phenols were also used in the U. S. P. base for Phenol Ointment and a comparative study was made. Melting points of the various bases were determined. Tabulations show bactericidal potency of the various ointments made with the U. S. P. base for Phenol Ointment and also with the proposed emulsion ointment base. Ointments were tested by the F. D. A. Agar Cup Method and plates are shown for nine ointments. After some experimentation the following emulsion ointment base was devised: gardinol 0.25 Gm.,

propylene glycol 6.00 Gm., water 1.92 Gm., white petrolatum 91.83 Gm., to make 100.00 Gm. That Phenol Ointment is non-antiseptic when tested by the official F. D. A. method using *Staphylococcus aureus* was confirmed. Ointments of hexylresorcinol, chlorcarvacrol, *m*-hydroxy diphenyl, chlorthymol, thymol, 3-chlor-4-hydroxy diphenyl, *o*-hydroxy diphenyl and betanaphthol show varying antiseptic potency in the U. S. P. Phenol Ointment base. *p*-Hydroxy diphenyl, resorcinol and trinitrophenol show no antiseptic potency in the same base. All twelve compounds show substantial antiseptic potency in the proposed emulsion ointment base. Waxes in ointment bases reduce the bactericidal potency. Phenol Ointment U. S. P. XI is devoid of antiseptic potency; the proposed ointment produces a clear zone of inhibition 6 mm. wide.—CARL B. BURNSIDE and RUDOLPH A. KUEVER. *Jour. A. Ph. A.*, 29 (1940), 373. (Z. M. C.)

Pneumococci—New Method for Isolation of, from Sputum. Mouse inoculation for culture of pneumococci from sputum is expensive, may miss important contributory organisms mixed with the pneumococci and may select a pneumococcus commensal in the mouth rather than the true cause of the infection. The method described depends on the stimulation by CO_2 of the growth of pneumococci in a moist atmosphere. Sputum obtained by aspiration is washed in saline and a selected particle spread on a blood agar plate. A piece of sterile wet blotting paper is placed inside the lid of the plate which is incubated in an airtight jar in an atmosphere containing from 0.5 to 25% CO_2. Luxuriant growth took place in 15 hours and the pneumococci were not overgrown by other organisms.—W. J. AUGER. *Brit. J. Expt. Path.*, 20 (1939), 439; through *Bull. Hyg.*, 15 (1940), 321. (T. C. G.)

Sepso-Tincture in Comparison with the Official Tincture of Iodine—Disinfectant Strength of. The action of sepso-tincture on bacteria in water suspension is somewhat weaker than that of tincture of iodine. In protein-containing media, sepso-tincture is clearly superior to tincture of iodine in disinfectant action.—P. HOFFMANN. *Deut. Med. Wochschr.*, 65 (1939), 1634–1635. (L. K.)

Silica Gel as a Carrier for Antiseptics—Study of. It has been shown that silica gel forms a stable ointment base. Experiments have been carried out to evaluate its efficiency as a carrier of antiseptic medicaments. Comparing bacteriocidal action with ointments made by U. S. P. XI formulas, it was found that the gel, when combined with glycerin, expressed oil of almond, liquid petrolatum, castor oil, olive oil and cottonseed oil, is a satisfactory carrier of antiseptic medicaments.—WILLIAM A. PROUT, MAE S. EDDLEMAN and RHETT G. HARRIS. *Jour. A. Ph. A.*, 29 (1940), 372. (Z. M. C.)

Silver Animal Mucins. By a process which involves use of gastric mucins or the like and a silver salt, etc., silver mucins are obtained which, when dry, are from cream colored to brown scales or powder, soluble in water, sensitive to light, not precipitated from solution with a lead acetate solution, and which reduce Benedict's solution. These silver mucins are suitable as antiseptics.—HERMAN J. SCHNEIDERWIRTH. U. S. pat. 2,194,677, March 26, 1940. (A. P.-C.)

Sodium Sulfate (Hypertonic) Treatment of Infected Wounds. The failure of ordinary bactericidal antiseptics applied to infected wounds is shown by the methods now being adopted to deal with these cases. Surgical excision of the whole of the injured tissues and Prof. R. Leriche's procedure of injecting an antiseptic into the main artery supplying the part are instances. On the other hand, Carrel-Dakin irrigation falls into the category of hypertonic treatment. The author has given the results of the extended use of a hypertonic saline solution alone applied to the surface in 1096 cases of septic infection. He has offered what he believes to be a rational explanation of its success; and he has described experiments which support the opinion, based on experience in practice, that of the agents hitherto used for this purpose sodium sulfate is much the most effective. The author appeals to surgeons and general practitioners, especially those who may be in charge of many infected injuries in this war, to give the hypertonic method a trial and to use a saturated solution of sodium sulfate.—J. C. LYTH. *Lancet*, 238 (1940), 216. (W. H. H.)

Staphylococci—Classification of. One hundred and twenty-seven strains of staphylococci from lesions and 122 strains classed as commensals or contaminants were examined in order to determine the suitability of the coagulase test for the differentiation of pathogenic and non-pathogenic strains of staphylococci in routine work. The results confirmed the observation that coagulase is formed only by pathogenic strains of the staphylococcus. On the basis of this work it is suggested that two subdivisions of staphylococci be recognized: (1) coagulase positive strains are pathogenic, usually ferment mannitol, may produce aureus or albus pigment, form soluble hemolysins and should be designated as *Staphylococcus pyogenes;* (2) coagulase negative strains are non-pathogenic, usually non-mannitol fermenters, tend to form albus and citrius pigments, do not produce soluble hemolysins and should be designated *Staphylococcus saprophyticus.*—R. W. FAIRBROTHER. *J. Path. Bact.*, 50 (1940), 83; through *Bull. Hyg.*, 15 (1940), 318. (T. C. G.)

Sulfanilamide as a Prophylactic in Colon Resections. In a series of 22 consecutive colon resections of various types, these authors have been encouraged by the prophylactic use of sulfanilamide. They feel that under special experimental or pathological conditions which favor drug action, sulfanilamide may have some degree of anti-bacterial effect against almost all species of pathogenic bacteria. They conclude that the bacteria concerned in the production of peritonitis of intestinal origin are relatively, but not entirely, resistant to sulfanilamide bacteriostasis. The bacteriostatic effect may become significant in the peritoneal defense against postoperative peritonitis if an adequate concentration of the drug is present; if the number of contaminating organisms is small; if tissue necrosis is minimal, and if the usual cellular defense is present. Since the death rate from peritonitis has been less than usual in this series, this first year of trial of the prophylactic use of sulfanilamide is encouraging.—J. S. LOCKWOOD and I. S. RAVDIN. *Surgery*, 8 (1940), 43; through *Abbott Abstract Service*, (1940), No. 730. (F. J. S.)

Sulfanilamide—Mode of Action of. The ability of *Br. abortus* to grow out in the presence of a dilution of sulfanilamide was found to be proportional to the bacterial density during the initial stages of growth. It appeared that there then existed in the medium sufficient of some factor antagonistic to the action of sulfanilamide. This factor ("P") was demonstrated in extracts of *Br. abortus* obtained by an alkali extraction method. The "P" factor was non-specific in that it stimulated growth of all bacteria tested and inhibited the action of sulfanilamide on all sensitive organisms. This factor could be obtained in variable quantities from a wide range of organisms. It is probable that sulfanilamide, which does not undergo chemical combination or destruction in the medium or the cell, acts by inhibiting some phase of bacterial metabolism, which phase is specifically stimulated by the

"P" factor.—H. N. GREEN. *Brit. J. Expt. Path.*, 21 (1940), 38; through *Bull. Hyg.*, 15 (1940), 315. (T. C. G.)

Sulfanilamide, Pyridine and Thiazole Derivatives—Bacteriostatic Effects of, upon Colon, Typhoid, Dysentery Group. Sulfathiazole and sulfamethylthiazole have been found to be somewhat more effective than sulfapyridine, sulfaphenylthiazole and sulfanilamide in their *in vitro* effects on bacteria of the coli-typhoid-dysentery group. The unsubstituted thiazol derivative appears to be the most active compound being followed in decreasing order of effectiveness by sulfamethylthiazole, sulfapyridine, sulfaphenylthiazole and sulfanilamide.—C. A. LAWRENCE. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 162. (A. E. M.)

Sulfanilamide, Sulfapyridine and Sulfathiazole—Clinical Evaluation of the Use of, in the Treatment of Bacterial Infections. A review of the comparative clinical value of orally administered sulfanilamide, sulfapyridine and sulfathiazole in various hemolytic streptococcal, viridans streptococcal, pneumococcal, meningococcal, gonococcal, staphylococcal, colon typhoid and other infections is given. The administration of these medicinals and their clinical toxic manifestations are also discussed.—PERRIN H. LONG and JAMES W. HAVILAND. *Proceedings, American Drug Manufacturers Association, Twenty-ninth Annual Meeting*, May (1940), 79–93. (N. L.)

Sulfanilamide, Sulfapyridine and Sulfathiazole—Effect of, on Staphylococcus Toxins. Toxic manifestation of staphylococci are not inactivated *in vitro* by sulfanilamide, sulfapyridine or sulfathiazole. The lethal toxin, dermo-necrotic toxin, coagulase, and enterotoxin are not neutralized by solutions of the sulfonamides tested at 37°, α- and β-hemolysins are slightly diminished in activity at concentrations approaching the saturation point of the sulfonamides but are unaffected at concentrations of less than 0.01%. These compounds appear to decrease hemolysin production by decreasing the growth rate of the organism.—MILWARD BAYLISS. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 525. (A. E. M.)

Sulfapyridine and Serum in Experimental Type III Lobar Pneumonia. The protective value of highly concentrated type specific serum in optimal doses and that of sulfapyridine in optimal doses are approximately equal when the infecting dose of Type III pneumococci is relatively small resulting in a mortality of 63% in untreated animals. After an infective dose producing 100% mortality, sulfapyridine is significantly more efficacious than serum. Combination of both treatments does not reduce the mortality below that observed with treatment by sulfapyridine alone.—J. L. WRIGHT and F. D. GUNN. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 523. (A. E. M.)

Sulfate-Reducing Bacteria—Inhibition of, by Dyestuffs. Bacteria which reduce inorganic sulfates with the production of hydrogen sulfide are of considerable economic importance because of the damage done by the hydrogen sulfide to materials with which it may come in contact. Inhibition of these bacteria by the use of ordinary disinfectants is often not possible because the presence of the disinfectants themselves, in the concentrations necessary to inhibit these bacteria, is not desirable. The present investigation has shown that certain dyestuffs are eminently suitable for the purpose. The development of the sulfate-reducing bacteria may be inhibited by dyestuffs derived from 3:6-diaminoacridine, which are non-corrosive and are effective in very small quantities.—T. H. ROGERS. *J. Soc. Chem. Ind.*, 59 (1940), 34–39. (E. G. V.)

Sulfonamides. I. Some 5-, 6- and 8-sulfonamidoquinolines have been synthesized; some of the compounds have been tested on mice infected with pneumococci and encouraging results have been obtained.—GURCHARAN LAL JUNEJA, KARTAR SINGH NARANG and JNANENDRA NATH RAY. *J. Indian Chem. Soc.*, 17 (1940), 495. (F. J. S.)

Sulfonamides of 2-Aminopyridines—Therapeutic Bactericidal. Details are given of the preparation of various derivatives, a number of which (or their salts) are suitable for subcutaneous, intramuscular or intravenous injection.—CARL NAEGELI, assignor to CILAG, CHEMISCHES INDUSTRIELLES LABORATORIUM A.-G. U. S. pat. 2,170,209, Aug. 22, 1939. (A. P.-C.)

Sulfonic Acid Amide Compounds. By treating an aromatic amino group of benzenesulfonamides which either contain a sulfonamide group in *p*-position to the amino group attached to the nucleus or several sulfonamide groups in the nucleus and which may also contain further substituents in the nucleus, with acylating agents of 5 or more carbon atoms, products are obtained suitable for combating streptococcic infections.—ROBERT BEHNISCH, JOSEF KLARER and FRITZ MIETZSCH, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,169,971, Aug. 15, 1939. (A. P.-C.)

Surface-Active Agents—Influence of, on Virus Inactivation. A study of the actions of certain surface-active agents on viruses has been extended with a hope of determining something of the mechanism involved in the inactivation of viruses by biological agents such as immune serum and the virus-inactivating agent (V. I. A.) from human nasal secretions. Sodium lauryl sulfate and saponins, in addition to sodium desoxycholate, showed a selective inactivation effect in certain viruses, with some being sharply differentiated in their behavior toward saponin solutions. The activity of all three agents is modified by the presence of protein and by the concentration of the virus. Sodium lauryl sulfate may be used to isolate psittacosis virus from sputum containing mouse-pathogenic pneumococci since the former is unaffected by this chemical. All bacteriophages were resistant to these surface tension lowering substances. There is a correlation in the susceptibility of the viruses for chemical and the biological inactivating agents.—F. M. BURNET and D. LUSH. *Australian J. Exp. Biol. Med. Sci.*, 18 (1940), 141–150. (W. T. S.)

Tetanus—Combined Active and Passive Immunization against. There has been a recent trend in prophylactic immunization against tetanus to inject both antitoxin and toxoid simultaneously or within short intervals of each other. On theoretical grounds and in the light of similar immunization methods in diphtheria, it was believed that the presence of antitoxin in the body might interfere with the production of active immunity from the injected toxoid. Therefore experiments were carried out with guinea pigs where both toxoid and antitoxin were injected at various intervals with relation to each other. In general it was found that if antitoxin was injected shortly before or after the toxoid was injected, the production of active immunity was greatly repressed. Hence it is recommended that the simultaneous injection of active and passive protective agents for tetanus should not be practiced until further data are available. The whole problem is considerably complicated by the fact that various authorities do not agree upon the number of units of tetanus antitoxin in the blood which must be maintained to prevent possible tetanus infection after receiving a wound.—L. OTTEN and I. P. HENNEMANN. *J. Path. Bact.*, 49 (1939), 213. (T. C. G.)

Tuberculin Test—Comparison of the Intradermal and Patch. Of 1455 children tested simultaneously with the intradermal (PPD first strength) and patch tuberculin test on different arms, 202 were positive to both, 15 positive only to the intradermal test and 3 positive only to the patch test. In almost every one of the 15 positive only to the intradermal test, alcohol had been used to cleanse the arm and the adhesive had not stuck properly. The importance of efficient adhesion is therefore obvious. In a few cases the patch test did not become positive until from 5 to 7 days after removal of the patch. In general the reliability of the patch test in an intelligent and well-instructed community was demonstrated.—R. B. KERR and A. J. WINOGRAD. *New Engl. J. Med.*, 222 (1940), 53; through *Bull. Hyg.*, 15 (1940), 358. (T. C. G.)

Tuberculosis—Antigen for the Diagnostic Determination of. An agent which on injection produces a reaction indicative of tuberculosis when present is prepared by extracting a protein that is characteristic of tuberculosis from the solid unaffected tissues or from the blood fibrin of an animal suffering from the disease and making an approximately neutral or mildly acid solution thereof. The extracting agent may be a dilute acid or alkaline solution, such as hydrochloric acid or sodium hydroxide.—BENJAMIN GRUSKIN, assignor to LAKELAND FOUNDATION. U. S. pat. 2,204,272, June 11, 1940. (A. P.-C.)

Tyndallization Process—Quantitative Bacteriological Investigation of the. The following summary is given: Hypodermic solutions cannot be tyndallized in the original sense of the word. Apparent tyndallization effects are due to the germicidal action of the medicaments themselves. The medicaments fall into three distinct groups according to their action on spores of *Bacillus subtilis* at 80°: non-germicidal, moderately germicidal and markedly germicidal. At room temperatures, 15.5° to 24°, however, the germicidal effect of these solutions is undetectable after one week.—H. DAVIS. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 14–31. (S. W. G.)

Typhoid and Paratyphoid Vaccines—Specificity of. Groups of mice which had received intraperitoneally two doses of heat-killed vaccines of. *Bact. typhosum* or *Bact. paratyphosum* A or *Bact. paratyphosum* B at a week's interval were tested for immunity to living suspensions of each of the three strains injected by the same route 10 days later. Protection was in each case specific and there was no evidence that a vaccine of one of these organisms would protect against either of the others. Some degree of protection appears to have been conferred by *Bact. paratyphosum* B against *Bact. paratyphosum* A but the converse was not observed. Further experiments lent no support to the view that intraperitoneal injection of vaccines of unrelated organisms such as pneumococci or dysentery bacilli might confer some immunity against subsequent inoculation with *Bact. typhosum* by the same route.—M. H. BROWN and A. J. BISHOP. *Can. Pub. Health J.*, 30 (1939) 585; through *Bull. Hyg.*, 15 (1940), 385. (T. C. G.)

Wetting Agents—Bacteriostatic Action of Various, upon Growth of Tubercle Bacilli in Vitro. The bacteriostatic action of Zephiran is superior to that of Nacconol NR, Aerosol OT and OS. This is not due to its ability to reduce surface tension or to superior wetting qualities as these qualities are alike in the various compounds tested.—B. L. FREEDLANDER. *Proc. Soc. Exptl. Biol. Med.*, 44 (1940), 51. (A. E. M.)

BOTANY

Anesthetics—Action of Local, on Vegetable Cells. The hyphae of the mycelium *Ascoidea rubescens* were treated, on a microperfusion apparatus, with solutions of cocaine hydrochloride (0.0125 Gm. % to 1.0 Gm. %) at p_H 7.2–7.4 and at 16–18°. The following results are reported: (1) The plants show a transformation of the siphons or vacuolary system into spherical vacuoles, then after a period of time, in spite of the continuous application of the toxic solution, a gradual spontaneous return of the vacuome to a state approaching the original arrangement. (2) If, after the second change, the perfusion is continued with a stronger solution of cocaine hydrochloride the appearance of spherical vacuoles is again noted. (3) If, after or during the second change, the hyphæ are washed with water, there is noted in about 20% of the cases (definitely where the approximate threshold dose—0.0125 to 0.015 Gm.%—has been used) either an accentuated passage of the vacuoles toward extinction, or the reappearance of vacuoles which have already disappeared; this phenomenon preceding the definite reformation of the original vacuolary system. In all other cases the original system is reformed at once. The microperfusion apparatus is illustrated and described.—J. REGNIER, P. GAVAUDAN and A. QUEVAUVILLER. *Bull. sci. pharmacol.*, 46 (1939), 321–327. (S. W. G.)

Anesthetics—Action of Local, on Vegetable Cells. II. Action of *p*-Aminobenzoyldiethylaminoethanol and Its Salts on Cellular Contents of Ascoidea Rubescens (Brefeld). The authors report that the action on the mycelian filaments of *A. rubescens* is in the same order as on other organisms or animal organs (rabbit cornea, frog nerve, fish); the phenylpropionate of *p*-aminobenzoyl-diethylaminoethanol is more active than the hydrochloride, which is more active than the citrate. The test depends on the determination of the smallest dose of the alkaloidal salt capable of modifying the cytoplasm-vacuome equilibrium of the plant.—J. REGNIER and A. QUEVAUVILLER. *Bull. sci. pharmacol.*, 46 (1939), 365–366. (S. W. G.)

Anesthetics—Action of Local, on Vegetable Cells. III. Action of Cocaine Salts on Cells of Elodea Canadensis. The findings agree with those reported previously using rabbit cornea, frog nerve and *Ascoidea rubescens* as the test objects (*Bull. sci. pharmacol.*, 46 (1939), 321).—J. REGNIER, R. DAVID and S. BAZIN. *Bull. sci. pharmacol.*, 46 (1939), 449–455. (S. W. G.)

Chromosome and Gene—Physicochemical Nature of. A review—C. H. WADDINGTON. *Am. Naturalist*, 73 (1939), 300–314; through *Chem. Abstr.*, 33 (1939), 6888. (F. J. S.)

English Oak—Hemicelluloses of the Wood of. V. The Structure of Hemicellulose B. Oak sapwood hemicellulose B resembles hemicellulose A from the same source in that it contains anhydroglucose units. Heartwood hemicellulose B, like heartwood hemicellulose A, contains no anhydroglucose units. All of the oak hemicelluloses so far examined give rise to two common fission products on hydrolysis with takadiastase under standardized conditions, namely xylose and a water soluble polysaccharide of $[\alpha]_D^{20°} = -51.2°$ the molecule of which is composed of one monomethylhexuronic acid residue and six xylose residues.—M. H. O'DWYER. *Biochem. J.*, 34 (1940), 149. (F. J. S.)

Fungicide Investigations. The efficiency of a number of cuprous oxide spray combinations is examined. A 2% copper zinc silicate preparation (copper 25, zinc 4%) used in combination with oil emulsions gave good control of tomato leaf mold; when used without oil the preparation was less effective.—W. H. READ. *24th Ann. Rept. Exp. Res. Sta., Cheshunt*, (1939), 62–63; through *J. Soc. Chem. Ind.*, 59 (1940), 75. (E. G. V.)

Herbicide. More toxic weed killers of reduced rate of deflagration are obtained by treating an alkali (sodium) or alkaline earth salt of an organic acid of low molecular weight (acetic acid) (1–5) and a chlorate (5–9) with water (224 parts).—I. E. MELHUS, assignor to CHIPMAN CHEM. CO., INC. U. S. pat. 2,094,366; through *J. Soc. Chem. Ind.*, 59 (1940), 161. (E. G. V.)

Insect Repellent. A repellent for chewing insects such as the Japanese beetle contains thiuram sulfide as an active ingredient together with a finely divided inert material such as Bancroft clay, and may be readily dispersed in aqueous media to form a suspension suitable for spraying.—WENDELL H. TISDALE and IRA WILLIAMS, assignors to E. I. DU PONT DE NEMOURS & CO. U. S. pat. 2,205,232, June 18, 1940. (A. P.-C.)

Melinis Minutiflora. A Tropical Grass Possessing Anti-Vermin and Insect-Repelling Power. This grass, known in Venezuela as Gordura or Capim Melado, is described by the author who pointed out factors in its cultivation and protection. It was claimed that neither mosquitoes, ticks nor snakes are found near this grass, probably because of its penetrating odor. High in protein, it is valuable for fattening cattle.—EDWARD MORGAN. *J. Trop. Med. Hyg.*, 43 (1940), 179. (W. T. S.)

Nitrite, Colchicine and *d*-Lysine—Use of, to Induce Mutations and Reversions in Reproductivity of Aspergilli. Claims for the chemical production of mutants in fungi were doubted. Colchicine produces polyploidy in phanerograms but not in fungi. Now nitrous acid has been successfully used to induce mutation with eight species of aspergilli. It was postulated that its action in this respect was due to its ability to destroy free amino groups. This hypothesis was strengthened by the fact that other amino group-destroying compounds acted similarly in *A. niger*. The addition of *d*-lysine and $Na_2S_2O_3$ to reverse the process of the nitrite treatment gave reversion mutants showing partial to complete recovery in reproductivity in *A. niger* and recovery of both conidia and ascospores in *A. amstelodami*. By the use of colchicine, along with $CaCO_3$ to prevent its hydrolysis, mutants were given with six out of eight species. Artificial strains could be duplicated in large measure from numerous forms collected over a period of thirty years. Conidia and ascospores, if produced at all, persisted unchanged in form and markings.—ROBERT A. STEINBERG and CHARLES THOM. *Proc. Nat. Acad. Sci. U. S.*, 26 (1940), 363–366. (W. T. S.)

Penicillium Carmino-Violaceum Biourge—Coloring Matters of, with a Note on the Production of Ergosterol by this Mold. Investigation of the coloring matters of *P. carmino-violaceum* Biourge has led to the isolation of two complex anthraquinones which have been named carviolin ($C_{15}H_{12}O_6$) and carviolacin ($C_{20}H_{16}O_7$), respectively. The preparation of various crystalline derivatives of these pigments are described and throw light on their constitutions. Ergosterol was isolated from the mold.—H. G. HIND. *Biochem. J.*, 34 (1940), 67. (F. J. S.)

Plant Growths—Stimulation of, by Treatment of Seeds. Germination and subsequent growth are improved by treating the seeds with 2–500 parts per million of an absorptive adherent dust (*e. g.*, talc) containing 0.1–10% of a plant hormone (indolylacetic, -propionic or -butyric acid, $CH_2Ph.CO_2H$, or α-$C_{10}H_7.CH_2CO_2H$, or their salts or esters). The absorptive dust may be replaced by a suitable fungicidal, *e. g.*, organic mercury preparation.—HON. ADVISORY COUNCIL FOR SCI. AND INDUSTR. RES. CANADA. Brit. pat. 509,282; through *J. Soc. Chem. Ind.*, 58 (1939), 1164. (E. G. V.)

Plant Histology—Rapid Staining Methods in. Routine methods for differential staining of plant tissue may require 24 hours or more. Since heat is applicable in bacteriological staining, its use for botanical staining was investigated and found to be effective for temporary mounts. Sufficient time has not elapsed for confirmation of the permanency of the stains. Further research will attempt to establish a more standardized technique, to study concentration of staining solution necessary for effective differentiation and to try other stains and combinations of stains. Two methods are described but both use the principle of flaming the primary stain.—ROBERT S. MCLEAN and EDWARD J. IRELAND. *Jour. A. Ph. A.*, 29 (1940), 318. (Z. M. C.)

Plant Names—Meaning of. In one of a series of articles dealing with the meaning of plant names, the author considers the sorrels and the smartweeds. The sorrels, from the French surelle (acid), are represented in medicine by several species of *Rumex*, especially *Rumex crispus* (yellow dock). These plants are of the order, *Polygonales*, and the family, *Polygonaceae*. Both order and family names being derived from the Greek words meaning many knees. The synonym, dock, is from the Anglo-Saxon docca, meaning a plant.—WILLARD N. CLUTE. *Am. Botanist*, 46 (1940), 79–85. (W. T. S.)

Syringyl Radical—Occurrence of, in Plant Products. The investigation of jute fiber, rye straw, corn stalks and hard woods seems to point to the presence of syringyl derivatives in the lignin constituents of all Angiosperms, for example as indicated in corn and rye (monocotyledons) and in jute and maple (diocotyledons).—E. WEST, A. S. MACINNES, J. L. MCCARTHY and H. HIBBERT. *J. Am. Chem. Soc.*, 61 (1939), 2556. (E. B. S.)

CHEMISTRY

GENERAL AND PHYSICAL

Anesthetics—Physico-chemical Properties of Local. I. Rate of Diffusion of Equimolar Solutions of Novacaine Salts. The rates of diffusion were determined as follows: Introduce 10 cc. of 0.001 *M* solution (containing 11.8 mg. of novocaine base) in twenty-five to thirty minutes by means of a 25-cc. burette with a capillary delivery tube reaching to the bottom of a cylinder having graduations of 50 cc. and outlets at each 100 cc., and containing a liter of water having p_H 5.8–5.9. After fifteen hours draw off the liquid into 10 receivers starting with the highest outlet and working down, thus running 100 cc. of solution into each of 9 receivers. Siphon the remaining 100 cc. of solution into the tenth receiver. The base was determined in each 100 cc. portion by the colorimetric procedure of Cheramy (*J. pharm. chim.*, 30 (1924), 408), comparing the colors obtained with that formed with a solution of novocaine containing 0.866 mg. of base (1:100,000 of hydrochloride) per 100 cc. Three systems were arranged in order to run three tests simultaneously. The following observations are made: (1) The total of the amounts of base found by the assays was always low. (2) Only tests run simultaneously will give identical results. (3) The rates of diffusion for the hydrochloride, phenylpropionate and citrate were found to vary in the order given with the rate for the hydrochloride being highest. Another series gave the following order: hydrochloride > phenylpropionate > gluconate. (4) The salts arrange themselves in the following order based on their pharmacodynamic action: phenylpropionate, benzoate > hydrochloride > citrate, gluconate. The rate of diffusion does not appear to be a reliable means of measure of the pharmacological activity of this series of salts.—J. REGNIER and A. QUE-

VAUVILLER. *Bull. sci. pharmacol.*, 46 (1939), 498–501. (S. W. G.)

Acetone and Certain Derivatives—Base-Catalyzed Prototropy of. Kinetic measurements have been made at 25° on the catalyzed halogenation of the following ketones: acetone, acetonylacetone, monochloroacetone, monobromoacetone, dichloroacetone and acetylacetone. In all cases the reactions are of zero order with respect to the halogen and exhibit general basic catalysis. For the first two ketones general acid catalysis is also detectable.—R. P. BELL and O. M. LIDWELL. *Proc. Roy. Soc.* (London) *B*, 129 (1940), S34. (W. T. S.)

Detergents—Determination of Some Physical and Chemical Constants of Certain. A study has been undertaken to assist in obtaining more comprehensive knowledge of the chemical and physical factors in the act of removing soil and to develop comparisons between detergents. Ten soaps were examined for the following properties: percentage of volatile matter, moisture, non-volatile matter, water-soluble matter, unsoluble matter, the p_H value, surface tension, ability to form suds, ability to remove soil and total alkalinity.—B. L. HOLIDAY, E. A. KELLY and L. W. RISING. *Jour. A. Ph. A.*, 29 (1940), 367. (Z. M. C.)

Electrodialysis—New Cell for. A small three-chamber glass cell for the electrodialysis of colloidal materials is reported. The cell consists of a spherical chamber and interchangeable end chambers, in which are provided outlets for the removal of the dialyzates during electrodialysis.—A. W. MARSDEN. *J. Soc. Chem. Ind.*, 59 (1940), 60–62. (E. G. V.)

Elkonite. A Colloidal Clay. This is a naturally occurring clay found near Elka, Nevada. In water, it swells to many times its original volume forming a firm jelly-like mass. Results of a study of the scope of possible clinical applicability and usefulness are presented. Physical and chemical properties are described and its composition given. Adsorptive power was tested by means of dyes and acids and alkalies. Comparisons were made with magnesium trisilicate, bentonite, fuller's earth, norit, kaolin, bismuth subcarbonate, aluminum hydroxide and Lloyd's alkaloidal reagent. Effect of acid and alkali upon viscosity was studied, chronic feeding experiments in rats were conducted and its value as an ointment base was tried. Summarizing, the authors report elkonite to be mainly aluminum magnesium silicate, that it is hydrophilic and swells in water, in 15% concentration forming a gel. Acid or alkali added to fluid suspensions of it greatly increase viscosity. Preliminary trials indicate that it may be useful for oral administration in gastric orders. Administration to rats for five months did not influence rate of growth but definitely increased food intake. Gastrointestinal tracts were normal but there was hypertrophy amounting to 11% increase in weight over that of controls, being more marked in stomach than intestines. Most promising usefulness appeared to be as a gel of 15% strength as an ointment base. Such a base dries on the skin and leaves an adherent film of medicament which does not rub off, does not stain or smear clothing but can be removed by water.—M. L. TAINTER, G. KULCHAR and A. B. STOCKTON. *Jour. A. Ph. A.*, 29 (1940), 306. (Z. M. C.)

Ethyl Alcohol and Water Mixtures—Surface Tension of. The surface tensions of eight ethyl alcohol-water mixtures (from 2.33 to 92.72% ethyl alcohol by weight) were determined at temperatures ranging from room temperature to the atmospheric boiling points of the various solutions. The surface tension decreased slowly with increase of temperature in linear relationship. At constant temperature the surface tension was found to decrease with increased concentration of alcohol, rapidly at first (up to 20–30% by weight) and then more slowly.—W. S. BONNELL, L. BYMAN and D. B. KEYES. *Ind. Eng. Chem.*, 32 (1940), 532–534. (E. G. V.)

Hydrogen Peroxide-Water System—Vapor Pressures and Boiling Points of. The authors described an apparatus and outlined a method by which the total vapor pressures of binary mixtures of hydrogen peroxide and water were measured at 30°, 45° and 60° C. over the entire composition range. The measurements showed the system hydrogen peroxide-water to exhibit large negative deviations from Raoult's law but no minimum. This is consistent with the polarity and association of these liquids. The technique used with the apparatus made it possible to determine the composition of the vapor in each case which provided data employed to obtain the partial pressure of each component. These values agree with those calculated from the total vapor pressure by means of the Duhem and Margules equation. Extrapolation of the vapor pressure data gave the normal boiling point and latent heat of vaporization, factors important in connection with the distillation of aqueous hydrogen peroxide.—P. A. GIGUERE and O. MAASS. *Can J. Research Sec. B.*, 19 (1940), 181–193. (W. T. S.)

Hydrophilic Sulfur—Dispersible. A composition dispersible in water and suitable for therapeutic or insecticidal use is obtained by preparing an aqueous sludge of hydrophilic colloidal sulfur of amicronic particle size containing polythionic acids, and adding a stabilizer consisting of sucrose, maltose, dextrose, glycerol, molasses, glucose, "Glycopon B" (a glycol carbohydrate composition), "Glycopon 2A" (sulfited glycol carbohydrate), triethylene glycol, diethylene glycol or propylene glycol, thereby reducing the water content of the sludge to about 10 to 30% to form a paste of suitable consistency containing about 0.05% to 10% of polythionic acids and about 0.01% to 20% of stabilizer.—PHILIP J. EHMAN and WALTER O. WALKER, assignors to ANSUL CHEMICAL CO. U. S. pat. 2,201,124, May 14, 1940. (A. P.-C.)

Mortar and Pestle for Powdering Glass. The mortar consists of 5 inches of 1-inch iron pipe (nipple), on one end of which is screwed a pipe cap, loosely fitted in order to facilitate removal of powdered glass. The pestle is a 16-inch length of 0.75 inch iron rod, threaded at one end and fitted with a large iron nut having a diameter a little greater than one inch. The nut is tightly adjusted to the rod and trimmed by a silicon carbide wheel to a size that will permit it to be inserted with ease into the mortar. The nut and rod are ground at the end until a flat pounding surface is obtained. H. L. WUNDERLY. *Ind. Eng. Chem. Anal. Ed.*, 12 (1940), 284. (E. G. V.)

Particle Size Studies. A method for the determination of grain size distribution of pharmaceutical chemicals is described. Two samples of barium sulfate were tested. It appears that such a test incorporating a limit of the per cent of large particles and a requirement for a definite per cent of small particles would be superior to the present pharmacopœial test for bulkiness of powder. Grain size is calculated from Stokes Law.—JOHN J. CORCORAN and SISTER MARY ETHELREDA. *Jour. A. Ph. A.*, 29 (1940), 322. (Z. M. C.)

Pectin—Some Physical and Chemical Properties of. A discussion.—GLENN H. JOSEPH. *Bull. Natl. Formulary Committee*, 9 (1940), 18–19. (H. M. B.)

Proteins—Modification of Complexes Precipitable with Trichloracetic Acid by the Action of Hydrogen Peroxide on Products of Cleavage of. The

resynthesis of proteins by hydrogen peroxide using mixtures of egg albumin and peptone digested by means of papain was investigated at 37° and 0° C. using trichloracetic acid and tannic acid. The results obtained emphasize the physical character of the phenomenon of increase and decrease of the amount of precipitate as being dependent upon the presence of hydrogen peroxide.—M. CALCINAI. *Biochim. terap. sper.*, 26 (1939), 437. (A. C. DeD.)

Soap Adsorption. Using a soap composed of 80% tallow and 20% coconut oil soda soap, the following adsorption values were found: Cotton 19.5, rayon 7.6, silk 11.1 and wool 60% adsorbed soap from a 0.1 soap solution, respectively. Adsorption is also a function of temperature. Single soaps were tested also and sodium laurate was found to be least adsorbed.—E. W. COLT AND C. V. SNELL. *Oil and Soap*, 17 (1940), 33; through *Am. Perfumer*, 41 (1940), No. 4, 81. (G. W. F.)

ORGANIC

Alkaloids

Adina Rubrostipulata—Crystalline Alkaloid from the Rubiaceae Named, by Schumann. The author states that the alkaloid rubradinine is identical with mitraphylline isolated earlier by Michiels and suggests that only the latter name be used.—RAYMOND-HAMET. *Bull. sci. pharmacol.*, 46 (1939), 327–336. (S. W. G.)

Alkaloid Bases and Salts—Potentiometric Determination of. The titrations were made in 90% alcohol or acetone with 0.1*N* potassium hydroxide in alcohol or 0.1*N* hydrochloric acid in alcohol, or HCl. The suitable p_H for the titration was determined on the basis of potentiometric curves, and then a standard electrode was prepared from a buffer mixture of the same p_H. The accuracy is 2%.—YA. SHAFERSHTEĬN, YU. S. KHAVKIN and N. A. IZMAILOV. *Trans. Ukrainian Inst. Exp. Pharm.*, 1 (1938), 134; through *Chem. Abstr.*, 33 (1939), 7237. (E. G. V.)

Alkaloids—Action of Iodo-Cuprous Reagent on. Precipitation and Color Reactions. *Reagent.* To 50 Gm. of 30% solution of crystalline sodium iodide, add with shaking 30 drops (1.23 Gm.) of 7.5% solution of crystalline copper sulfate. The precipitate which first forms is redissolved by mixing to give a clear solution colored by the dissolved liberated iodine. If, after several hours, the reagent becomes turbid, filter and keep the filtered reagent in a dark place, where it will retain its properties indefinitely. Tests were carried out using 4 cc. of 1% aqueous solutions (or saturated solutions if the solubility was less than 1 in 100) of the compounds to 1 cc. of reagent. All the alkaloidal salts tested as well as the bases aconitine, brucine, cinchonidine, codeine and nicotine gave reactions which yielded yellowish white, yellowish or brown precipitates with different sensitivities. The bases colchicine, ephedrine, eserine and veratrine gave precipitates only after careful addition of diluted hydrochloric acid to the reaction mixture. The alkaloids of the purine group (uric acid, caffeine, theobromine), the principal glucosides, barbiturates, picrotoxin and adrenaline gave no precipitates in simple aqueous solution or after acidification. The sensitivities are lower in most cases than those observed with Bouchardat's iodine-iodide reagent (2.5 Gm. iodine, 5 Gm. potassium iodide, distilled water 100 cc.), but quinine and sparteine were more sensitive to the iodo-cuprous reagent. Eserine precipitates, from acid solution, or eserine salt precipitates, from aqueous solution, dissolve in ammonia solution to give a violet-red color. The sensitivity is 1:10,000. The color is unstable and changes slowly to brown. Ephedrine reacts with the reagent added dropwise to give a violet color which is stable but disappears on addition of acid. The sensitivity is 1:10,000.—M. PERRONNET and J. GUENIN. *J. pharm. chim.*, 1 (1940), 142–147. (S. W. G.)

Alkaloids and Amines—New Precipitating Agents for. The author states that recognition of characteristic crystals under the microscope, the method of identification originated and developed by Behrens, Wormley, Stephenson and others, is now considered to be the best, most convenient and most reliable means of identifying the pure alkaloids in drug analysis or toxicology. With a sufficient number and variety of reagents, a good test can probably be found for any isolated (pure) amine, making possible its identification even in minute quantity. Many new reagents are referred to and the discussion in this article not only explains advances which have been made, but points the way to further and future advances of great importance.—CHARLES C. FULTON. *Am. J. Pharm.*, 112 (1940), 51. (R. R. F.)

Alkaloids and Amines—Precipitating Agents for. Ninety-three reagent formulas are given and while some of them are long known, many others are entirely new and intended for specific uses.—CHARLES C. FULTON. *Am. J. Pharm.*, 112 (1940), 134. (R. R. F.)

Alkaloids—Kjeldhalization of, in Presence of Complex Catalysts of Mercury, Copper and Selenium. I and II. The different techniques for kjeldhalization are reviewed and the advantages of using catalysts in the decomposition mixture are stressed, especially the use of selenium. The authors experiments lead them to the following conclusions: (1) The use of complex catalysts (containing mercuric oxide, copper sulfate and sodium solenite; mercuric selenite and potassium sulfate; benzoic and phosphoric acids) for the kjeldhalization of alkaloids do not present any important advantages over the ordinary catalysts already proposed. (2) Among the thirteen compounds tested only apomorphine, eserine, caffeine and strychnine may be conveniently kjeldhalized. (3) When the kjeldhalization does not give the theoretical yield the results appear to be variable even the most exact conditions are observed. (4) The systematic study of the results of kjeldhalization of morphine hydrochloride, using a complex selenium catalyst, shows that the constituents of the catalyst have a slight influence as long as the highest possible temperature for the reaction mixture is obtained.—B. DREVON and ROUSSIN. *J. pharm. chim.*, 1 (1940), 18–24, 24–31. (S. W. G.)

Alkaloids—Potentiometric Determination of Hydrochlorides of. The titrations were made with silver nitrate by Müller's method. The silver chloride formed does not interfere and the results are within 2% of the truth.—I. YA. SHAFERSHTEĬN and M. A. BEL'GOVA. *Trans. Ukrainian Inst. Exp. Pharm.*, 1 (1938), 126; through *Chem. Abstr.*, 33 (1939), 7237. (E. G. V.)

Alkaloids—Use of Acetone as Solvent for Extraction of, in Toxicology. The following steps for the extraction of alkaloids are recommended: (1) Digestion of the pulped organs with three volumes of acetone for two hours on a water bath in the presence of tartaric acid. (2) The pulp is dried by exposure to air and again extracted as above. (3) The pulp is washed with acetone, the acetone solutions are united and cooled to 0° then filtered and distilled to a syrupy consistence under reduced pressure. (4) The residue is taken up in 300 cc. of hot anhydrous acetone, the mixture is cooled, filtered and distilled. (5) The residue, having the consistence of a soft extract, is dissolved in 100–200 cc. of a 20% aqueous solution of ammonium sulfate. (6) The solution is cooled, filtered, then extracted with

different volatile solvents after acidifying the mixture; then the extractions are repeated after alkalinizing the mixture. With strychnine and quinine the alkaloids may be removed by extraction with acetone in a soxhlet extractor. The alkaloidal yields with strychnine, atropine, aconitine, morphine and quinine are tabulated and fall between 52.5% and 96.1%.—P. CHERAMY and M. PAPAVASSILIOU. *J. pharm. chim.*, 30, (1939) 316–321. (S. W. G.)

Alkaloids—Use of Acetone for Extraction of, in Highly Saccharated Media and in Galenicals. The following procedure is used for confections containing 20 mg. of morphine hydrochloride in 50 Gm. of sample. The sample is mixed with 50 Gm. of dry sodium carbonate, the mixture is transferred to a flask and treated with 250 cc. of anhydrous acetone by refluxing on a water bath for two hours. The solution is separated from the saccharated mass by decantation, the solvent removed by distillation and the residue is taken up in diluted hydrochloric acid. The solution is made alkaline with ammonia and the alkaloid is extracted with chloroform. The solvent is removed and the residual alkaloid is weighed. The yield is about 93% of the theoretical amount. Less stable alkaloids give lower yields. The following procedure is given for a syrup containing codeine. Mix 20 Gm. of syrup with 5 Gm. of dry sodium carbonate, add 100 cc. of acetone and heat the mixture with shaking during half an hour. Separate the acetone solution and continue as above for morphine. With 0.1 mg. strychnine sulfate granules, mix 10 granules with tartaric acid and extract with acetone according to the method used in toxicological procedures. Colorimetric determination gave a yield of 95%. A second sample of 10 granules was powdered and mixed with 5 Gm. of dry sodium carbonate, then digested for half an hour with 100 cc. of acetone. The procedure for morphine was followed to obtain the alkaloid in chloroform. The colorimetric determination gave a yield of 100%. An Extract of Aconite which yielded 0.562% of total alkaloids by the Codex method was assayed as follows: Mix 3 Gm. of the sample with 10 cc. of water and mix the whole with 20 Gm. of washed sand and place in a flask. Add 100 cc. of acetone and acidify the mixture slightly with diluted nitric acid. Digest the mixture for two hours on a water bath, filter the acetone solution (washing the residue in the flask and the filter with acetone), and remove the solvent by distillation. Take up the residue in 100 cc. of 20% solution of ammonium sulfate, filter, alkalinize the filtrate with ammonia and extract with chloroform. Precipitate and dry the alkaloid as the silicotungstate according to the Codex procedure. The yields from three samples were 0.637%, 0.638% and 0.641%.—P. CHERAMY and M. PAPAVASSILIOU. *J. pharm. chim.*, 1 (1940), 69–73. (S. W. G.)

Anthrophytum Leptocladum M. Pop.—Alkaloids of. The green parts of the plant after alcohol extraction yield a resinous mixture of alkaloids (0.7— of the dry weight) which, after ether extraction, yields leptocladine, $C_{13}H_{16}N_2$, long rectangular plates, melting at 109–110°, isolated as the hydrochloric acid salt, needles, melting at 234–235° (decomposition), from which also are prepared the chloroplatinate, orange, decomposing at 197–198°; picrate, yellow needles, partially melting at 94–95°, completely at 112–114°; and benzyl derivative, melting at 132–133°. The hydrochloride, dry distilled, yields a substance with fecal odor, probably an indole derivative. Leptocladine is soluble in most organic solvents, insoluble in water, is optically inactive and instantly decolorizes cold potassium permanganate in both alkaline and acid medium.—N. K. YURASHEVSKIĬ. *J. Gen. Chem.* (U. S. S. R.), 9 (1939), 595–597; through *Chem. Abstr.*, 33 (1939), 7800. (E. G. V.)

Cocaine—Color Reaction for. Review of Methods for Identification. The procedures which are generally used for the identification of cocaine are reviewed and criticized. The following procedure is recommended: Place several particles (several mg. to 1 Cg.) of the alkaloid in a well-dried tube, add 2 drops of nitric acid and 13–15 drops of sulfuric acid, mix and place in a boiling water bath for 5–10 minutes. Cool, then add 1 cc. of distilled water. The mixture assumes a canary-yellow tint. Cool the tube for several seconds under cold water and add 10 cc. of acetone; then cool again and add 5 cc. of sodium hydroxide solution diluted 1:10 and thoroughly mix the contents of the tube. The aqueous layer has a yellow tint; the acetone is cloudy at first then a violet-blue ring appears at the juncture of the two liquids, and after shaking the acetone layer takes on an intense sky-blue color. On standing the color changes to violet (3–5 minutes) then to bordeaux red (20–30 minutes). The color is very intense with 5 mg. of the sample and can be detected briefly with 1 mg of cocaine. With several tenths of a mg. only an old rose color is produced. The color of the alkaline aqueous layer should not be considered. The reaction gives a sky-blue color with only two other substances tested, alypine and delcaine, both of which are local anesthetics. The eucaines produce a violet-blue color. Atropine gives a rose-red; hyoscyamine, duboisine, scopolamine and homatropine give a violet-red; piperine gives a rose; ephedrine gives a blood-red; other alkaloids do not give characteristic colors. Aromatic compounds and barbiturates were also tested.—M. PESEZ. *J. pharm. chim.*, 30 (1939), 200–206. (S. W. G.)

Curare Alkaloids. Alkaloids of Some Chondrondendron Species and the Origin of Radix Pareirae Bravae. The botanical source of the drug, *Pareirae bravae*, has been established by a chemical examination of its alkaloids, already known to resemble those of tube- and pot-curare. *Pareirae bravae*, yielding *l*-bebeerine, comes from *Chondrondendron platyphyllum* and *Pareirae bravae*, yielding *d*-bebeerine, comes from *C. microphyllum*. *Pareirae bravae* also yielded a new alkaloid isomeric with coclaurine, and so named. A classification of certain bisbenzylisoquinoline alkaloids is given. The historical, chemical and botanical aspects of the drug, *Pareirae bravae*, are comprehensively reviewed to account for the ambiguity surrounding it.—HAROLD KING. *J. Chem. Soc.*, (1940), 737–746. (W. T. S.)

Ephedra—Sardinian. Samples of *E. vulgaris* and *E. nebrodensis* were examined. The alkaloid content decreased with increasing period of storage, while conversion of ephedrine into ψ-ephedrine was sometimes apparent. The yield of ephedrine appeared to be less than that of foreign-grown plants. Methods of extraction are discussed.—M. MULAS and E. SALIS. *Arch. ist. biochim. ital.*, 11 (1939), 315–334; through *J. Soc. Chem. Ind.*, 59 (1940), 243. (E. G. V.)

Ergot Alkaloids—Separation of Mixed. Ergotoxine is obtained from ergot alkaloid mixtures by extracting (for example, with chloroform, dichloroethane, trichloroethane) an acid solution after removing ergotinine by extraction from caustic alkaline solution. The use of α-hydroxypropionic acid as the acid and the alkaloid ergoclavine, $C_{31}H_{37}O_5N_5$, H_2O, melting point 170–171° or (anhydrous) 178°, specific rotation at 20° +110° to + 124° in chloroform are claimed.—W. H. KUSSNER, assignor to MERK & CO., INC. U. S. pat. 2,086,562; through *J. Soc. Chem. Ind.*, 59 (1940), 173. (E. G. V.)

Lupinine—Synthesis of the Racemic. XIX. Alkaloids of Lupinine. The authors describe the

preparation of pyridyl-diazoketone and of oxymethyl-pyridyl ketone and give a description of the Grignard treatment of the oxymethyl-pyridyl ketone with γ-bromo-propylethyl ether and α-pyridyl - (ω - ethoxy - propyl) - oxymethyl carbinol. They also describe their attempts at the following reactions: (1) Hydrogenation of the α-pyridyl-oxymethyl carbinol. (2) Ether cleavage of the α-piperidyl - (ω - ethoxy - propyl) oxymethyl carbinol. (3) Ether cleavage of the hydrogenated product with HBr and ring closure to form lupinine. (4) Preparation of lupinine picrolonate. (5) Distillation of the α-pyridyl-oxymethyl carbinol.—K. WINTERFELD and H. VON COSEL. *Arch. pharm.*, 278 (1940), 70–81. (L. K.)

Morphine in Opium—Determination of, and of Cocaine in Crude Cocaine and in Coca Leaves. The report of the international committee appointed to study the methods of analysis of opium and similar drugs is reproduced in abstract form. The methods of sampling crude opium and of determining the content of morphine are described. Similarly, methods are given for the analysis of cocaine and ecognine-containing materials.—ANON. *Schweiz. Apoth.-Ztg.*, 77 (1939), 29–31; 41–48; 57–62. (M. F. W. D.)

Morphine—New Raw Material for the Extraction of. Straw of poppies contains 0.08% of morphine, the heads contain more. They are a waste product obtained in the manufacture of poppyseed oil. The material is extracted with dilute acid, the solution is evaporated to one-fifth of its volume and precipitated with slaked lime and ethanol. After a second evaporation to one-fifth volume, the accompanying alkaloids are removed with sodium hydroxide and ethanol. The filtrate is acidified and the morphine is precipitated with ammonia. One kilo of morphine was obtained from 1250 kilos of straw.—A. GORIS. *Bull. sci. pharmacol.*, 45 (1938), 265–270; through *Chimie & Industrie*, 41 (1939), 1143. (A. P.-C.)

Morphine—Preparation of, from the Dried Poppy Capsules. The procedures used are discussed. A comprehensive general discussion is given.—A. GORIS. *Bull. sci. pharmacol.*, 46 (1939), 376–387. (S. W. G.)

Morphine—Rapid Titration of, in Opium by New Process. The following procedure is given. Opium —powder, pill or tablet: Weigh accurately about 0.5 Gm. of opium and mix in a mortar with 2 Gm. of slaked lime and 10 cc. of distilled water. After about 15 minutes of contact, pour on a filter and wash the mortar and filter well with water so as to collect 50 cc. of clear filtrate. Ten cc. of this morphino-calcic solution (representing one decigram of opium) is poured in a conical flask and exactly neutralized by adding 2 or 3 drops of strong acetic acid. Then dissolve 3 Gm. of potassium iodide in this liquid and add 15 cc. of 0.1*N* iodine solution by means of a pipette, and mix well by agitation for three minutes. Morphine tri-iodide precipitates. Filter through a glass filter using suction. Titrate the excess of iodine in the filtrate with 0.1*N* thiosulfate. Each cc. of 0.1*N* iodine solution fixed by the morphine present is equivalent to 0.0095 Gm. of anhydrous morphine or 0.012625 Gm. of morphine sulfate.—A. J. LAURENCE and J. LABARRE. *Merck Report*, 49 (1940), No. 4, 8. (S. W. G.)

Orixa Japonica—Alkaloids of the fruit of. Extraction of the fruit of *Orixa japonica* with methyl alcohol followed by treatment with 3% hydrochloric acid gives a solution which, after neutralization with sodium hydroxide solution, yields a precipitate. After extraction of the precipitate with chloroform followed by removal of the solvent, the resultant syrup forms crystals from absolute alcohol, which were shown to have the formula, $C_{14}H_{13}NO_4$. Concentration of the mother liquors gives needle-like crystals of the composition, $C_{13}H_9NO_4$. The alkaloid, $C_{14}H_{13}NO_4$, was found to have three methoxy groups, but when heated with methyl iodide in a tube, the product also had the formula $C_{14}H_{13}NO_4$, but the presence of only two methyl groups was proved. Oxidation of the latter with permanganate gave an aldehyde, $C_{12}H_{13}NO_5$ and an acid, $C_{13}H_{13}NO_6$. When the acid, $C_{13}H_{13}NO_6$, is heated with concentrated hydrochloric acid, carbon dioxide and a methyl group are split off and the product obtained has the formula, $C_{11}H_{11}NO_4$. The chemical properties of the compound were found to be identical with those of skimmianin obtained from *Skimmia japonica*. The second alkaloid, $C_{13}H_9NO_4$, was found to be identical with kokusagin.—TAKESHIRO OBATA. *J. Pharm. Soc. Japan*, 59 (1939), 145–148 (in German, 136–138). (N. L.)

Pai Pu—Alkaloids of the Chinese Drug. It is known that alkaloids occur in the species of *Stemona*. A résumé of studies recorded in the literature is given. Exact botanical identity of Pai Pu is not established. Experimental work included both a chemical and pharmacological investigation. Alkaloids found totaled 1.77%. Two new alkaloids were isolated in crystalline form: paipunine, $C_{24}H_{37}O_4N$ and sinostemonine, $C_2H_{36}O_5N$. Photomicrographs of each are shown. Pharmacologically, paipunine is a convulsant probably acting on the medulla. It depresses the frog's heart in 1:5000 solutions. It inhibits isolated rabbit's small intestine but contracts isolated guinea pig's uterus. Sinostemonine has a median lethal dose of 757 ± 535 mg. per Kg. in mice when injected intravenously.—HENRY M. LEE and K. K. CHEN. *Jour. A. Ph. A.*, 29 (1940), 391. (Z. M. C.)

Peganum Harmala L. (Peganum)—Biological Study of the New Alkaloid from. The effects of the injection of peganum are compared with those of harmine, an alkaloid isolated from the same plant. Both cause tremor and convulsions in warm blooded animals when toxic doses are administered. Peganum depresses the central nervous system and its toxic dose is 6 mg. per 20 Gm. body weight. The tremor and convulsions are due to an excitatory action on the upper spinal cord. The alkaloid stimulates the ventricular muscle of the frog heart, and in strong concentrations the heart stops in systole. It also stimulates the activity of the smooth muscles of the intestine and uterus of rabbits. The locus of action on smooth muscle is probably the muscle fiber itself.—G. V. TUTAEV and Z. A. MAKAROVA. *Trans. Ukrainian Inst. Expt. Pharm.*, 1 (1938), 46; through *Chem. Abstr.*, 33 (1939), 7391. (E. G. V.)

Pelletierine—Commercial. The following summary is given: It is shown (*a*) that Ewers's method for the estimation of "pelletierine" in pomegranate bark, or in the total alkaloids of the bark, gives fairly accurate results, (*b*) that it is possible to remove the inactive *pseudo*-pelletierine from the total alkaloids by treating the mixed hydrochlorides with acetone and (*c*) that commercial "pelletierine" salts are apt to be low in "pelletierine" content and therefore of doubtful value as tænicides.—J. A. GOODSON. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 57–63. (S. W. G.)

Stemona Tuberosa—Alkaloids of. III. Additional data is presented on the elucidation of the chemical structure of tuberostemonin and hydrotuberostemonin.—HEISABURO KONDO, KOHEI SUZUKI and MASAKICHI SATOMI. *J. Pharm. Soc. Japan*, 60 (1940), 389–398 (in German, 149–157). (N. L.)

Totadita and Totambal from Philippine Medicinal Plants. Totadita represents the mixture of the alkaloids from dita bark, about 0.6% from *A. scholaris* and 1.3% from *A. macrophylla*. Totambal

is the mixture of the alkaloids, about 1.9% isolated from the bark of *Pycnarrhena manillensis*. The total precipitates by ammonia water from the slightly acidic aqueous solution of the total alkaloidal extractives obtainable by the general scheme of alkaloid extraction, were purified by reprecipitation and subsequent decolorization with animal charcoal. Totadita and totambal appeared efficacious in the treatment of bird malaria. Totadita dissolved with methyl salicylate and coconut oil in alcohol has relieved two persons suffering with alleged rheumatism and lumbago, enabling them to walk after they had been disabled in bed for about two months.—GUILLERMO Q. QUIBILAN. *Proc. Fifth Sci. Convention Nat. Res. Council Philippines Bull.*, 23 (1939), 151. (P. A. F.)

Essential Oils and Related Products

Abies Semenovii—Essential Oils of. The needles yield 0.3–0.4% of oil, consisting of *l*-α-pinene 35, camphene 3.4, *l*-borneol 17.2, bornyl acetate 25.3 and furfuraldehyde 3%.—I. TZUKERVANIK and L. GRATSCH. *Acta Univ. Asiae Medial*, 36 (1937), 1–5; through *J. Soc. Chem. Ind.*, 59 (1940), 170. (E. G. V.)

Alcohols in Essential Oils—Determination of. An acetylation test is described in which the oil is first washed with water to remove foreign alcohols as adulterants.—J. E. HAN. *Am. Perfumer*, 41 (1940), No. 2, 35–36. (G. W. F.)

Ceylon Citronella. A review of the history, botany, commercial types of citronella oil, producing regions, planting, distillations, yield and economic set-up.—E. GUENTHER. *Soap*, 16 (1940), No. 9, 30; through *Am. Perfumer*, 41 (1940), No. 4, 73. (G. W. F.)

Cineol Content in Eucalyptus Oil. Since Indian eucalyptus oil contains not more than 60% of cincol, the Indian Chem. Mfg. Assoc. has suggested that the requirements for this oil be changed in the B. P. from 70% to 55%. It was pointed out that much eucalyptus oil is available in India but it cannot be used in B. P. preparations. A change in cineol requirements would therefore benefit the eucalyptus oil industry generally.—ANON. *Indian Med. Gaz.*, 75 (1940), 430. (W. T. S.)

Citrus Mitis Blanco—Study of the Volatile Oil from the Leaves of. A preliminary investigation of the partially air dried leaves of *Citrus mitis* Blanco, locally known as "calamansi," gave positive results for the presence of tannins, reducing substances and volatile oil. The moisture and ash contents were determined. Selective solvent extraction showed a comparatively high percentage of petroleum ether extract. By ordinary steam distillation of the fresh leaves, there was obtained one per cent of a greenish yellow oil with the following properties: $N_D^{29°}$ 1.4960; $d_{29°}$ 0.972; $[\alpha]_D^{29°}$ −9.0309; congealing point, −12° C.; acid value, 1.5863; ester value, 5.5371; iodine number, 136.446; freely soluble in chloroform; soluble in 70% alcohol; sparingly soluble in 85% alcohol; slightly soluble in 90% alcohol. The cassia flask-bisulfite method gave 5% aldehyde. Qualitative tests for sesquiterpenes were distinctly positive; 200 cc. was fractionated, and the specific gravity, optical rotation and refractive index were noted. β-Pinene, linalyl acetate and an aldehyde were indicated. Administration of the oil in a dose of 0.1 cc. to human female adults gave a satisfactory carminative effect within one hour.—ELENA VILLA-SIMBRA and LUZ OLIVEROS-BELARDO. *Proc. Fifth Sci. Convention Nat. Res. Council Philippines Bull.*, 23 (1939), 153. (P. A. F.)

Clausena Anisum-Olens (Bl.) Merrill—Volatile Oils of. The oils examined were obtained by steam distillation using Lloyd's extractor and concentrator apparatus. The oil yield is 1.0129% to 1.2809%. Sp. gr. at 30° is 0.86599–0.88195; $[\alpha]_D^{30}$ is +1.00 to +1.93; N_D^{30} is 1.4530–1.4534; E. V. before acetylation is 15.9780–18.1442; E. V. after acetylation is 110.0716–184.2220; S. V. 14.0406–16.6574; solubility in 70% alcohol is 1 to 1; and 1 to 3. Preliminary tests indicate the presence of aldehydes and alcohols. Possesses some narcotic effects.—ISABEL GARCIA-REYES and PATROCINIO VALENZUELA. *Nat. App. Sci. Bull.*, 7 (1939), 5; through *Proc. Fifth Sci. Convention Nat. Res. Council Philippines Bull.*, 23 (1939), 144. (P. A. F.)

Echiophora Sibthorpiana—Essential Oils of. The oil from the fresh plants contains *d*-α-phellandrene 80 and methyleugenol 14%, together with traces of an unidentified aldehyde and 6% of resins.—I. TZUKERVANIK and K. MARTINOVA. *Acta Univ. Asiae Mediae*, 38 (1937), 1–6; through *J. Soc. Chem. Ind.*, 59 (1940), 170. (E. G. V.)

Eucalyptus Oil—Carbonyl Constituents of. Constitution of Phellandral. Conversion of phellandric acid into hexahydrocuminic acid, the epimeric forms of which have already been characterized (*J. Chem. Soc.*, (1939), 1245), establishes the 1:4 positions of the substituents in phellandral (4-isopropyl-Δ^1-cyclohexene - 1 - aldehyde, Δ^1 - tetrahydrocuminal). The synthesis of *dl*-phellandric acid from α-bromohexahydrocuminic acid also fixes the position of the ethylene linkage in the aldehyde. Resolution of the synthetic acid into antipodes identical with the active isomers from *d*- and *l*-phellandral was not achieved. Laboratory procedures are given for all syntheses.—R. G. COOKE, A. KILLEN MACBETH and T. B. SWANSON. *J. Chem. Soc.*, (1940), 808–810. (W. T. S.)

Ligusticum Scoticum—Essential Oil of. The fruits of *Ligusticum scoticum* L. (*Umbelliferae*) contain 5.2% of essential oil, which on distilling yields two fractions. Fraction I distills at about 150° and has the following properties: $[\alpha]_D^{25.5} = 27.15°$; $d^{25.5} = 0.8545$. It was shown to have the formula, $C_{10}H_{16}$, indicating that it was a terpene. Fraction II distilled at 30–130°/5 mm. The portion distilling at 125–130°/5 mm. was collected and an analysis indicated the formula $C_{10}H_8O_2(OCH_3)_2$, which is dillapiol. On oxidation with aqueous permanganate dillapiolic acid, $C_7H_3O_2(OCH_3)_2COOH$ (m. p. 144°), was obtained. Further proof for the identification of dillapiol was given by bromination forming mono bromodillapiol-dibromide, $C_{12}H_{13}O_4Br_3$ (m. p. 108°), and by heating with sodium ethylate forming dill-isoapiol (m. p. 43°).—TATUO KARIYONA and HITOSI TERAMOTO. *J. Pharm. Soc. Japan*, 59 (1939), 313–314 (in English, 110–111). (N. L.)

Litsea Cubeba Pers.—Essential Oils of. The leaves of *Litsea cubeba* collected from West Java and Central Java, respectively, yielded different types of essential oil; the former (Litsea oil) with a relatively high content of aldehydes and the latter (Krangean oil) with a small content of aldehydes but a high proportion of cineol. Since the age of the trees and the altitude at which they were growing were similar, the authors consider that there are two varieties of the species with very small botanical differences. Samples of Litsea oil contained citral 5–7%, citronellal 20–40%, cineol 10–22%, linalool 40–50%; of which 9–11% was present as esters. Krangean oil contained citral and citronellal 3–9%, cineol 66%, linalool and terpineol 7%; of which 4% was present as esters.—C. J. VAN HULSSEN and D. R. KOOLHAAS. *Rec. Trav. Chim. Pays-Bas*, 59 (1940), 105; through *Quart. J. Pharm. Pharmacol.*, 13 (1940), 175. (S. W. G.)

Manilla Ylang Ylang Oil—Critical Survey of. A discussion of Manilla Ylang Ylang (*Cananga odorata*) oil, its cultivation, harvesting, distillation. Samples of first and second quality oil, respectively, pos-

sessed the following characteristics: specific gravity (15° C.) 0.961, 0.957; optical rotation −26° 33′, −56° 50′; refractive index (20° C.) 1.4932, 1.5110; acid value 1.1, 1.9; saponification value 160.9, 111.4; soluble in 0.5 volumes of 90% alcohol.—E. GUENTHER. *Am. Perfumer*, 41 (1940), No. 1, 34-36. (G. W. F.)

Mayur Pankhi (Thuja Orientalis) Oil—Refining of. Of several methods examined for removing color from the crude essential oil (obtained from a wood-water mixture by distillation), vacuum distillation gave the best results. The crude and refined oils, respectively, had density at 30° 0.9774, 0.9598; specific rotation at 28° −12.9; −20.9; index of refraction at 36° 1.5030, 1.5000; acid value 21.0, 19.8; ester value (as methyl acetate) 2.96, 2.96.—S. N. GHATAK and K. C. MUKHERJI. *J. Sci. Tech. India*, 4 (1938), 39–41; through *J. Soc. Chem. Ind.*, 59 (1940), 171. (E. G. V.)

Oil of Bay. A survey with 17 references.—ERNEST GUENTHER. *Drug and Cosmetic Ind.*, 47 (1940), 260–265, 270. (H. M. B.)

Salvia Spinosa (S. Macrosiphon)—Essential Oils of. The fresh plants yield 0.06% of oil, containing *n*-hexyl alcohol 13.5 and *l*-linalool 55% (both free and as acetates and isovalerates); in addition, acetic acid, isovaleric acid, sesquiterpenes and an unknown aldehyde were found.—I. TZUKERVANIK and L. GRATSCH. *Acta Univ. Asiae Mediae*, 40 (1937), 1–6; through *J. Soc. Chem. Ind.*, 59 (1940), 170. (E. G. V.)

Glycosides, Ferments and Carbohydrates

Centaurea Scabiosa L.—Study of. The heteroside, which exists in the fresh leaves of the plant as the alkaline or alkaline earth salt, is extracted with boiling water. On acidification of the aqueous solution the water-insoluble heteroside is precipitated. Yield 2%. The glycuronoside ($C_{21}H_{18}O_{12}.2H_2O$) was hydrolyzed by acids and yielded glycuronic acid and a flavonol identical with scutellareol. A comparative study of the glycuronoside and of the scutellaroside, glycuronoside of scutellareol, proved the identity of the two compounds.—C. CHARAUX and J. RABATE. *J. pharm. chim.*, 1 (1940), 155–162. (S. W. G.)

Diastase—Assay of. Influence of Different Factors. Technique of Amylolytic Determination. The following summary is given: The properties of diastase obtained from germinated barley are reviewed, and the three stages of its action are distinguished as the liquefaction of starch paste, the formation of dextrins and the formation of maltose. The various methods for the determination of the amylolytic power of diastasic preparations are critically reviewed. The techniques based on the determination of reducing sugars formed by hydrolysis are given special attention. Studies of the influence of p_H, temperature, time, nature and quantity of substrate and of the diastase, activators and inhibitors on the official (French) method are reported. The titer of the diastase is defined as the ratio between the quantity of starch converted to maltose and the quantity of diastase used. A value of 100 is proposed for the official product. Seventy-seven references are given.—J. LANGLOIS and C. MORIN. *Bull. sci. pharmacol.*, 46 (1939), 353–364, 415–436. (S. W. G.)

Glucosides of Digitalis Lanata—Comparative Toxicity Studies of, in the Pigeon, Cat and Dog, with Some Observations on the Influence of Anesthesia. The emetic potency in pigeons and the fatal dose for cats and dogs was established for several of the glucosides from *Digitalis lanata*. The results are summarized in a table.—J. J. KAPLAN and M. B. VISSCHER. *J. Pharmacol.*, 70 (1940), 228. (H. B. H.)

Glycogen—Enzymic Synthesis of. After purification of the enzyme system of glycogen phosphorylation it was found that during the fermentation with live yeast the primary product is not glycogen but glucose-*l*-phosphoric acid. The glycogen is formed from this in a side reaction.—A. SCHAFFNER. *Naturwissenschaften*, 27 (1939), 195; through *Chem. Abstr.*, 33 (1939), 6885. (E. G. V.)

Munson-Walker Reducing Sugar Values—Redetermination of. Using an alkaline copper tartrate reagent (Fehling's Solution) Munson and Walker proposed in 1906 a very successful gravimetric method for determining reducing sugars. The present author, using sugars of higher purity, has redetermined Munson and Walker's values, as well as the values for levulose and additional sugar mixtures containing 0.3 Gm. of total sugar. The latter makes the method adaptable to such products as simulated molasses. Except for determining the copper electrolytically and heating the reagent by electricity, rather than gas, the author followed the procedure of Munson and Walker. An extensive table is given for the new values which are somewhat higher for a given weight of copper.—LESTER D. HAMMOND. *J. Research Nat. Bur. Standards*, 24 (1940), 579–596. (W. T. S.)

Saponin—Extraction and Determination of, in Soap Root from the Levant. Methods for the determination of saponins are reviewed and the following procedure based upon liberation of the sapogenin from a sample containing between 2% to 5% of saponin is recommended. Place in a Lintner pressure flask 5 cc. of a 10% solution of saponin and 10 cc. of 5% sulfuric acid (the final concentration of saponin is 3.33%). Heat the mixture at 102–105° in a salt bath for 2.5 hours. A white precipitate separates. This is centrifuged and washed four or five times by successive centrifuging and decanting, until the washings are free from sulfate. Dry the precipitate at 60°, dissolve it in alcohol and transfer to a conical flask having a large neck. Evaporate the alcohol and dissolve the residue in neutral ethyl acetate by refluxing on a water bath. Filter the solution into a tared dish, evaporate and dry at 60° to constant weight. The sapogenin was dissolved in hydro-alcoholic medium and its acid equivalent was determined using phenolphthalein as indicator. A mean value of 433 was obtained for the acid equivalent or molecular weight of the sapogenin obtained from the saponin separated from the white soap root (*Gypsophila paniculata seu Arostii Gussone*). The root in a No. 30 powder was macerated with four portions (20, 10, 10 and 10 cc.) of 50% alcohol, finally being digested on a water bath. The combined liquids were evaporated to a volume of 10 cc. and then hydrolyzed. Three other procedures were tried. The hydrolyzed saponin yielded 22.67% of sapogenin, which corresponds to a "molecular weight" of 1914.16 for the saponin. The drug yielded about 8% of saponin.—J. ROWAN. *J. pharm. Belg.*, 21 (1939), 869–874. (S. W. G.)

Saponins and Sapogenins. XI. Neotigogenin, a New Steroid Sapogenin. A new steroid sapogenin has been obtained which is isomeric with tigogenin and has been named "neotigogenin." It has been isolated as the acetate and characterized by oxidation to a monoketone and conversion of the ketone into the oxime. The neotigogenin was produced during the preparation of tigogenin acetate using acetic anhydride and pyridine. It is not known whether the isomer is one of the original hydrolysis products of the extract of *Chlorogalum pomeridianum* or is formed by isomerization during the acetylation.—L. H. GOODSON and C. R. NOLLER. *J. Am. Chem. Soc.*, 61 (1939), 2420. (E. B. S.)

Saponins and Sapogenins. XII. The Product of Dried Oxidation of Echinocystic Acid with Dichro-

mic Acid. Methyl echinocystate is oxidized by chromic acid to a diketo ester, which on saponification loses carbon dioxide to give a diketone, norechinocystenedione. Free echinocystic acid, under similar conditions, gives an isomeric compound named isonorechinocystenedione. The ultraviolet absorption spectra of norechinocystenone and norechinocystenedione confirm the presence of isolated carbonyl groups, while that of the isomer indicates the absence of carbonyl groups in ether solution but the presence of one or more carbonyl groups in alkaline ethyl alcohol solution. On heating with alcoholic alkali isonorechinocystenedione is converted into norechinocystenedione. A possible interpretation of the isomerization is suggested.—R. N. JONES, D. TODD and C. R. NOLLER. *J. Am. Chem. Soc.*, 61 (1939), 2421. (E. B. S.)

Saponins—Pharmacodynamic Study of. Saponin of Dumoria Heckeli. The saponin was obtained by extracting the dried and powdered seeds of *D. heckeli* in a soxhlet with ether, the marc was extracted with boiling alcohol, the alcohol was evaporated at a low temperature and the residual gel was extracted with anhydrous ethyl acetate. The residue was taken up in boiling absolute alcohol and the alcohol was removed by evaporation under reduced pressure. The saponin thus obtained was purified by treatment with animal charcoal in anhydrous ethyl acetate, solution in methanol, precipitation with an excess of anhydrous ether, dialysis and desiccation. The toxicity of the saponin was determined for fish (1:4000); for guinea pigs (5 mg./100 Gm. intraperitoneally killed in two hours); and for rabbits (8 mg./Kg. intravenously). The action on the arterial pressure and on isolated organs was also noted.—P. DODEL, G. DASTUGUE and VILLEDIEU. *Bull. sci. pharmacol.*, 46 (1939), 401–407. (S. W. G.)

Saponins—Properties of, Especially of Cyclamin. Cyclamin was obtained crystallized from potato tubers. Color reactions of cyclamin, esculin, Merck's saponin, saligenin, solanin and amygdalin with Nessler's agent, chloroform and sulfuric acid, chloroform-acetic anhydride and sulfuric acid are described.—J. HADACEK and Z. ROSENBERG. *Casopis Ceskoslov. Lekarnictiva*, 16 (1936), 157–163; through *Chem. Abstr.*, 33 (1939), 7823. (E. G. V.)

Schwoenkia Americana L.—Study of. The entire plant (615 Gm.) was powdered in a mill and exhausted by rapid percolating with four liters of 80% alcohol containing 0.5% of tartaric acid. The green colored alcoholic extract was evaporated to dryness *in vacuo*, the residue was taken up in 500 cc. of hot water and the aqueous solution, after two extractions with ether, was allowed to stand. A white crystalline precipitate (1.15 Gm.) was deposited very slowly (about one month). This was found to be a heterocide, ($C_{34}H_{36}O_{16}.3H_2O$), and was named schwoenkioside. The compound upon hydrolysis with diluted acids or alkalies or emulsion yields two molecules of glucose and a molecule of schwoenkiol, $C_{22}H_{20}O_8$. The latter compound does not have acid properties, but possesses a free acetylable phenolic group and two methoxyl groups. Traces of alkaloids are reported.—J. RABATE. *J. pharm. chim.*, 1 (1940), 234–240. (S. W. G.)

Starch—Effect of Certain Substances on the Action of Malt Amylase on. It is generally supposed that salts of heavy metals, including iron salts, have an injurious effect on the conversion of starch by malt amylase, but the presence of iron salts has been found to be without influence even in a concentration of 850 parts per million. A relationship between the toxic effect of a metal on malt amylase and its position in the electrochemical series is suggested. The injurious effect of a boiling water extract of the spent grains on conversion in malt mashes is discussed, and evidence is given to the effect that the inhibitory action may be due to the presence of tannins in the husk.—R. S. POTTER. *J. Soc. Chem. Ind.*, 59 (1940), 45–47. (E. G. V.)

Strophanthus Glucoside—Manufacture of. Extracts of *Strophanthus kombé*, rich in glucoside, are repeatedly dissolved in a solvent miscible with water (*e. g.*, methyl alcohol, ethyl alcohol) and precipitated by means of a solvent (*e. g.*, ethyl ether, chloroform, light petroleum) immisicible with water but miscible with that used first. The glucoside may be purified by recrystallization. Acetylation is thus unnecessary.—CHEM. WORKS formerly SANDOZ. Brit. pat. 52,526; through *J. Soc. Chem. Ind.*, 58 (1939), 1293. (E. G. V.)

Sugar—Determination of Minute Amounts of, by the α-Naphthol Test. The reagents must contain no ammonia, acetone, nitrate, nitrite, selenium dioxide or ferric salt. The best procedure is to add 5 drops of a 20% alcoholic solution of α-naphthol to 2 cc. of the sucrose solution, then 5 cc. of concentrated sulfuric acid and the color developed for three minutes at room temperature. For amounts of sucrose between 150 and 20 parts per million in 10 cc. of solution, 8 color standards are made with various mixtures of rhodamine, erythrosin, toluidine blue and tartrazine. Amounts from 20 to 1 parts per million require 10 standards made of mixtures of cobaltic nitrate and cupric sulfate.—T. YOSIDA. *Rept. Govt. Sugar Expt. Sta. Tainan, Formosa*, 6 (1939), 60–76; through *Chem. Abstr.*, 33 (1939), 7238. (E. G. V.)

α-Sugars—Structure of. IV. Preparation of 6-Methylfructose. The following summary is given: (1) The evidence of assignment of structure to the five possible monomethylglucoses has been reviewed. (2) 6-Methylfructose has been prepared from 6-methylglucose phenylosazone by conversion to the osone followed by reduction. (3) 6-Methylfructose was obtained as a non-crystallizable syrup which reduced Fehling's solution on warming, restored the color slowly to Schiff's reagent, decolorized dilute potassium permanganate solution in the cold, had $[\alpha]_D^{18}$ + 17.15° and showed no mutarotation in aqueous solution. (4) 6-Methylfructose condensed with methyl alcohol containing hydrogen chloride under conditions for γ-fructoside formation. 6-Methyl-γ-methylfructoside has been isolated as a brown syrup having $[\alpha]_D^{17}$ + 25.05° in aqueous solution.—F. HARTLEY and W. H. LINNELL. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 150–161. (S. W. G.)

α-Sugars—Structure of. III. Preparation of 3:4:6-Trimethylfructose. The authors give the following summary: (1) 3:4:6-Trimethylfructose has been prepared by hydrolysis of methylated inulin and purified by conversion to the methylfructoside followed by hydrolysis. (2) The position of the substituents in 3:4:6-trimethylfructose has been established by the identity of its phenylosazone with that of 3:4:6-trimethylglucose. (3) The synthesis of 3:4:6-trimethylglucose has been effected by an unambiguous route.—F. HARTLEY and W. H. LINNELL. *Quart. J. Pharm. Pharmacol.*, 12 (1939), 743–752. (S. W. G.)

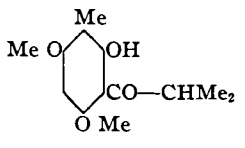
Other Plant Principles

Adalin—Dimorphism of. Adalin exists in two modifications, known as α- and β-adalins. α-Adalin is obtained by slow recrystallization of adalin from methanol or acetone whereas β-adalin is obtained by rapid cooling of a solution of adalin in the above solvents. Both forms are stable at room temperature but on heating at 70°, α-adalin is rapidly transformed into the β-form. Thus the melting point of α-adalin cannot be ascertained since it is

converted to β-adalin (melting point, 118°). The various physical properties are tabulated. Photographs and diagrams illustrating the crystalline structures of these substances are given in the Japanese text with accompanying titles in the *Transactions*.—ATUSI WATANABE. *J. Pharm. Soc. Japan*, 60 (1940), 416–419 (in German, 163–164). (N. L.)

Alfalfa—Isolation of α-Spinasterol from. The isolation of a sterol from alfalfa has been described together with evidence showing its identity with α-spinasterol. The acetate and *m*-dinitrobenzoate were prepared; hydrogenation and titration with perbenzoic acid were carried out in establishing its identity. It has been pointed out that Dam's medicagosterol II also obtained from alfalfa is in all probability α-spinasterol.—E. FERNHOLZ and M. L. MOORE. *J. Am. Chem. Soc.*, 61 (1939), 2467. (E. B. S.)

Baeckeol—Structure and Synthesis of. Baeckeol, $C_{13}H_{18}O_4$, a phenol related to aspidinol and other anthelmintic substances, is found in the essential oils from various species of *Myrtaceae*. A formula suggested for baeckeol by Penfold and Simonsen (*J. Proc. Roy. Soc., N. S. W.*, 56 (1922), 87) has been shown to be incorrect and this formula



suggested in its place. The new formula agrees with the degradation of baeckeol by sodium ethoxide fusion to methylphloroglucinol dimethyl ether and peroxide oxidation to isobutyric acid. The carbonyl group could not be demonstrated but diazomethane treatment of methylphloroisobutyrophenone (I) yielded pale yellow needles m. p. 102–103°, and gave an acetyl derivative m. p. 73°, identical, respectively, with baeckeol and its acetyl derivative. Laboratory directions for preparing I were also given.—G. R. RAMAGE and W. J. I. STOWE. *J. Chem. Soc.*, (1940), 425–426. (W. T. S.)

Borneol—Preparation of Synthetic, by the Acetic Acid Method. The pinene-camphene fraction, boiling point 153–163°, of abies oil, when treated with acetic acid, acetic anhydride and boron oxide and then treated with 60% sulfuric acid and hydrolyzed, gives a mixture of borneol and isoborneol.—M. IMOTO. *J. Soc. Chem. Ind. Japan*, 42 (1939), 341; through *J. Soc. Chem. Ind.*, 59 (1940), 114. (E. G. V.)

Calameone—Constitution of. Dihydrocalameone, $C_{15}H_{28}O_2$, was prepared by dissolving calameone in 96% alcohol and treating it with palladium-charcoal catalyst in the presence of magnesium oxide. Crystals are white, melt at 133° and are readily soluble in almost all organic solvents except pentane. Calamene, $C_{15}H_{22}$, made by the action of 50% sulfuric acid on calameone, boils at 137–139°. Calamene, on treatment with sulfur, yielded cadaline.—HORST BÖHME. *Arch. pharm.*, 278 (1940), 1–7. (L. K.)

Camphor and Camphor Oil. The source and method of isolation are reviewed.—F. D. DODGE. *Soap*, 16 (1940), No. 5, 32; through *Am. Perfumer*, 41 (1940), No. 1, 69. (G. W. F.)

Cannabis Indica—Isolation of Cannabidiol from. Observation on the Structure of Cannabinol. The authors outlined the method by which cannabidiol was isolated, along with an equal amount of cannabinol, from a fresh sample of Egyptian hemp. Cannabidiol was reported by Adams, *et al.* (*J. Am. Chem. Soc.*, 62 (1940), 196) to be a typical constituent of American hemp resin. Cannabinol has not yet been isolated from American hemp (Adams, *et al., loc. cit.*). Cannabidiol contains two double bonds, neither being conjugated with the aromatic nucleus as indicated by its absorption spectrum. Analyses indicated its formula to be $C_{21}H_{30}O_2$ which is in agreement with that suggested by the American authors. These facts support the view of Adams, *et al.*, that cannabidiol is a doubly unsaturated derivative of menthylbenzene containing two hydroxyl and one *n*-amyl groups located at the positions in the benzene ring corresponding too those substituted in cannabinol. The structure of cannabinol is discussed and two possible structures of it are presented.—A. JACOB and A. R. TODD. *J. Chem. Soc.*, (1940), 649–653. (W. T. S.)

Carotene and Allied Pigments—Constitution and Physiological Significance of. A review.—R. A. MORTON. *Chemistry and Industry*, 59 (1940), 301–307. (E. G. V.)

Catechins—Isolation of, from Java Tea Leaves. From eight different samples of Java tea leaf the crystalline catechins, *l*-epi-catechin and gallocatechin were obtained; crystalline catechin gallate was obtained from only four of the samples. Yields of amorphous tea tannins were 2% to 2.5%. The wide range of melting point and of specific rotation of these amorphous tannins, the separation by means of ether into a soluble and an insoluble fraction and the partial precipitation by means of gelatin solution, all point to the fact that this tannin is not a single compound. The splitting off of gallic acid from the amorphous tannin by boiling with 5% sulfuric acid was confirmed, but the yield was lower than that obtained with tannase. No sugars could be isolated from the amorphous tannin. The formalin-hydrochloric acid method is considered the most simple and accurate for the quantitative determination of tea tannins, the boiling of the precipitate was found to be unnecessary and to lead to inaccuracy.—W. B. DEIJS. *Rec. Trav. Chim. Pays-Bas*, 58 (1939), 805; through *Quart. J. Pharm. Pharmacol.*, 13 (1940), 179. (S. W. G.)

Coumarin—Manufacture of.—U. S. pat. 2,204,008; through *Am. Perfumer*, 41 (1940), No. 4, 73. (G. W. F.)

Derris Root—New Constituents of. A new substance, $C_{20}H_{16}O_6$, named derride has been isolated from derris. The crude substance is separated from the ethereal solution resulting from the exhaustive extraction of the root by ether. Treatment of the crude sticky residue with methyl alcohol and ethyl acetate gave a white solid which on recrystallization from methyl alcohol was obtained as white needles m. p. 157°. Derride is *l*-rotatory ($[\alpha]_D^{29} = -20°$ in benzene) and is considered to be the precursor in the plant of the optically inactive isomeric substance isolated from an ethereal solution of derris resin after treatment with alkali. Derride gave a persistent purple color with sulfuric acid and sodium nitrite, a deep blue color with a drop of nitric acid and a few drops of strong solution of ammonia, and no color with alcoholic ferric chloride solution. Derride was readily soluble in benzene, ethyl acetate and carbon tetrachloride and sparingly soluble in methyl alcohol and ether. A dehydro-compound and an oxime of derride were prepared. From a Sumatra-type derris root containing no rotenone, an optically active substance was isolated by concentration of the ethereal extract. The substance had the formula $C_{20}H_{16}O_7$, m. p. 244°, $[\alpha]_D^{29} = +107°$ in benzene and was sparingly soluble in ether, methyl alcohol, ethyl alcohol, acetone and benzene. It is suggested that this new substance bears to toxicarol a relation similar to that of derride to *iso*rotenone. *l*-Toxicarol and sumatrol were also isolated. A summary of the substances which have been isolated

from derris root is given.—T. H. MEYER and D. R. KOOLHAAS. *Rec. Trav. Chim. Pays-Bas*, 58 (1939), 207; through *Quart. J Pharm. Pharmacol.*, 12 (1939), 623. (S. W. G.)

Gums—Aseptic Autolysis of Some Insoluble. The author states that the hydrolyzing ferments which provoke the formation of insoluble gums persist in the gums after their exudation and are capable, in aseptic media, of continuing their action and making the gums soluble. Furthermore, when the gums have completely dissolved the ferment is still active and can split an added hemicellulose such as the albumin obtained from *Gleditschia triacanthos*. This action was demonstrated with the gums from *Acacia decurrens*, var. *mollissima* and *Prunus avium*.—L. LUTZ. *Bull. sci. pharmacol.*, 47 (1940), 12–15. (S. W. G.)

Lactucarium and Latucyl. A discussion.—ALFRED DORNER. *Deut. Med. Wochschr.*, 65 (1939), 136–137. (L. K.)

Linalool and Geraniol—Action of Ethyl Acetoacetate with. In an attempt to acetylate certain alcohols by reacting them with acetoacetic ester in the presence of an alkaline catalyst, simple alcoholysis occurred. Applying this reaction to geraniol and linalool a reaction resembling the Michael condensation took place with geranylacetone being produced from each alcohol instead of the expected ester. The ketone was identified by comparison with an authentic sample.—M. F. CARROL. *J. Chem. Soc.*, (1940), 704–706. (W. T. S.)

Pectin—Comments on a Monograph for. The tentative monograph of Powers and Beeler is discussed.—AKSEL G. OLSEN. *Bull. Natl. Formulary Committee*, 9 (1940), 28–31. (H. M. B.)

Pectin—Proposed National Formulary Monograph for. A detailed monograph is offered.—GLENN H. JOSEPH. *Bull. Natl. Formulary Committee*, 9 (1940), 20–23. (H. M. B.)

Pectin—Revised Tentative National Formulary Monograph for. A monograph revised in part on the comments of Olsen (*Bull. Natl. Formulary Comm.*, 9 (1940), 28–31).—JUSTIN L. POWERS and EMERSON C. BEELER. *Bull. Natl. Formulary Committee*, 9 (1940), 31–34. (H. M. B.)

Pectin Studies. V. Organic Base Derivatives of Pectinic and Pectic Acids. Present conception of pectin simplifies interpretation of its properties. The colloidal properties presumably are indicative of the number of units in the chain, the only difference between pectic acid and pectinic acid being that the former is more completely demethoxylated than the latter. Various properties are discussed. Experimental work involved forming various organic base derivatives and differences were studied. Pectic salts of several simple aliphatic amines, substituted aliphatic amines, aromatic amines, heterocyclic bases, guanidines and substituted hydrazines were among the compounds prepared.—REINHOLD F. STUEWER and AKSEL G. OLSEN. *Jour. A. Ph. A.*, 29 (1940), 303. (Z. M. C.)

Quillaic Acid—Structure of, and Its Relation to Echinocystic Acid. Compare *Pharm. Abstr.*, 6 (1940), 200. Previous to this, Elliott and Kon (*J. Chem. Soc.*, (1939), 1130) had shown that quillaic acid is a dihydroxyaldehyde and that one hydroxyl is a part of the CH(OH)—CMe—CHO group, which is also present in gypsogenin. Degradation experiments now show that the second hydroxyl group is attached to a carbon atom immediately adjacent to the quaternary carbon atom carrying the carboxyl group. This structure is the same as that found in echinocystic acid by Noller and White. Replacement of the aldehyde group of qualliac acid by methyl yields deoxyquillaic acid. This acid shows great similarity to echinocystic acid but they are still regarded by these authors as different compounds. The degradation experiments are outlined in detail.—DONALD F. ELLIOTT, GEORGE A. R. KON and HENRY R. SOPER. *J. Chem. Soc.*, (1940), 612–617. (W. T. S.)

Tannic Acid U. S. P. II. Relationship Between Glucose and Tannic Acid. The claim that the glucose obtained by acid hydrolysis of tannic acid is a part of the tannic acid molecule has been studied quantitatively. A method for quantitative determination was perfected. The glucose is present in variable amounts as an impurity.—CLIFTON E. MILLER and L. WAIT RISING. *Jour. A. Ph. A.*, 29 (1940), 394. (Z. M. C.)

1,3,8-Trihydroxyanthraquinone. Frangula emodin was acetylated to form triacetyl emodin which on oxidation and subsequent hydrolysis was converted to emodic acid. Decarboxylation of emodic acid by copper chromite and quinoline gave good yields of 1,3,8-trihydroxyanthraquinone. This, and a sample of 1,3,8-trihydroxyanthraquinone from emodic acid in *Penicillium cyclopium* Westling, were found identical with synthetic samples. 1,3,8-Triaceto- and 1,3,8-trimethoxyanthraquinone were also prepared and described.—W. K. ANSLOW, J. BREEN, and H. RAISTRICK. *J. Chem. Soc.*, (1940), 427–428. (W. T. S.)

Xanthophyll from Wheat Germ—Crystalline. While attempting to isolate the tocopherols by new methods, a crystalline xanthophyll was obtained. Experimental details are reported.—O. GISVOLD. *Jour. A. Ph. A.*, 29 (1940), 312. (Z. M. C.)

Fixed Oils, Fats and Waxes

Aleurites Trisperma—Composition of the Oil of. The oil of *A. trisperma* is very similar to China wood oil, and may find application in the paint and varnish industry. It does not, however, gelatinize on heating, and contains considerably less eleostearic acid. The oil was found to consist mainly of the glycerides of eleostearic, linoleic, oleic, palmitic and stearic acids. The composition was determined to be as follows: eleostearic acid, 47.3%; 9:12-linoleic acid, 18.0%; 9-oleic acid, 10.8%; palmitic acid, 9.1%; stearic acid, 7.9%; glyceryl residue, 4.2%; unsaponifiable matter, 0.5%; undetermined. 2.2%.—E. D. G. FRAHM and D. R. KOOLHAAS. *Rec. Trav. Chim. Pays-Bas*, 58 (1939), 277; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 619. (S. W. G.)

Ben (Moringa) Seed Oil. The oil expressed from seed of the tree *Moringa oleifera* of Haiti gave the following characteristics: index of refraction at 25° 1.4761, iodine number (Hanus) 68, saponification number 186.4, acid value 0.74, unsaponifiable 1.5%. The results indicated that the oil contained the following percentages of fat acids: oleic 68.9, linoleic 3.8, myristic 1.5, palmitic 3.6, stearic 10.8, behenic 6.3, lignoceric 0.13.—G. S. JAMIESON. *Oil & Soap*, 16 (1939), 173–174; through *Chem. Abstr.*, 33 (1939), 8431. (E. G. V.)

Chaulmoogra Oils—Analysis of. III. Hydnocarpus Wightiana Oil. The qualitative and quantitative analyses of the total fatty acids of *H. wightiana* oil have been made by the method described in the first article of this series. This is the first quantitative analysis that has been made of this oil. Six constituents not previously reported have been found, four of which are new homologs of chaulmoogric acid. This analysis shows *H. wightiana* oil to be quite similar in composition to *Carpotroche braziliensis* oil.—H. I. COLE and H. T. CARDOSO. *J. Am. Chem. Soc.*, 61 (1939), 2351. (E. B. S.)

Cod Liver Oil in Emulsions—Simple Determination of. The following procedure is offered: Add to 5 Gm. of the emulsion in a porcelain dish, 20 cc.

isopropyl alcohol and stir with a small pestle. Add 10 cc. petroleum ether and mix well whereby the emulsion is broken and the oil and water pass into the propyl alcohol-petroleum ether phase and the other material in the emulsion agglomerates. Filter through a plaited filter into a 200-cc. flask accurately weighed and be certain that the emulsion residue does not come onto the filter. Repeat the extraction once more with 15 cc. propyl alcohol and 10 cc. petroleum ether, once with 10 cc. of each, and then with 3 × 10 cc. of petroleum ether. At the last extraction transfer quantitatively the residue onto the filter. Evaporate the filtrate on a water bath until there is no longer an odor of propyl alcohol, dry in a dessicator and weigh the oil residue. The residue on the filter paper can also be weighed and used for the determination of its components.—H. PANZER. *Deut. Apoth. Ztg.*, 55 (1940), 382. (H. M. B.)

Emulsions of Fatty Oils—Preparation of. Fresh vegetable oils cannot be readily and directly emulsified; oils aged by storage or artificially by blowing (for example, at 160° for 4–5 days) emulsify readily with water and a base, for example, aqueous ammonia, triethanolamine or morpholine, but only aged olive oil yielded a permanently stable emulsion. The other oils could be emulsified by rubbing them up with oleic acid soap of an organic base before adding water. Preparations of aged olive oil are suitable for making cold and cleansing creams.—L. S. MALOWAN. *Seifensieder-Ztg.*, 65 (1938), 988–989; through *Chem. Abstr.*, 33 (1939), 8430. (E. G. V.)

Fat Stability. Data on the hydrolysis of beef tallow, lard, coconut oil, palm kernel oil, sesame oil, peanut oil, olive oil and trioleins at various temperatures between 60° and 120° C. show that degree of fat splitting was not dependent upon amount of free fatty acid originally present, but increased with higher temperatures. Each oil has a critical temperature at and above which hydrolysis was more rapid. Critical temperatures are as follows: coconut 100° C., palm kernel 90° C., olive 90° C., peanut 80° C., soybean 80° C.—E. C. GLIMM, H. WITTMEYER and W. JAHN-HELD. *Z. Untersuch. Lebensm.*, 78 (1940), 285; through *Am. Perfumer*, 41 (1940), No. 4, 87. (G. W. F.)

Fats—Homogenizing Agents for. Ozokerite is described as a homogenizer for wax solvent pastes. Effect of acid refining on ozokerite is stressed. Presence of ozokerite prevents formation of wax crystals.—K. S. NITSCHE. *Fette u. Seifen*, 46 (1939), 391; through *Am. Perfumer*, 41 (1940), No. 4, 77. (G. W. F.)

Fats, Oils and Fatty Acids—Preliminary Acid Treatment of. Generally, the preliminary acid treatment of fats, oils and fatty acids with sulfuric or phosphoric acid is followed by very good results. With proper handling of materials the loss in fat oil, or fatty acid on treatment is negligible.—JOSEF HETZER. *Seifensieder-Zeitung*, 67 (1940), 201. (L. K.)

Fats—Role of, in Cosmetics and Pharmaceutical Preparations. A review of the purpose served by various fats in formulating cosmetic and pharmaceutical preparations.—L. D. EDWARDS. *Oil and Soap*, 17 (1940), 82; through *Am. Perfumer*, 41 (1940), No. 4, 85. (G. W. F.)

German Whale Gland Experiments. Before the outbreak of war, German chemists were conducting experiments with whale glands with a view to developing medicinal extracts. The whale liver, on account of its size and its probable rich content of vitamin A, is said to be an important potential source for medicinal oils.—ANON. *Chemist and Druggist*, 133 (1940), 101. (A. C. DeD.)

Hardened Fats—Determination of the Hydrogen Number of. The material is dissolved in 96–100% acetic acid at 80–100°, and absorption of hydrogen in the presence of a platinum-barium sulfate catalyst is measured, using a special apparatus (described). A linear relation between the melting point and hydrogen number of hardened fats of melting point 35–60° is demonstrated.—G. SHABROVA. *Maslob. Zhir. Delo*, 5 (1939), 34–37; through *J. Soc. Chem. Ind.*, 59 (1940), 149. (E. G. V.)

Liver Oil—Chromatographic Separation of Higher Alcohols and Hydrocarbons of the Unsaponifiable Matter of. The substances (for example, batyl, chimyl, selachyl and oleyl alcohols, squalene, pristane and gadusene), although similar in solubilities and other properties, are separated by adsorption on aluminum oxide.—Z. NAKAMIYA. *Bull. Inst. Phys. Chem. Res. Japan*, 18 (1939), 787–788; through *J. Soc. Chem. Ind.*, 59 (1940), 149. (E. G. V.)

Margaric Acid. In his researches on fats in 1811, Chevreul found a saturated acid, $C_{17}H_{34}O_2$, which he called margaric because its pearly appearance suggested mother of pearl, "margaron" in the Greek. Subsequently it has been classified as a specific entity, as a mixture of oleic and stearic acids, and has been confused with palmitic acid. It is found in human fat and in spermaceti. The name has been confounded with margarine, causing some misconception. In addition to margaric acid, daturic acid isolated from the seeds of *Datura stramonium*, and an oil of similar characteristics isolated from alfalfa seed, all have the same formula, $C_{17}H_{34}O_2$, heptadecilic acid.—C. H. LIBERALLI. *Rev. quim. farm.*, 4 (1939), 31. (G. S. G.)

Oils and Fats—Preserving. A suitable antioxidant is 0.5 to 1% of vegetable lecithin, for vegetable oils. Animal fats are preserved with 10% of palm oil. In the case of non-edible oils, 0.1% hydroquinone or pyrocatechol is recommended, especially for castor oil.—ANON. *Chem. Trade J. & Chem. Eng.*, 106 (1940), 22; through *Am. Perfumer*, 41 (1940), No. 4, 89. (G. W. F.)

Oils—Hydrogenation of Mixed. This work reports the hydrogenation of mixtures of coconut oil and pilinut, peanut or kapok oils at 180° C., and one atmosphere pressure. Mixtures of 1:1, 2:1, 3:1 and 4:1 using a catalyst of 1%, 2% and 3% concentration were investigated. The products obtained using mixtures of coconut-pilinut oils and coconut-peanut oils were white, hard and comparable to the vegetable lards sold in the market. Those from mixtures of coconut-kapok were of inferior quality. The time required for hydrogenation was shortened by increasing the concentration of the nickel catalyst used. Increasing the proportion of coconut oil used in the mixtures required greater concentration of the catalyst and longer time of hydrogenation.—A. I. DE LEON and F. AGDEPPA. *Philippine Agric.*, 28 (1939), 225; through *Proc. Fifth Sci. Convention Nat. Res. Council Philippines Bull.*, 23 (1939), 151. (P. A. F.)

Oilseeds and Oils—Jugoslavian. Analytical data are recorded for castor and soya beans, and for flax, sunflower and rape seed, as well as for the oils expressed therefrom. It is concluded that flax is best cultivated in the northern, and castor bean in the southern, parts of Jugoslavia; soy bean, sunflower and rape appear to be less dependent on climate.—D. DELIC. *Bull. soc. chim. Yougoslav.*, 10 (1939), 63–74; through *J. Soc. Chem. Ind.*, 59 (1940), 290. (E. G. V.)

Olive Oil (and Other Oils)—Behavior of, with Antimony Trichloride. It was found that a 33.33% solution of antimony chloride in chloroform produced a blue color with olive oil and other oils, and also with vitamin A, synthetic vitamin A and various

carotenoids and other sterols such as cholesterol, squalene and the carotenes. It may be presumed that olive oil contains either vitamin A or some related substance which, when absorbed into the body, would be converted into vitamin A.—WALLACE H. DICKHART. *Am. J. Pharm.*, 112 (1940), 131. (R. R. F.)

Olive Oil—Iodine Value of Unsaponifiable Matter of. The iodine value of the unsaponifiable matter of olive oil is due to the presence of squalene and other unsaturated hydrocarbons, and it is proposed that the result of its determination should be expressed as a percentage of squalene. For the iodine value determination the method of Hanus or of Margosches may be used. Old rancid oils give much lower figures than fresh ones, but those obtained by the method of Hanus are about 80% higher than those by the Margosches method. With oils other than olive, the former method also gives higher results. The authors therefore prefer the Margosches method. Details are as follows: Five Gm. of the oil is saponified with 3 cc. of potassium hydroxide solution (47%) and 20 cc. of alcohol (95%) for fifteen minutes in a special flask. After cooling, 50 cc. of petroleum ether (60–70°) is added, and the mixture is swirled round; 20 cc. of water is then added, and the mixture is swirled round repeatedly. After standing over night, 25 cc. of the fat solution is transferred to a 100-cc. flask and evaporated to dryness, the residue, dried at 105°, being weighed. This weight, multiplied by 35.2, gives the amount of hydrocarbons in percentage. The residue is then dissolved, with warming, in 2.5 cc. of absolute alcohol, and cooled, any opalescence appearing being neglected, though no droplets should be present. This solution is treated with 5.0 cc. of Margosches alcoholic iodine solution ($N/5$), mixed by shaking, and then treated immediately with 50 cc. of water. After three minutes the mixture is titrated with $N/10$ sodium thiosulfate. The number of cc. of $N/10$ thiosulfate used up, multiplied by 0.120, gives the percentage of squalene in the oil. Normal figures for fresh olive oil are 0.41 to 0.54; for old oil 0.07; colza oil 0.05; arachis oil 0.05 to 0.07; sesame oil 0.10; linseed oil 0.08; peach kernel oil 0.02; cod liver oil 0.05.—J. GROSSFELD and H. TIMM. *Z. Untersuch. Lebensm.*, 77 (1939), 249; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 761. (S. W. G.)

Olive Oil—Vitamin Content of. The oil contains no more than 1 I.U. of vitamin A per Gm.—M. R. MARCILLE. *Ann. chim. anal.*, 21 (1939), 7; through *Am. Perfumer*, 41 (1940), No. 4, 89. (G. W. F.)

Olive Oils—Fluorescence of Virgin. The fluorescence given by various types of olive oil is described. Oils treated with carbon lose their fluorescing properties.—A. LISO. *Boll. soc. ital. biol. sper.*, 14 (1939), 465-466; through *J. Soc. Chem. Ind.*, 59 (1940), 149. (E. G. V.)

Sulfonated Oils. Three sulfonated oils were analyzed by the Hart method. The results showed that sulfonation of castor oil occurred primarily at the hydroxyl group and secondarily at the double bond. Sulfonation of neat's foot-oil took place at the double bond primarily. Sulfonation of cod liver oil took place at the double bond of the more unsaturated compounds. Iso-oleic acid is formed during the sulfation of neat's foot-oil. Other findings relating to analysis are described.—R. M. KOPPENHOEFER. *J. Am. Leather Chem. Assoc.*, 34 (1940), 622; through *Am. Perfumer*, 41 (1940), No. 4, 91. (G. W. F.)

Sulfonated Oils—Structure and Preparation of. Among the alcohols sulfonated were oleic, cetyl, stearic, lauric, spermacetic, carnaubic and alcohols which are obtained by the reduction of the oxyacids arising as a result of the oxidation of montan wax. Furthermore, tertiary alcohols, acyl derivatives of unsaturated fatty alcohols, etc., also were used as starting points. Among the sulfonating agents were sulfuric acid, fuming sulfuric acid, chloro-sulfonic acid, pyridine plus SO_3, pyridine plus chlorosulfonic acid, sodium pyrosulfate and dimethylaniline plus chloro-sulfonic acid. Sulfonation of saturated fatty alcohols progresses smoothly and results in almost 100% yields. In the case of unsaturated fatty alcohols, where there are side reactions, less often used sulfonating agents are employed in order to obtain pure sulfuric acid esters of the unsaturated alcohols.—M. SINGER. *Seifensieder-Zeitung*, 67 (1940), 208. (L. K.)

Tangan-Tangan Oil—Medicinal Use of, as Substitute for Imported Castor Oil. Tangan-tangan oil is a good substitute for imported castor oil. There is evidence to show that the laxative efficiency of the former is somewhat better than that of the latter. Tangan-tangan oil, or castor oil from Philippine *Ricinus communis*, is practically devoid of side-effects such as vomiting, which is produced in many instances by the imported castor oil. Both tangan-tangan oil and the imported castor oil produce after-constipation but this effect is more frequent with the former than with the latter. Cats are suitable laboratory animals for testing the cathartic efficiency of purgative oil. Tangan-tangan oil, if prepared by cold expression, does not contain the highly poisonous ricin with which the oil is associated in the beans.—ROMULO GUEVARA. *Proc. Fifth Sci. Convention Nat. Res. Council Philippines Bull.*, 23 (1939), 133. (P. A. F.)

Thiocyanogen Values of Some Fats Used in Pharmacy. Comparison with Iodine Values. *Reagent.* Suspend 12 Gm. of lead thiocyanate (prepared by mixing an aqueous solution of 170 Gm. of lead nitrate with a solution of 100 Gm. of potassium thiocyanate, filtering, washing and drying) in 30 cc. of anhydrous acetic acid and add 5 Gm. of bromine. Mix, filter and make up to 100 cc. with anhydrous acetic acid. The solution ($^2/_3$ N) should not be kept longer than three days. *Method.* Accurately weigh the sample (0.15 Gm. for substances giving values between 150 and 200; 0.2 Gm. for substances giving values between 50 and 100; 0.6 Gm. for substances giving values between 30 and 50; 1 Gm. for substances giving values between 0 and 30) in a small bulb, transfer to a 250-cc. iodine flask, add 10 cc. of the reagent, break the bulb and let stand in the dark for twenty-four hours. (The thiocyanogen polymerizes in the light.) Add rapidly 15 cc. of a 10% aqueous solution of potassium iodide, and titrate the liberated iodine with $0.1N$ thiosulfate. Carry out a blank using 10 cc. of the reagent. Let N cc. represent the thiosulfate used in the control, n cc. the thiosulfate used for the sample determination, p the weight of the sample, then $\frac{(N - n) \times 1.27}{p}$ gives the thiocyanogen value expressed in grams of iodine fixed by 100 Gm. of sample. The values obtained by the Hanus iodine bromide method and the thiocyanogen method with samples of oils, fats and waxes were fairly close but in all cases the thiocyanogen method gave lower values, with much lower values in the cases of peanut and poppy-seed oils. The variation is attributed to substitution occurring together with addition when the more active iodine bromide reagent is used.—P. MESNARD. *Bull. trav. soc. pharm. Bordeaux*, 78 (1940), 11-19. (S. W. G.)

Tung Oil—Reaction of Wijs Solution with. The behavior of Wijs solution toward α-eleostearic acid, oleic acid and a mixture of the two acids has been studied by varying the proportions of Wijs solution to acid and the time of contact. The two-stage halogen absorption from Wijs solution by α-eleo-

stearic acid forming a tetrachloro addition product in the first stage, and the addition of iodine monochloride to oleic acid have been quantitatively established. The difference in halogen absorption between α-eleostearic acid and oleic acid has been applied to the analysis of a mixture of the two acids and to the analysis of α-eleostearic acid glyceride in tung oil, further work being carried out for developing the latter analysis into a reliable method. The chemical kinetics for the absorption of halogen from Wijs solution by α-eleostearic acid has been studied and two specific reaction rates have been determined. Böeseken's assumption of a bimolecular reaction for the second stage halogen absorption by α-eleostearic acid from Wijs solution has been found incorrect. A combination of two simultaneous bimolecular reactions has been suggested. The variation of the iodine value of tung oil with temperature, excess of reagent and time of contact with reagent has been explained.—S. W. WAN and D. B. HU. *J. Am. Chem. Soc.*, 61 (1939), 2277. (E. B. S.)

White Oil—Medicinal. A high viscosity medicinal white oil of good storage qualities and taste is prepared substantially free from occluded air and containing carbon dioxide in amount sufficient to yield at a temperature of 21° C. an oil with adsorbed carbon dioxide content of at least 0.1%.—GEO. A. KESSLER and LEO LIBERTHSON, assignors to L. SONNEBORN SONS, INC. U. S. pat. 2,193,819, March 19, 1940. (A. P.-C.)

Unclassified

Acid Emulsifier. The reaction product of acid hydrolysis of wood pulp is neutralized with alkali and reacidified with an inorganic acid.—Russian pat. 52,312; through *Am. Perfumer*, 41 (1940), No. 4, 77. (G. W. F.)

Acridine Series—Chemotherapeutic Studies in. VII. Hydroxy and Chloroalkoxy Derivatives of Acridine. The following summary is given: (1) Certain hydroxy and chloroalkoxy derivatives of acridine have been prepared, with the object of exploring their bactericidal properties. (2) The following compounds have been prepared for the first time: 6-methoxy-4′-ethoxydiphenylamine-2-carboxylic acid, 3-ethoxy-5-chloro-9-methoxyacridine, 3-ethoxy-9-methoxy-acridine, 3:9-dihydroxyacridine, 3-ethoxy-9-methoxyacridine, 3-ethoxy-9-methoxy-5:10-dihydroacridine, 4-methoxy-4′-ethoxydiphenylamine-2-carboxylic acid, 3-ethoxy-5-chloro-7-methoxyacridine, 3:7-dihydroxyacridone. (3) New methods of preparation of 3-hydroxyacridone and 3-hydroxyacridine and of hydrolysis and dealkylation of mesochloroalkoxyacridines have been evolved.—W. H. LINNELL and R. E. STUCKEY. *Quart. J. Pharm. Pharmacol.*, 13 (1940), 162–171. (S. W. G.)

β-Alkylcholine Salts and Their Acyl Esters. By reaction of the appropriate chlorohydrin with 2 molecules of dimethyl amine in benzene at 115° to 120° C. for about 15 hours, *l*-dimethylamino-2-alkanols are obtained, such as the butanol and pentanol derivatives, from which, by reaction with an alkyl iodide at room temperature, and by further reaction with silver chloride if the chloride is desired as a final product, products are obtained such as the chlorides and (or) iodides of β-ethyl-, β-propyl-, β-butyl-, β-hexyl-, β-heptylcholine. Although the β-hexylcholine and the β-heptylcholine chlorides exhibit a muscarine action, the corresponding propyl and butyl derivatives exhibit the typical, so-called nicotinic action.—RANDOLPH T. MAJOR and HOWARD T. BONNETT, assignors to MERCK & CO., INC. U. S. pat. 2,192,925, March 12, 1940. (A. P.-C.)

Amines. A review of the properties and uses of triethanolamine, isopropanolamine and morpholine.—H. F. ROBERTSON. *Can. Chem. & Process Ind.*, 24 (1940), 290; through *Am. Perfumer*, 41 (1940), No. 4, 75. (G. W. F.)

5-Aminoacridines—Substituted, Preparation and Antimalarial Action of. Ten derivatives of substituted 5-aminoacridines have been prepared by the general method of heating the substituted 5-phenoxyacridine with the substituting amine in molten phenol at 100° for one hour, and examined for antimalarial activity. Two compounds, 8-chloro-3-dimethylamino-5-(δ-diethylamino-α-methylbutyl)-aminoacridine, an oil, and 2-chloro-5-(γ-piperidino-β-hydroxypropyl)-amino-7-methoxyacridine, a crystalline substance, showed a pronounced schizotropic action in bird malaria.—O. M. TSCHERNTZOV and N. S. DROZDOV. *J. Gen. Chem., U. S. S. R.*, 9 (1939), 1435; through *Quart. J. Pharm. Pharmacol.*, 13 (1940), 184. (S. W. G.)

Antipyrine and Related Compounds—Constitution of. II. Proof of Betaine Form. Triopyrine trioxide when treated with hydrogen peroxide in alkaline solution at 26° C. for 36 hours gave antipyrine. It is well known that thiopyrine trioxide is prepared by oxidation of thiopyrine or by the action of sodium sulfite on 1-phenyl-5-chloro-2,3-dimethylpyrazoline chloride. The author believes that formation of antipyrine from thiopyrine is a sufficient proof for betaine type structure for antipyrine; furthermore he points out that the proof for betaine type structure advanced by Komada is based upon an incorrect assumption and thinks that the thiopyrine dioxide reported by him should be removed from the literature.—R. KITAMURA. *J. Pharm. Soc. Japan*, 58 (1938), 161–164; through *Chimie & Industrie*, 41 (1939), 1145. (A. P.-C.)

Barbituric Acid Compounds. Barbituric acids substituted in the 5-position by $CH_2{:}C(CH_3)CHR$ and R' (in which R and R' represent hydrocarbon radicals containing not more than 6 carbon atoms) and substituted or not in the *l*-position by alkali metal, alkaline earth metal, ammonium, alkylammonium or dialkylammonium, are specified. Those compounds in which R' is an ethyl or allyl group are of relatively low toxicity and high hypnotic and soporific effect.—WM. G. BYWATER, assignor to PARKE, DAVIS & CO. U. S. pat. 2,200,538, May 14, 1940. (A. P.-C.)

Benzene and Its Monoalkyl Derivatives—Combustion Products of. The progressive formation of products in the combustion of benzene and its monoalkyl derivatives has been studied by analytical methods, and the characteristic features of the isothermal reactions at various temperatures have been established. A cool-flame reaction of *n*-propylbenzene has also been investigated, and by comparison with corresponding isothermal combustions, it is concluded that the propagation of cool-flames is conditioned by the accumulation of a phenylalkyl hydroperoxide. The results are interpreted in the light of the theory of the two-stage process, and a schematic mechanism for the main combustion reaction is outlined. This comprises degradation of the side-chain (if present) and rupture of the benzene nucleus, followed by rapid degradation of the higher aliphatic aldehyde thus formed, yielding finally formaldehyde and the ultimate combustion products CO_2, CO and H_2O.—J. H. BURGOYNE. *Proc. Roy. Soc.* (London) B., 129 (1940), S 36. (W. T. S.)

Boric Acid—Condensation Product of Higher Fatty Acid with. A hard wax-like substance is prepared by condensing hardened castor oil with boric acid and acetic anhydride.—U. S. pat. 2,187,334; through *Am. Perfumer*, 41 (1940), No. 4, 87. (G. W. F.)

p-Carbamidobenzenesulfonamide. This is prepared by causing *p*-aminobenzenesulfonamide to react with a water-soluble cyanate such as potassium cyanate, in acid solution, or with nitrourea, in solution. The product has therapeutic properties. For medicinal use, it is preferably dissolved in a glycol, such as propylene glycol, to which water is added.—MORRIS S. KHARASCH and OTTO REINMUTH, assignors to ELI LILLY & CO. U. S. pat. 2,191,432, Feb. 20, 1940. (A. P.-C.)

2,4-Cholestadiene—Action of Perbenzoic Acid on. From a study of carcinogenic compounds this report is made. 2,4-Cholestadiene (I), in chloroform, on treatment with 1 mole of perbenzoic acid gave 35% yield of 4,5-dihydroxycholestene-2 (II). A sample of II was reconverted to I by refluxing with KOH. Acetic anhydride converted II to 4-acetoxy-5-hydroxycholestene-2. Catalytic reduction of II produced 4,5-dihydroxycholestane (III) which could be titrated with $Pb(CH_3COO)_4$. The 4-monoacetate of III resulted from its treatment with acetic anhydride. Two moles of perbenzoic acid reacted with I producing a chloride of the formula, $C_{27}H_{45}ClO_2$. Treatment of this chloride with alcoholic KOH gave a dioxide, $C_{27}H_{44}O_2$.—WERNER BERGMANN and EVALD L. SKAU. *J. Org. Chem.*, 5 (1940), 439–442. (W. T. S.)

Cinnamic Acids—Preparation and Oxidation of Substituted. Cinnamic acids have been prepared from several substitution products of vanillin. These acids were converted smoothly into good yields of the corresponding acetyl derivatives. Oxidation of these acetyl derivatives with potassium permanganate solution caused the loss of the acyl radical and much degradation occurred. In each case the product which formed was the aldehyde, the original vanillin substitution product. None of the corresponding acid could be isolated.—VICTOR S. WEBSTER. *Am. J. Pharm.*, 112 (1940), 291. (R. R. F.)

Dehydroabietic Acid and Dehydroabietinol—Hydroxyl and Amino Derivatives of. Detailed procedures for the preparation of these compounds are given by which good yields are obtained. The phenol 6-hydroxydehydroabietinol has some of the structural features of estradiol. These compounds, because of their structural similarity to important natural products are being investigated as to possible physiological worth.—L. F. FIESER and W. P. CAMPBELL. *J. Am. Chem. Soc.*, 61 (1939), 2528. (E. B. S.)

$\Delta^{5,6}$-*trans*-Dehydrodesoxyandrosterone. $\Delta^{5,6}$-*trans*-Dehydrodesoxyandrosterone was prepared by reduction of the ketone function in 17-position of androsterone, according to Clemmensen's iron filings method and according to Kishner-Wolff's sodium ethylate method. The unreduced fraction was separated by means of Girard and Sandulesco's reagent. Both methods gave the same compound which, after recrystallization, occurs as colorless needles melting at 104° C. The existence of the alcohol function and its *trans*-configuration were confirmed by precipitation with digitonoside. Ultimate analysis of the compound obtained by both methods agrees with the formula $C_{19}H_{30}O$. It possesses some androgenic activity, 25 times smaller than that of testosterone; estrogenic activity, determined on mice, is practically nil.—Y. RAOUL and P. MEUNIER. *Compt. rend.*, 207 (1938), 681–683; through *Chimie & Industrie*, 41 (1939), 1147. (A. P.-C.)

Desoxycodeine Studies. Desoxycodeine-D (Desoxyneopine). 8-Chlorodihydrocodide on treatment with sodium in cyclohexanol loses HCl to form a new desoxycodeine, designated desoxycodeine-D (I). The structure proposed for I represents it as the desoxy derivative of the rare alkaloid neopine. The structure is based on negative but convincing evidence. Desoxycodeine-D adds a molecule of H to give the dihydroderivative demonstrating its desoxy nature. Desoxycodeine-D-methine must have the stable β-methylmorphine arrangement of double linkages since it does not rearrange in the manner of α-γ-methylmorphimethines which form β- and δ-methylmorphimethines by undergoing a shift of their 7,8-unsaturated linkages into the 8,14-position thus showing conjugation with the 9,10-double bond. The von Braun cyanogen bromide degradation of I yielded an amorphous bromine-containing product instead of cyanodesoxycodeine-D as occurs with desoxycodeine-C known to possess a 7,8-unsaturation. I behaves pharmacologically like thebaine, another fact suggesting 8,14-unsaturation. A by-product (11%) in the dehalogenation of 8-chlorodihydrocodide was the demethylation product of I which could be reconverted to I by diazomethane.—LYNDON SMALL and JAMES E. MALLONEE. *J. Org. Chem.*, 5 (1940), 350–354. (W. T. S.)

Diphenylethylamine—Preparation of Hydroxyl Derivatives of. The methods of preparation of phenyldioxyphenylaminoethane and phenyltyramine are given in detail. The physical and chemical properties have been studied, and the compounds will be tested pharmacologically.—A. LESPAGNOL, J. TURLUR and L. LESPAGNOL. *Bull. sci. pharmacol.*, 46 (1939), 305–311. (S. W. G.)

Estrogens—Chemistry of Natural and Synthetic. A review is given of the chemical properties and structural formulas of the most important estrogenic substances, with especial consideration of the synthetic stilbestrol and related compounds. Stilbestrol is available in Denmark under the trade names: Estilben and Cyren. Another synthetic estrogen on the northern market is Sexadien, which is 3,4-(*p,p'*-diphenoxy)-2,4-hexadiene. Schemes of synthesis are shown and constants given. About 50 literature references are cited.—H. BAGGESGAARD-RASMUSSEN. *Arch. Pharm. Chemi*, 47 (1940), 433. (C. S. L.)

Flacourtiaceæ Alcohols—Esters of. By reaction of sulfuric or phosphoric acid with alcohols obtained by carboxylic reduction of the acids present in Flacourticeae oils, esters are formed which are lipoid-soluble, form neutral water-soluble salts and have bactericidal properties.—OZREN STEFANOVIC and GEORG STEFANOVIC. U. S. pat. 2,195,345, March 26, 1940. (A. P.-C.)

Formaldehyde—Process of Producing. Approximately equimolecular quantities of ethane and oxygen are passed through a porous partition of unglazed porcelain at a pressure of 1 to 20 atmospheres and a temperature of 400° to 600° C., and reaction products are rapidly withdrawn as they emerge and formaldehyde is separated from them, as by scrubbing with water.—WM. A. BONE and DUDLEY M. NEWITT, assignors to IMPERIAL CHEMICAL INDUSTRIES, LTD. U. S. pat. 2,196,188, April 9, 1940. (A. P.-C.)

Glass—Organic and Inorganic. A review of the nature and properties of glasses.—H. MOORE. *Chemistry and Industry*, 58 (1939), 1027–1037. (E. G. V.)

Growth-Inhibitory Polycyclic Compounds—Synthesis of. II. In continuation of previous work (*J. Chem. Soc.* (1939), 802) a further series of water-soluble compounds derived from the growth-inhibitory carcinogenic hydrocarbons, 10-methyl- and 9:10-dimethyl-1:2-benzanthracene, has been prepared. A preliminary report of tests for growth-inhibitory properties carried out with nineteen compounds, described in the present communication and in Part I (*loc. cit.*), showed that four of these

had definite activity; only one of the active compounds (sodium 1:2-benz-10-anthroate) was water-soluble. The introduction of hydroxyl and carboxyl groups is attended by marked loss of growth-inhibitory activity.—G. M. BARGER and J. W. COOK. *J. Chem. Soc.*, (1940), 409–412. (W. T. S.)

Halogenomorphides and -codides—Formation and Structure of. Mechanism of the Morphine-Apomorphine Transformation. Laboratory directions are given for the preparation of halogenomorphides and -codides which are of theoretical and practical importance. Morphine reacted with thionyl chloride to give α-chloromorphide as well as β-chloromorphide and a trichloromorphide of unknown composition. Hydrogenation of α-chloromorphide in glacial acetic acid gave a 52% yield of chlorodihydrocodide, a 40% yield of tetrahydrodesoxycodeine and a 7% yield of dihydrodesoxycodeine-D, establishing the halogen in α-chlorocodide on carbon 6. Efforts to show the position of the halogen in β-chlorocodide and bromocodide were not successful due to rearrangements, but data are presented in favor of both position 6 and 8, with the authors favoring the latter. A simplified mechanism is offered for the transformation of morphine into apomorphine through the intermediates, β-chloromorphide and dichlorodihydrodesoxymorphine. The first intermediate is formed by substituting chlorine for the alcoholic hydroxyl followed by an α,γ-shift, and the second results from the addition of hydrochloric acid to the cyclic ether group of β-chloromorphide.—LYNDON SMALL, BURT F. FARIS and JAMES E. MALLONEE. *J. Org. Chem.*, 5 (1940), 334–349. (W. T. S.)

Hydroxymandelonitrile Dibenzoates—Synthesis of. Because tyramine is biologically important an investigation of possible intermediates for the synthesis of it and its isomers was undertaken. Previous syntheses are reviewed. Buck prepared *p*-hydroxybenzaldehyde and subsequently reduced it to tyramine. Benzaldehyde, in the presence of potassium cyanide and benzoyl chloride, forms the benzoate of mandelonitrile. Together these reactions suggested a synthesis of tyramine and its isomers. Hydroxybenzaldehydes simultaneously undergo the Schotten-Bauman reaction. Ultimate results will be influenced by speeds of the reactions. Experimental work is reported in detail. Summarizing, the dibenzoates of the three isomeric hydroxymandelonitriles have been obtained by treating the benzoate of the hydroxybenzaldehyde with an equivalent of alkali cyanide and benzoyl chloride, and by treating the hydroxybenzaldehyde with an equivalent of pyridine, an equivalent of alkali cyanide and two equivalents of benzoyl chloride. Of the three isomeric dibenzoates, the *ortho* and *meta* compounds have been prepared, it is thought, for the first time. The benzoate of *m*-hydroxybenzaldehyde is also reported for the first time.—KENNETH E. HAMLIN, JR. and WALTER H. HARTUNG. *Jour. A. Ph. A.*, 29 (1940), 357. (Z. M. C.)

Isopropylamine Salts of Theophylline. Therapeutic compounds which are readily soluble in water, less soluble in 95% alcohol and almost insoluble in ether are obtained by reaction of theophylline monohydrate with mono-, di- or tri-isopropanolamine.—FREDERICK R. GREENBAUM, assignor to NATIONAL DRUG CO. U. S. pat. 2,196,495, April 9, 1940. (A. P.-C.)

Mercurated Carvacrol—Chemical Study of. Attempts have been made to increase the therapeutic action of certain organic compounds by introducing mercury into the nuclei. Some of this work is briefly reviewed. Experiments reported include the preparation of diacetoxymercuri-carvacrol, dichlormercuricarvacrol, sodium compound of dihydroxy-mercuricarvacrol and oxide of dihydroxy-mercuri-carvacrol and their analysis. From the results of the experiments it was concluded that a disubstituted product results when carvacrol is made to react with mercuric acetate. Nitration may be used to determine the positions occupied by the acetoxy-mercuri groups in the carvacrol molecule. Curative effects of dichlorimercuri-carvacrol were reported by Burt and ointments of this compound are being tried.—J. B. ABCEDE and A. C. SANTOS. *Jour. A. Ph. A.*, 29 (1940), 362. (Z. M. C.)

2-Methyl-3-phytyl-1,4-naphthoquinone—Synthesis of. The preparation of 2-methyl-3-phytyl-1,4-naphthoquinone is described thoroughly as well as its characterization. Its antihemorrhagic activity was well investigated.—L. F. FIESER. *J. Am. Chem. Soc.*, 61 (1939), 2559. (E. B. S.)

N-Methyl Sulfites and N-Methanesulfinic Acid Salts of 1-Aryl-2,3-dialkyl-4-alkylaminopyrazolones. *N*-Methyl sulfites and *N*-methanesulfinic acid salts of 1-aryl-2,3-dialkyl-4-alkylaminopyrazolones which contain a branched aliphatic radical at the 4-N have both an antipyretic and narcotic action and are suitable for use as analgesics. Various details of manufacture of a number of such products are given.—MAX BOCKMÜHL, WALTER KROHS, FRITZ RACKE and KURT WINDISCH, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,193,788, March 19, 1940. (A. P.-C.)

Morphimethine Series—Study of. This is one of the papers resulting from a long range study sponsored by several well-known national agencies and directed toward a solution of the drug addiction problem. Demethylation of crystalline dihydro-β-methylmorphimethine, the preparation of which is described, and tetrahydro-α-methylmorphimethine with 16% HBr in glacial acetic acid resulted in a migration of the isolated double bond in the dihydro-β-compound. An acetyl-β-morphimethine was obtained in a yield of 1% by Vongerichten's method of degradation.—ERICH MOSETTIG. *J. Org. Chem.*, 5 (1940), 401–415. (W. T. S.)

Morpholine—Use of, for Production of "Mannich" Bases. The use of the saturated heterocyclic base morpholine in the preparation of "Mannich" ketonic tertiary bases is described. A number of these bases and their salts have been prepared, several of the latter showing definite local anesthetic action. The most powerful effect was observed with the hydrochloride of the benzoate of morpholinobutanol. The hydrochloride of the *p*-nitrobenzoate of the same base was active, though not so powerfully. A fairly strong action was also observed with the hydrochloride of *beta*-morpholinoethylphenyl ketone. The hydrochlorides of the benzoates and *p*-nitrobenzoates of morpholinomethylcyclohexanol and the morpholinomethylmethylcyclohexanols showed only mild local anesthetic action.—R. H. HARRADENCE and F. LIONS. *J. Proc. Roy. Soc. N. S. W.*, 72 (1939), 233; through *Quart. J. Pharm. Pharmacol.*, 12 (1939), 636. (S. W. G.)

Phenolphthalein—Process of Producing. A mixture of phenol and phthalic anhydride is heated to liquefaction, anhydrous zinc chloride and aluminum chloride are added and the temperature is raised to between 100° and 135° C., and after formation of the phenolphthalein the aluminum chloride, zinc chloride and unreacted phenol and phthalic anhydride are separated by washing with hot acidified water.—MAX HUBACHER, assignor to EX LAX, INC. U. S. pat. 2,192,485. March 5, 1940. (A. P.-C.)

2-Phenylquinoline Derivatives—Synthetic Studies of. III. Phenylquinoline is inactive in malaria.

However, various derivatives of phenylquinoline have desirable therapeutic properties. A series of compounds was prepared by the reaction of Grignard reagents on 2-phenylquinoline-4-carbonic acid ethyl ester (atophan) to give, for example, 2-phenylquinolyl-4-dimethylcarbinol.—K. FEIST, W. AWE, M. KUKLINSKI and W. VÖLKSEN. *Arch. pharm.*, 276 (1939), 271–279. (M. F. W. D.)

Quinolines—Synthesis of Derivatives of.—U. S. pat. 2,211,538; through *Am. Perfumer*, 41 (1940), No. 4, 73. (G. W. F.)

Sitosterol Complex—Studies in the. The Structure of α_1-Sitosterol. Certain experimental results on the determination of the structure of α_1-sitosterol are described. An absorption spectrum study, and the non-formation of an addition compound with maleic anhydride, indicate that the two double bonds in α_1-sitosterol are not conjugated. Only one of the double bonds in α_1-sitosteryl acetate can be hydrogenated under ordinary conditions. α_1-Dihydrositosterol and its acetate have been prepared and characterized. Evidence is offered to show that α_1-dihydrositosterol is an α-stenol. The second double bond which is resistant to hydrogenation can be isomerized by dry hydrogen chloride into a position which is easy to hydrogenate. α_1-Isodihydrositosterol and its acetate have been prepared and characterized. Evidence is offered to show that α_1-isodihydrositosteryl acetate gives α_1-sitostanol acetate. Certain characteristic properties of this latter compound have also been described and we have observed that it may be obtained also by the direct complete hydrogenation of α_1-sitosteryl acetate at 65–70° in the presence of a small amount of concentrated hydrochloric acid. α_1-Sitostanol and stigmastanol are not identical. This difference is probably the result of isomerization in the hydrocarbon side chain. A structural formula for α_1-sitosterol has been proposed.—S. BERNSTEIN and E. S. WALLIS. *J. Am. Chem. Soc.*, 61 (1939), 2308. (E. B. S.)

Sterols—Investigations of. XVIII. Δ^{5-6}-Androstenol-17-one-7. Δ^{5-6}-Androstenol-17-one-7 was prepared by treating *trans*-dehydroandrosterone with thionyl chloride. The 3-chloro-androstenone-17 (m. p. 154°) so obtained, was reduced, using sodium and ethyl alcohol, to Δ^{5-6}-androstenol-17 (m. p. 161–162°). Acetylation of this alcohol gave the acetate, which on oxidation with chromic anhydride in glacial acetic acid, formed the acetate (m. p. 212–213°). Saponification of this keto-ester gave Δ^{5-6}-androstenol-17-one-7 (m. p. 143–144°). The acetate of the product so obtained was found to possess about one-tenth the physiological activity of testosterone.—SATORU KUWADA and KENITI TUTIHASI. *J. Pharm. Soc. Japan*, 59 (1939), 352–356 (in German, 115–116). (N. L.)

Sulfanilamide Derivatives. II. A number of sulfanilamide derivatives was prepared in which the amino group was substituted by various complex acyl groups and the amido group by ethanol and isopropanolamine. None showed activity comparable with sulfanilamide, only a few exhibiting any activity at all.—R. ADAMS, P. H. LONG and A. JEANES. *J. Am. Chem. Soc.*, 61 (1939), 2346. (E. B. S.)

Sulfanilamide—Heterocyclic Derivatives of, Synthetic Investigations in the Class of. 2-(*p*-Aminobenzenesulfonamide)pyridine was obtained by boiling a mixture of 14 Gm. of *p*-acetylaminobenzenesulfonyl chloride with 5.7 Gm. of α-aminopyridine and 5.7 Gm. of sodium bicarbonate in dry acetone for two hours. On cooling, the sulfonamide separated in the form of crystals which were filtered off and recrystallized from methanol; 18 Gm. of the sulfonamide (m. p. 227°) so obtained was hydrolyzed by heating with 15% hydrochloric acid on a water bath. After twenty minutes, the solution was neutralized and crystals of 2-(*p*-aminobenzenesulfonamide)-pyridine (m. p. 189°) separated. After recrystallization from methanol, the yield was 12 Gm. Using the same procedure, the following sulfonamides were also prepared. *2-(p-Aminobenzene sulfonamide)-6-aminopyridine.*—10.7 Gm. of *p*-acetylaminobenzenesulfonyl chloride, 2.5 Gm. of 2,6-diaminopyridine and 3.9 Gm. of sodium bicarbonate gave 5 Gm. of 2-(*p*-acetylaminobenzenesulfonamide)-6-aminopyridine, m. p. 243°, which on acid hydrolysis gave 2.5 Gm. of 2-(*p*-aminobenzenesulfonamide)-6-aminopyridine, m. p. 208°. *2-(p-Aminobenzenesulfonamide)-6-methylpyridine.*—23.6 Gm. of *p*-acetylaminobenzenesulfonyl chloride, 10 Gm. of 2-amino-6-methyl-pyridine and 8.6 Gm. of sodium bicarbonate gave 2.5 Gm. of the acetylsulfonamide, which on hydrolysis gave 15 Gm. of 2-(*p*-aminobenzenesulfonamide)-6-methyl-pyridine, m. p. 222°. *2-(p-Aminobenzenesulfonamide)-quinoline.*—3.6 Gm. of *p*-acetylaminobenzenesulfonyl chloride, 2.2 Gm. of α-aminoquinoline and 1.4 Gm. of sodium bicarbonate gave 4 Gm. of 2-(*p*-acetylaminobenzenesulfonamide)-quinoline, m. p. 241°, which on acid methanolysis gave 2 Gm. of 2-(*p*-aminobenzenesulfonamide)-quinoline, m. p. 195°. *2-(p-Aminobenzenesulfonamide)-4-methylthiazol.*—12.5 Gm. of *p*-acetylaminobenzenesulfonyl chloride, 5.7 Gm. of 2-amino-4-methyl-thiazole and 4.3 Gm. of sodium bicarbonate gave 12 Gm. of the acetylsulfonamide which on acid methanolysis gave 6 Gm. of 2-(*p*-aminobenzenesulfonamide)-4-methyl-thiazole, m. p. 241°.—KYOSUKE TSUDA, ZENTARO ITIKAWA and DOSHO SO. *J. Pharm. Soc. Japan*, 59 (1939), 204–215 (in German, 155–158). (N. L.)

Sympathol (Synephrine)—Study of Intermediates of. The condensation reaction between phenyl benzoate (I) and chloroacetyl chloride (II) in the presence of aluminum chloride has been studied with a view toward improving the method for preparing sympathol, usually obtained in low yields. Condensation of 19.8 Gm. of I and 11.2 Gm. of II yielded 4 Gm. of *p*-(choloroacetoxy)benzophenone which was hydrolyzed with HCl to *p*-hydroxybenzophenone. *p*-Benzyloxyacetophenone (III) was obtained by refluxing *p*-hydroxyacetophenone and benzyl chloride with Na for five hours. *p*-Benzyloxy-α-bromoacetophenone (IV) and *p*-benzyloxy-α-α-dibromoacetophenone (V) were readily prepared by bromination of III in chloroform. Treatment of V with methylbenzylamine gave *p*-benzyloxy-α-methylbenzylaminoacetophenone (VI). 3,5-Dibromo-4-hydroxyacetophenone (VII) was obtained in good yields by brominating *p*-hydroxyacetophenone in CH_3COOH. The methyl ether (VIII) and the benzyl ether (IX) of VII were prepared. Measured bromination of IX yielded respectively, the α-bromo- and the α-α-dibromo-derivatives. Both 3,5-dibromo-4-hydroxy-α-bromoacetophenone and the corresponding α-α-dibromo-derivative were prepared by brominating V. A Claisen condensation of III with butyl nitrite produced *p*-benzyloxy-α-isonitrosoacetophenone (X) which on reduction gave *p*-benzyloxy-α-α-aminoacetophenone. The Claisen condensation with the same reactants using HCl as a catalyst gave *p*-benzyloxybenzoic acid. In like manner 3,4-dibenzyloxybenzoic acid resulted from 3,4-dibenzyloxypropiophenone and 3,4-dibenzyloxyacetophenone. Thus, a series of new intermediates useful in the preparation of sympathol and related amino alcohols have been prepared.—HILL M. PRIESTLEY and EUGENE MONESS. *J. Org. Chem.*, 5 (1940), 355–361. (W. T. S.)