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PHARMACEUTICAL ABSTRACTS

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ABSTRACTORS

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PHARMACOLOGY, TOXICOLOGY, AND THERAPEUTICS

THERAPEUTICS (*Continued*)

Sulfamidothiazole (2090 RP) in Meningitis and Infections. The authors report satisfactory results obtained by the ingestion of sulfamidothiazole (2090 RP) without intrarachidal treatment in meningococcal cases. This sulfamide is well tolerated, even with large doses in severe cases. The temperature improvement (sometimes great) need not be interrupted, which was said to be continued even after the appearance of the polyuric crisis. The concentration of 4 mg. per 100 cc. of blood is said to be optimal; this corresponds to a minimal of formation of conjugated derivatives (most always with sulfapyridine) but the clinical improvement often may be attained with lower doses, as those which have been stated for sulfapyridine. This new sulfamide appears to be more active and better tolerated than those which have preceded it. The authors also report equal effectiveness in a case of septicemia and exanthematic typhus.—CELICE, GRENIER and FALLOT. *Soc. Méd. des Hopitaux*, July 26, 1940; through *Presse méd.*, 58–59 (1940), 641. (W. H. H.)

Sulfanilamide and Antitoxin—Use of, in the Treatment of Scarlet Fever. Six hundred and eighty patients treated for scarlet fever were divided into mild and "more severe" groups. In the mild group the cases treated with sulfanilamide showed a 13% complication rate, while the controls in the same group showed 33 per cent complications. In the more severe group of cases the controls and those treated with scarlet fever antitoxin alone showed rates of 60 and 41%, respectively, while those treated with sulfanilamide alone or in combination with antitoxin showed a rate of approximately 24%. From these reports the conclusion is drawn that the use of sulfanilamide in scarlet fever reduces the incidence of complications. Scarlet fever antitoxin has a beneficial effect on the toxic phase of the disease by reducing the length of the febrile period to a greater extent than does the administration of sulfanilamide. The toxic effects of sulfanilamide in this series were not serious and the authors believe they were not of sufficient gravity to militate against routine use of the drug.—M. G. GORDEN N. H. SOLOMON and S. F. PEARLMAN. *J. Pediatrics*, 19 (1941), 76; through *Abbott Abstract Service*, (1941), No. 973. (F. J. S.)

Sulfanilamide—Effect of Local Application of, on Wound Healing. The local application of sulfanilamide crystals in the edges and in the immediate vicinity of stomach wounds in rats did not affect the healing of these wounds. Microscopical examination showed a mild foreign body reaction produced by occasional embedded crystals.—MAX TAFFEL and SAMUEL C. HARVEY. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 202. (A. E. M.)

Sulfanilamide—Local Use of, in the Eye. Experiments were made on rabbits in which an 0.8% solution of sulfanilamide in normal saline was instilled into the eyes every ten minutes for four hours. The level of sulfanilamide attained in the aqueous humor by this method ranged between 2.1 and 8.7 mg. per 100 cc. Instillation of 2.5% neoprontosil into the conjunctival sac failed to produce any measurable amount of sulfanilamide in the aqueous humor. Subconjunctival injection of the solution produced only small amounts in the aqueous humor. Various ointments containing sulfanilamide were made and tried. The most satisfactory one had a base consisting of sodium alginate, aquaphor, petrolatum and castor oil. This ointment contained 5% of sulfanilamide in a finely divided colloidal state. When this was placed in the rabbit's eye every half hour for four hours the concentrations in the aqueous humor ranged between 26.9 and 39.9 mg. per 100 cc.—J. S. GUYTON. *Am. J. Ophthalmol.*, 24 (1941), 292; through *Abbott Abstract Service*, (1941), No. 967. (F. J. S.)

Sulfanilamide Spray—Use of, in the Treatment of Colds. During the early part of 1941, a spray of sulfanilamide for the nose and throat was used in the treatment of colds among students of a school. Beginning at the same time, the school showed the best health record of any year since the founding of the school in 1934. To make the spray, three 5-gr. tablets of sulfanilamide or two $7\frac{1}{2}$-gr. tablets of sulfanilamide were dissolved in one ounce of hot water. The solution was used every two or three hours for 48 hours. The author is convinced that the effects of the spray are beneficial. The majority of colds and sore throats cleared up in about half the usual time. The spray probably has no effect on the virus that causes the cold, but is said to be markedly effective against the secondary invaders which in some cases result in sinusitis, bronchitis, pneumonia and otitis media. The earlier the cold is treated the better the chance of holding such complications in check. The author believes that the use of the spray somewhat limits the contagiousness of colds.—N. C. STEVENS. *New Engl. J. Med.*, 225 (1941), 430; through *Abbott Abstract Service*, (1942), No. 1004. (F. J. S.)

Sulfanilamide—Use of, in Glycerin for Local Treatment of Impetigo. Sulfanilamide is soluble in water only to approximately 0.8%, although it is much more soluble in alcohol or glycerin. Accordingly, the author prepared a supersaturated solution of powdered sulfanilamide in glycerin for local application. This has proved very successful in all cases of impetigo, acute infectious dermatitis, folliculitis, septic ulcers and other streptococcic and staphylococcic infections. The solution may be easily made in the physician's office by the addition of 1 or 2 drams of powdered sulfanilamide to each ounce of slightly warm glycerin. If more powder than the glyerin will dissolve is added, the adherent unabsorbed powder serves as an excellent protective dressing. Application of the solution may be readily performed with a cotton swab two or three times daily without bandaging, although the time required for a cure is much shortened if daily applications are made with thin strips of gauze saturated with the solution and covered with a bandage.—E. S. LAIN. *Arch. Dermatol. Syphilol.*, 44 (1941), 257; through *Abbott Abstract Service*, (1942), No. 1001. (F. J. S.)

Sulfapyridine and Heparin in Bacterial Endocarditis. A case of subacute bacterial endocarditis is described in which treatment with sulfapyridine and heparin was attempted, but the patient died from cerebral hemorrhage. This treatment is attended by a risk of vascular accidents. The cases so far published suggest that this risk may be greater when a preliminary course of sulfapyridine fails to sterilize the blood and to stop embolic signs. An investigation into the relative activity of three different brands of heparin was made. There appeared to be a wide divergence in the activity of the advertised units. This disparity is in part attributable to the fact that the methods of standardization of these brands are all different.—C. M. FLETCHER. *Lancet*, 239 (1940), 512. (W. H. H.)

Sulfapyridine and Sulfathiazole in the Treatment of Pneumonia—Comparison of. The authors have clinically and biochemically compared sulfapyridine and sulfathiazole in the treatment of pneumonia in a Kentucky hospital. Data embrace 103 cases treated with sulfapyridine and 56 cases with sulfathiazole. In the winter and spring of 1939, sulfapyridine was given to 79 patients with lobar pneumonia with 2 deaths and to 25 patients with broncho-

pneumonia with 4 deaths. In the spring and fall of 1940, sulfathiazole was given to 42 patients with lobar pneumonia with 2 deaths. Eleven of the 103 sulfapyridine cases developed empyema, none of the 56 sulfathiazole cases did. Temperature falls sooner after sulfathiazole than after sulfapyridine. Sulfathiazole is more quickly absorbed but sulfapyridine more completely. Sulfathiazole is eliminated more rapidly. Sulfathiazole is less poisonous producing less vomiting than sulfapyridine and no agranulocytosis or hematuria, as was the case in a few instances with sulfapyridine.—J. MURRAY KINSMAN and JOHN WALKER MOORE. *Southern Med. J.*, 34 (1941), 497–504. (W. T. S.)

Sulfapyridine in Cerebrospinal Fever. Forty-five consecutive cases of epidemic cerebrospinal fever in young adults have been used to investigate the best method of administration of sulfapyridine. All the patients have returned to duty in the R. A. F., and have remained free from any sequels. The concentration of sulfapyridine in the cerebrospinal fluid was higher in a group treated without thecal drainage than in those in which repeated lumbar puncture was performed. The significance of this is discussed in relation to the absorption of sulfapyridine. It is concluded that when adequate doses of sulfapyridine are given the disease can be effectively controlled without therapeutic lumbar puncture.—D. WILLIAMS and D. BRINTON. *Lancet*, 239 (1940), 482. (W. H. H.)

Sulfapyridine "8-7-7-6" Treatment of Acute Gonorrheal Urethritis in the Male. Sulfapyridine "8-7-7-6" plan (administration of 8 Gm. on the first day, 7 Gm. on the second and third days, and 6 Gm. on the fourth day) of therapy is a safe and very efficient method of treatment of gonorrheal infections in young, healthy adults who can be hospitalized for an average period of five days. It gives a higher percentage of true cures than any other sulfonamide plan of therapy, with about half the loss of effective man days, and does not cause the development of a symptomatic carrier states and late relapses. It is felt that inadequate drainage, early during chemotherapy, of all sealed foci of glandular structures communicating with the urethra, plus small oral doses with the erratic individual absorption rates, are, primarily, the factors responsible for the development of sulfapyridine-resistant infections, asymptomatic carrier states and consequent late relapses.—JAMES P. PAPPAS. *Military Surgeon*, 90 (1942), 45. (F. J. S.)

Sulfapyridine in Gonococcal Vulvovaginitis. This drug produced speedy recovery in a 5-year old child who had not improved under treatment with septanilam and clinestrol.—S. K. SARKAR. *Indian Med. Gaz.*, 76 (1941), 93–94. (W. T. S.)

Sulfapyridine in the Treatment of Gonorrhea. In 75 patients with positive urethral smears two tablets of sulfapyridine three times a day for four days followed by a second course after one day's interval gave these results. Urine sediments were present in the urine of 11 of the 75 patients (after periods ranging from several days to more than 3 months). The medication produced no rashes but some complained of headaches, giddiness, vomiting and 6 showed a sudden rise of temperature at the end of the treatment.—C. E. K. NORMAN and D. DAVID. *Indian Med. Gaz.*, 76 (1941), 91. (W. T. S.)

Sulfapyridine in the Treatment of Pneumonia. The results obtained in 122 cases of pneumonia treated by the scheme of Evans and Gassiford are reported. In 80% of the cases the temperature fell in the course of the first twenty-eight hours. The total mortality was 3.2%, which ordinarily was 18.5% in Chile when compared to the subjects dying in the first twenty-four hours. With eight cases of bacterimia there were no deaths and in nine cases of Type III pneumonia there were no deaths. It has become almost a habit to administer this compound along with serum and is reported that no serious accidents have occurred with this medication. During the treatment of 23 cases of Type I and II with sulfapyridine and serum no deaths have occurred. The doses employed were less than those necessary when these two medicaments were used separately. Sulfapyridine is indicated for the normal treatment of pneumonia with the serum being used as a reserve in particular cases.—H. ALESSANDRI, A. ARMIJO, M. GARCIA and ROSENBLITT. *Presse méd.*, 68–69 (1940), 709. (W. H. H.)

Sulfapyridine—Use of Sulfur-Containing Compounds, Particularly Pentothal Sodium, in Conjunction with. This short paper has been written because it is felt that patients receiving sulfapyridine can safely be given pentothal and magnesium sulfate at the same time. Although this is not directly concerned with the matter of diet one is caused to wonder whether various sulfur-containing foods, such as eggs, need be withheld from the numerous patients receiving sulfapyridine.—E. J. R. SMITH. *Brit. Med. J.*, 4162 (1940), 488. (W. H. H.)

Sulfathiazole and Sulfamethylthiazole in Gonorrhea. Two thiazole derivatives of sulfanilamide were used in acute gonorrhea in males: sulfathiazole in 19 cases and sulfamethylthiazole in 20. Sulfathiazole appears to have a rapid initial therapeutic effect, comparable to that of sulfapyridine, in the treatment of acute gonorrhea. Sulfamethylthiazole has a slower action and is less efficient. The tolerance of these compounds, particularly of sulfathiazole, is high.—V. E. LLOYD and D. ERSKINE. *Lancet*, 239 (1940), 186. (W. H. H.)

Sulfathiazole—Case of Anuria Following. The present report of a case of anuria demonstrates the dangerous consequences that may follow the administration of even small doses of sulfathiazole. The patient was given 7 Gm. of sulfathiazole in seven doses when she became nauseated and passed smoky urine. Following this, she had constant desire to urinate but in 20 hours passed only about two teaspoonfuls. Intravenous administration of glucose saline, sodium bicarbonate and aminophyllin, and application of heat and enemata, all were without effect. Under cystoscopic examination a yellow-orange spherical concretion about the size of a pea was removed from one ureteral orifice and ureteral catheters were inserted with difficulty up to the pelvis in both ureters. With a catheter also placed in the bladder, the pelves were flushed with sterile water every two hours during the day for three days. Potassium citrate cleared up a bladder infection which occurred and in about three weeks after admission the patient was well.—H. K. DETWEILER, A. MACKAY and A. I. WILLINSKY. *Can. Med. Assoc. J.*, 45 (1941), 242; through *Abbott Abstract Service*, (1942), No. 1000. (F. J. S.)

Sulfathiazole in Cerebrospinal Fever. In the postepidemic period of 1940, ninety-six consecutive cases of cerebrospinal fever were treated with two deaths. In fifty-two cases sulfathiazole was used after one or more preliminary doses of sulfapyridine, and in forty-four cases sulfathiazole was used alone. The fatality rate of cases treated with sulfathiazole was 2.1% which compares favorably with previous series treated with serum and sulfanilamide and with sulfanilamide or sulfapyridine alone or combined. Sulfathiazole, though not tested in epidemic conditions, has rapidly cured some very acute cases. The evidence so far suggests that it is at least equal in potency to sulfapyridine in meningococcal disease. There is evidence that, with adequate dosage, bacteriostasis is complete and phagocytosis advanced

within twelve to twenty-four hours. Concentration in the C. S. F. varies from about 15 to 40% of that in the blood, and rarely is greater than 1.5 mg. per 100 cc. even on high dosage. The comparative rarity of nausea, vomiting and dehydration, and the absence of depression and mental confusion, make the treatment with sulfathiazole more pleasant, and the management of the case easier than with sulfapyridine. Other toxic effects are also rare. High dosage is well tolerated. One or two intravenous injections of the 5% sodium solution are recommended in all severe cases and where vomiting persists.—H. S. BANKS. *Lancet*, 240 (1941), 104. (W. H. H.)

Sulfathiazole in Malaria. The authors show that the other sulfonamides used previously required smaller doses than sulfathiazole to accomplish the same effects. They believe that the relatively rapid excretion of sulfathiazole may be responsible for its failure to temporarily eliminate the parasites from the blood stream.—R. PAKENHAM-WALSH. *Lancet*, 239 (1940), 485. (W. H. H.)

Sulfathiazone—Treatment of Diarrhea with. The author administered sulfathiazole to 17 patients with infectious diarrhea, 9 of whom gave positive stool cultures for *B. dysenteriæ*. The drug was administered orally and in most cases a daily dose of 1.5 grains per pound of body weight was given over a period of 4.5 days. The average hospital stay was 5.8 days, diarrhea lasted an average of 2.25 days and there was no mortality. Other treatment consisted of rest in bed with an unrestricted bland diet. Under systems of treatment prevailing in past years, in 113 cases of infectious diarrhea during the years from 1930 to 1939, the average hospital stay was 21 days, duration of diarrhea 14 days and mortality about 36%. Sixteen patients with non-infectious diarrhea were treated with sulfathiazole; the average hospital stay was 6 days, duration of diarrhea 2 days with no deaths. In 111 cases treated during 1930–1939, the average stay was 17.5 days, duration of diarrhea 10 days and the mortality was about 14%.—E. V. ANDERSON. *J. Pediatrics*, 18 (1941), 732; through *Abbott Abstract Service*, (1941), No. 986. (F. J. S.)

Sulfathiazole—Use of, in Topical Application for Impetigo. The successful management of individual cases of impetigo is at times difficult. The most widely used drug, ammoniated mercury, has definite limitations. The authors of the present paper report a method of treatment which has been found almost uniformly satisfactory. Fifty-three patients with various infections, chiefly impetigo and ecthyma, were favorably treated by the local application of sulfathiazole powder in an ointment base. The drug in the ointment varied in concentration from 5 to 25%. A 10% concentration of sulfathiazole in cod liver oil ointment was given routinely for local application. Thirty-three patients with impetigo were reported to be well in from 4 to 10 days. One case was observed in which manifestation of sensitivity to sulfathiazole was evident, but no other detrimental local or systemic effects were observed. The time required for care, the simplicity of application and scarcity of reactions all recommend the treatment.—W. M. SAMS and L. CAPLAND. *Arch. Dermatol. Syphilol.*, 44 (1941), 226; through *Abbott Abstract Service*, (1941), No. 990. (F. J. S.)

Sulfhydryl Compounds and Wound Repair. It is felt that the sulfhydryl compounds offer a new and definite approach, backed by experimental evidence, in the treatment of a large wound where healing is retarded. If, however, the additional factor present in embryo extract (which stimulates migration in addition to mitosis) could also be isolated an even more effective weapon might be in our hands. The possible dangers accompanying inhibition of fibroplastic activity, thus allowing greater epithelial growth, yet have to be proved, and may or may not be real. It is more than likely that substances of the aldehyde class, *e. g.*, propionaldehyde, may eventually be found useful in such situations as the cornea and in plastic work, where even slight scarring is a matter of importance. In other situations the application above the dressing of wool and a firm bandage are satisfactory since Twyman (1922) has shown that epithelium will proliferate vigorously under pressures at which excessive fibroblastic growth is retarded. Used intelligently and in conjunction, therefore, all these factors regarding the physiology of tissue growth may be put to advantage.—J. F. RILEY. *Brit. Med. J.*, 4163 (1940), 516. (W. H. H.)

Sulfonamides in the Treatment of Bacillary Dysentery. Twenty cases of bacillary dysentery successfully treated with sulfapyridine and sulfathiazole are reported. Recent *in vitro* experiments explaining the favorable clinical results are described. A discussion by other authorities is appended.—SAMUEL F. RAVENEL and D. LESESNE SMITH. *Southern Med. J.*, 34 (1941), 504–511. (W. T. S.)

Testosterone Propionate in Functional Impotence. Six patients with functional impotence unassociated with any evidence of testicular dysfunction failed to respond to testosterone propionate given intramuscularly in doses varying from 50 to 100 mg. three times a week for two to six weeks. A seventh patient with hypogonadism also failed to respond after treatment for two months, probably because of a superadded psychological disturbance. It is concluded that testosterone propionate has no effect on impotence due to psychological disturbances.—A. W. SPENCE. *Brit. Med. J.*, 4160 (1940), 411. (W. H. H.)

Tetanus—Treatment of. The following conclusions are given: (1) A mortality rate of 20.8 per cent occurred in a series of 24 cases reported. (2) The injuries were considered so insignificant by the patients that only four of the 24 consulted a physician prior to the onset of tetanus. (3) This report reëmphasizes the fact that tetanus not infrequently follows a very trivial injury. (4) Because tetanus so frequently follows unrecognized and untreated trivial injuries, the morbidity and mortality rate can be reduced only by the general use of active immunization with tetanus toxoid.—M. L. ZEE, A. F. STEIN, M. F. ZELDES and M. L. BLATT. *Military Surgeon*, 89 (1941), 685. (F. J. S.)

Tetanus—Treatment of, with Sodium Evipan and M. & B. 693. During an epidemic of cerebrospinal fever in the Dinka districts of the Equatoria province of the Anglo-Egyptian Sudan, 22 cases of tetanus were seen. Of 22 patients with tetanus treated with M. & B. 693 and by continuous or intermittent narcosis with sodium evipan only 5 died. In view of Sharp's five successive recoveries with sulfanilamide on the Gold Coast it is possible that the doses of M. & B. 693 were on the small side. Tetanus has previously been rarely seen in Equatoria; but the natives believing that the disease was a type of cerebrospinal meningitis, brought 22 cases for treatment in six months. Of these, 6 cases followed infection with Guinea worm. It may be that the Guinea worm infection was purely incidental. It is believed that, when serum is unobtainable, the treatment described here may be of great value.—J. BRYANT and H. D. FAIRMAN. *Lancet*, 239 (1940), 263. (W. H. H.)

Therapeutic Drugs and the British Empire. Contributions of British Empire workers in research on insulin, endocrines, hormones, vitamins and other

therapeutic agents are discussed.—F. H. CARR. *Chemistry and Industry*, 60 (1941), 329–331. (E. G. V.)

Therapeutic Substances—Chemistry of. VI. Opium Alkaloids. A review.—ANON. *Chemist and Druggist*, 135 (1941), 117. (A. C. DeD.)

Therapeutics—Recent Developments in. XII. Organo-Metallic Compounds. Although a large number of organo-metallic compounds are known, the author discusses the five metals, compounds of which are of considerable therapeutic importance, arsenic, antimony, mercury, bismuth and gold.—F. PRESCOTT. *Chemist and Druggist*, 134 (1941), 130. (A. C. DeD.)

Thiamine Hydrochloride—Report of Cases of Hypersensitivity to. In recent months there has been a number of reports of the development of hypersensitivity to thiamine after intensive and prolonged treatment. In the present paper two such cases are described. In the first patient, after continuous treatment over a period of years, transient sensations of weakness and faintness developed a few minutes following the injection of 30 mg. of thiamine chloride combined with liver extract and a crude B complex preparation. A few days later, following a similar injection, the patient complained of excessive nervousness, the pulse rose from 70 to 120 and the face and hands were flushed. The second patient took thiamine chloride intermittently for several years both by mouth and by injection. A sensation of heat then developed an hour or more after injections of 20 to 50 mg. which were given at intervals of 3 or 4 days. This was followed rather quickly by profuse perspiration and marked tinnitus.—M. H. STILES. *J. Allergy*, 12 (1941), 507; through *Abbott Abstract Service*, (1941), No. 975. (F. J. S.)

Thyroid—Use of, in Relieving Certain Types of Dyspepsia. There is a certain type of patient presenting a history of migraine, and suffering from hyperacidity, nausea, belching and epigastric distress. The author has found that many of these patients, in whom no definite organic basis can be found for the dyspepsia, will benefit from the administration of thyroid in doses of $^1/_4$ grain three times daily. This treatment was suggested by the fact that many such patients show an elevated blood cholesterol and a low basal metabolic rate. In one series of cases observed while under thyroid treatment, about 69 per cent were relieved within a week. A careful watch should be kept or any symptoms of overdosage, and if any such symptoms appear, the medication should be discontinued temporarily. It may be resumed at a later time if the circumstances of the individual case seem to warrant it. The thyroid extract may influence the hypothalamus, which in turn may play a part in the regulation of gastrointestinal function.—R. C. MOEHLIG. *J. Clin. Endocrinol.*, 1 (1941), 29; through *Abbott Abstract Service*, (1941), No. 950. (F. J. S.)

Tulle Gras—Dressing for Burns. This, originally a French preparation, may be prepared by placing curtain net, with a mesh of 2 mm. in pieces 9 cm. square in a metal box slightly larger in size, and adding the following mixture: soft paraffin, 96 Gm.; balsam of Peru, 2 Gm.; halibut oil, 2 Gm., sufficient to impregnate and cover the material completely after sterilization.—A. H. MCINDOE. *Proc. Roy. Soc. Med.*, 34 (1940), 56; through *Quart. J. Pharm. Pharmacol.*, 14 (1941), 92. (S. W. G.)

Vitamin A Deficiency—Allowable Claims for. The Relation of Visual Defects and Skin Lesions. Contrary to usual claims, a review of the recent literature (19 reports) shows that it is difficult to maintain that visual symptoms (night blindness, xerophthalmia, etc.) and phrynoderma are both caused by the same deficiency, *i. e.*, vitamin A.—D. FITZGERALD MOORE. *J. Trop. Med. Hyg.*, 44 (1941), 47–48. (W. T. S.)

Vitamin A—Relation of, to Follicular Conjunctivitis. One hundred and nineteen children with follicular conjunctivitis of varying degrees of severity were studied with regard to the effect of supplementary vitamin A. Twenty-one of the 22 children in series 1 who received supplementary vitamin A showed improvement, and of these 11 were entirely free of conjunctivitis at the end of the nine-week experimental period. No improvement occurred in the eyes of any of the 17 children in the control group observed over the same period. In another series, 60 children who received graded amounts of vitamin A were improved while of 20 children who received no supplementary vitamin during the same period, only 2 who had received a more liberal diet showed any improvement. Apparently a time factor operates which seems to limit the rate of healing, and excessive doses of vitamin A do not increase this rate proportionately. It is observed that a deficiency of vitamin A appears to be the specific factor in the development of follicu ar conjuncitivitis in children.—M. R. SANDELS, H. D. CATE, K. P. WILKINSON and L. J. GRAVES. *Am. J. Dis. Child.*, 62 (1941), 101; through *Abbott Abstract Service*, (1941), No. 988. (F. J. S.)

Vitamin B Complex—Use of, in Cirrhosis of the Liver. Evidence is presented which suggests that there is a significant relationship between the occurrence of nutritional deficiency and cirrhosis of the liver. Cirrhosis, like beriberi and pellagra, is often associated with chronic alcoholism. Lack of certain food factors contained in yeast are said to cause fatty changes in the liver and impaired function. Studies indicate a protective action against hepatotoxins by the feeding of yeast or high protein diets. Fifty-four patients with cirrhosis were treated with a highly nutritious diet supplemented by Brewer's yeast and intramuscular injections of concentrated liver extract. The clinical course of the patients appeared to be more favorable than that of 386 cirrhosis patients who were not thus treated. It is possible that the lack of certain food factors leads directly to the development of cirrhosis, or it is possible that the malnourished liver becomes vulnerable to toxins which ordinarily would be disposed of.—A. J. PATEK, JR., and J. POST. *J. Clin. Invest.*, 20 (1941), 481; through *Abbott Abstract Service*, (1941), No. 994. (F. J. S.)

Vitamin B_1 and Liver Extract—Failure of, in Ulcerative Coli is. For some time liver extract has been used as an adjunct in the treatment of idiopathic ulcerative colitis. Recently, because of the successful use of vitamin B_1 in several types of deficiency diarrhea, the combination of liver extract and vitamin B_1 has been advocated in the treatment of ulcerative colitis. To test the efficacy of such therapy, the authors treated twelve patients, representing all the different stages of the disease with a combination of vitamin B_1 and liver extract. Of the twelve patients only one received any benefit which might have been due to the treatment. In a later attack, however, in the same patient the treatment had no effect although it was begun early. From observations made on these cases the authors conclude that the use of liver extract in combination with vitamin B_1 has contributed nothing to the treatment of this destructive disease and is of no particular value to the patient.—P. SHIFFER and L. K. FERGUSON. *Am. J. Digestive Diseases Nutrition*, 8 (1941), 300; through *Abbott Abstract Service*, (1941), No. 989. (F. J. S.)

Vitamin B_1—Role of, in Diseases of the Central Nervous System. The role of avitaminosis B_1 in

genesis of certain infections and toxic diseases of the central nervous system is actually clearly set up. It has a double interest, theoretical and practical. It appeared true that vitamin B_1 had a superior curative action to that of other therapeutic agents employed thus far, in a certain number of acute and chronic affections of the central nervous system due to infectious or toxic origin. The action of vitamin B_1 is not limited to curative but also becomes preventive. In this regard it should be used by subjects who intercurrently suffer from avitaminosis and in those who possess a permanent vitamin deficiency.—H. SCHAEFFER. *Presse méd.*, 58–59 (1940), 638. (W. H. H.)

Vitamin B_2 Complex and Glossitis in Pellagra. This paper is based on clinical observations made with the object of disentangling the etiology of tropical sprue and allied diseases. It has been shown that glossitis, probably of a similar nature and non-specific to the disease, is found in pellagra, sprue, pernicious anemia, the nutritional anemias and idiopathic steatorrhea, and that through this and other features, such as changes in the spinal cord, these diseases are closely related to one another. It is therefore suggested that a deficiency of vitamin B_2 complex, which appears to be common to all, may partially explain these phenomena. It is further suggested that nicotinic acid and riboflavin play an important part in the treatment of sprue as well as of pellagra, pernicious anemia, subacute combined degeneration of the cord and, to some extent, of idiopathic steatorrhea. It is further shown that these diseases are so closely related to one another that borderline cases are often encountered embodying the salient features of two or even more of the group. The opinion is therefore expressed that this group of diseases has as many affinities in common as there are factors involved (some of which still may be obscure); and that the clinical picture of any one of them varies with the presence or absence of any one or more of these factors.—P. MANSON-BAHR. *Lancet*, 239 (1940), 356. (W. H. H.)

Vitamin B_6—Successful Use of, in the Treatment of Sydenham's Chorea. Some of the present methods of treating chorea are attended with some danger and considerable discomfort to the patient. In view of satisfactory use of pyridoxine hydrochloride in the treatment of other conditions of nervousness and irritability it was thought that this therapy might be of value in chorea. A report of 3 cases of Sydenham's chorea successfully treated with vitamin B_6 is given. In all cases, subjective amelioration preceded but was soon followed by and closely associated with progressive objective improvement. The good response of these patients to vitamin B_6 calls forth the observation that one of the etiologic factors in chorea may very well be a vitamin deficiency. The ideal therapy would be one that gave successful results quickly, was easily and painlessly administered, had no harmful or discomforting effects and was inexpensive. All these objectives seem to have been fulfilled by pyridoxine in these cases.—J. SCHWARTZMAN, D. DRAGUTSKY and G. ROOK. *J. Pediat.*, 19 (1941), 201; through *Abbott Abstract Service*, (1941), No. 976. (F. J. S.)

Vitamin E in the Treatment of Habitual Abortion. A number of patients with a history of habitual abortion received 3 mg. of alpha-tocopherol acetate daily starting with their first prenatal visit which occurred between four and eleven weeks after pregnancy began. The treatment lasted from forty-four to one hundred and ninety-six days. Five out of seven of these cases were brought to term. For patients not meriting the classification of habitual abortion but who had had at least one previous abortion, the system of dosage was the same. In cases of threatened abortion the initial dose ranged from three to forty-eight milligrams orally in divided doses during the first twenty-four hours. The maintenance dose was 3 mg. daily unless symptoms persisted or reappeared. Treatment continued for from two to one hundred and one days. Bed rest was employed in addition. Of these cases twelve out of fifteen were brought to delivery.—S. LUBIN and R. WALTMAN. *Am. J. Obstet. Gynecol.*, 41 (1941), 960; through *Abbott Abstract Service*, (1941), No. 979. (F. J. S.

Vitamin K—Biologic Activity and Therapeutic Indications. The antihemorrhagic vitamin acts in conjunction with the formation of prothrombin. Deficient prothrombin may be due to lack of vitamin K or bile in the intestine, or inability of the liver to transform vitamin K into prothrombin. Various methods of biologic assay have been proposed and tried, both preventive and curative. Therapeutic indications for its use are hemorrhage in the newborn child, cases of icterus, congenital hydropsy and anemia of the newborn. Preventive use is in the last stages of pregnancy, and before and after operations. The dosage is: K_1 synthetic 10 mg. per day; K_3 2 mg. per day; K_5 3 to 5 mg. per day. In oral administration add 1 to 3 Gm. of bile daily or 6 to 18 cg. of sodium dioctylsulfosuccinate every 24 hours.—ROBERTO PASQUALIN. *Arq. Biol., Sao Paulo*, 25 (1941), 62. (G. S. G.)

Vitamin K—Effect of, in Hemorrhage in Newborn. Studies made on the prothrombin clotting time of blood taken from a series of apparently normal infants showed that the prothrombin clotting time is frequently prolonged. This tendency becomes more marked during the first few days of life, but eventually the value returns to the level usually found in healthy adults. Between the second and fifty days of life in many infants, a hemorrhagic tendency exists, shown by the elevated prothrombin time, and this hemorrhagic diathesis can be corrected by the administration of preparations containing vitamin K. One preparation frequently used was Abbott's Klotogen, a natural vitamin K concentrate in oil. As little as 2 cc. of this material is ordinarily enough to restore the clotting time of the infant's blood to normal. The material may also be given to the mother antepartum, and if it is given about 12 hours before delivery, the effect will be felt by the fetus. The authors believe that mothers should receive vitamin K before delivery and that newborn infants should also be given it.—P. S. ASTROWE, E. S. PALMERTON and V. HENDERSON. *J. Pediatrics*, 18 (1941), 507; through *Abbott Abstract Service*, (1941), No. 951. (F. J. S.)

Watermelon Fruit or Plant—Extracting the Therapeutic Principle from Various Parts of the. The dried watermelon part is reduced to a powder which is soaked in a fat solvent. The solvent is removed. The fats are removed and the residue is dried. The dried residue is soaked in water for a period of approximately 24 hours, and the mixture is filtered. The filtrate is dried. The dried filtrate is suspended in water at approximately 100° C., filtered, and the filtrate is dried. The dried filtrate is suspended in an aqueous alcoholic solution. The mixture is filtered and the filtrate is dried. The residue is extracted with ethyl ether, ethyl acetate or chloroform or mixtures thereof, the residue of this extract is subjected to further extraction with methanol and the extract is dried—MATTHEW EVERTZ. U. S. pat. 2,242,062, May 13, 1941. (A. P.-C.)

MODERN REMEDIES

Abfuhr Tablets, Vegetable "Schmöger" (Chem.-pharmaz. Labor. Felgenauer & Co., Hochheim/-

Erfurt. Inh. C. A. Schmöger) contain rhubarb, senna leaves, extract of aloes, medicated soap, precipitated sulfur and resins of jalap and colocynth. These are recommended as a purgative.—*Pharm. Zentralhalle*, 81 (1940), 185. (N. L.)

Adrenutol is an aqueous solution containing in 1 cc., adrenaline, 2 mg.; chlorbutol, 15 mg.; glycerin, 0.7 cc. A weaker solution containing 1 mg. of adrenaline per cc. is also issued. It is indicated for the treatment of asthma and other allergic disorders. In this combination it is claimed that the effect of the adrenaline is prolonged to 12 to 18 hrs. Adrenutol is contraindicated in asthmatic and other allergic conditions complicated with arteriosclerosis or high blood pressure. The average dose, by subcutaneous or intramuscular injection, is 1 cc.; in mild cases 1 cc. of the 1 mg. per cc. strength is recommended. Adrenutol is issued in ampuls of 1 cc. in boxes of 6 and 50.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 95. (S. W. G.)

Alumevan contains solution of aluminum acetate, $1^1/_4$ fl. oz.; syrup, 360 minims; essence of cherry, 4 minims; made up to 4 fl. oz. with purified honey. It is recommended for the treatment of hyperphosphatemia occurring in generalized fibrocystic and allied bone diseases and in rheumatoid arthritis. The dose is 1 dr. four times daily after food. This may be increased, but too large a dose tends to produce rickets. To accompany the treatment a pint of milk daily is recommended. Alumevan is issued in bottles of 4, 16, 40 and 80 fl. oz.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 95. (S. W. G.)

Arthradol is phenylethyl iodide and phenylethyl thiocyanate in the form of an emulsion, or ointment, for the treatment of rheumatism, sprains, rheumatoid arthritis and kindred ailments. The emulsion is diluted with five or six parts of hot water and applied on lint or flannel as a compress, or is used in massage. The emulsion is available in bottles of 2 and 4 oz. and in bulk, and the ointment is issued in small jars or in bulk.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 95. (S. W. G.)

Asidon Tablets (Anhaltisches Serum-Institute, G. m. b. H., Berlin) contain amidopyrine, phenacetin, caffeine citrate, extract of cola and a sweeting agent. They are recommended as an analgesic, antineuralgic and antipyretic.—*Pharm. Zentralhalle*, 81 (1940), 210. (N. L.)

Belladenal (Sandoz Products, London) contains bellafoline (the total natural laevorotatory alkaloidal complex of belladonna leaves), 0.00025 Gm., with phenobarbitone 0.05 Gm. in each tablet. It is used in refractory cases: Nervous conditions, with paroxysm; crises and their equivalents, essential asthma, epilepsy, mental agitation, anxiety and phobias, infantile convulsions, chorea, tremors, parkinsonism, angina pectoris, etc. The general dose is 2 to 4 tablets (maximum 5) per day. Pediatorics, $^1/_4$ tablet to 4 tablets, as to age. It is marketed in cruciform tablets: tubes of 20 and bottles of 100, 250 and 500.—*Australasian J. Pharm.*, 22 (1941), 715. (A. C. DeD.)

Berin is aneurine hydrochloride in the form of tablets and in sterile solution in ampuls. The dose by parenteral injection in berberi is 10 to 50 mg. daily, followed by 5 mg. daily; in less acute conditions, if the results warrant it, two doses of 10 mg. followed by smaller doses are suggested. The oral dose is 1 to 6 mg. Berin tablets contain 1 mg. and 3 mg. of aneurine hydrochloride and are issued in bottles of 25, 100 and 500. The solution contains 5 mg. per cc. and is issued in boxes of 6, 12 and 50 1-cc. ampuls. A stronger solution containing 25 mg. per cc. is obtainable in boxes of 6, 12 and 50 1-cc. ampuls.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 207. (S. W. G.)

Calfos Tablets contain in each, calcium phosphatocarbonate, $4^1/_2$ gr.; sucrose, 5 gr.; oil of lemon, $^1/_{60}$ minim; made up to 12 gr. with excipient. The calcium and phosphate are claimed to be in the same form as in bone and in the correct ratio for satisfactory assimilation. Calfos is recommended for the correction of calcium and phosphorus deficiencies, particularly during pregnancy and lactation, in childhood, during the menopause and for dysmenorrhea. The average dose is one or two tablets three times daily, to be chewed or slowly dissolved in the mouth. It is issued in tins of 50 tablets.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 95. (S. W. G.)

Carbact Tablets contain in each, activated charcoal 3 gr., bismuth tribromophenate $1^1/_8$ gr., dry extract of rhubarb $^3/_8$ gr., made up to $7^1/_2$ gr. with excipient. Carbact is offered as an adsorbent of alimentary toxins, suitable for the treatment of gastrointestinal disturbances, flatulent dyspepsia, food poisoning, gastroenteritis and diarrhea. The dose is two tablets three times daily after meals. Carbact is issued in packets of 100 tablets.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 95. (S. W. G.)

Cholan-DH (Maltbie Chemical Co., Newark, N. J.) is dehydrocholic acid, derived from cholic acid and is used as a hydrocholeretic for effective treatment of disorders of the biliary tract, biliary stasis, chronic constipation resulting from functional hepatic insufficiency, hepatic insufficiency due to hepatic engorgement in cardiac decompensation, cholangitis, liver poisoning, cholecystitis and nonobstructive cholelithiasis. The dose varies with type and severity of hepatic dysfunction; average dose, 1 or 2 tablets, two or three times a day with meals. It is supplied in bottles of 100, 500 and 1000 tablets, each $3^3/_4$ gr.—*Amer. Professional Pharm.*, 7 (1941), 453. (F. J. S.)

Compral (Bayer Products Ltd., London) is trichlor-ethyl-urethane dimethyl-amino-phenazone. It is used in cases of headache, toothache, neuralgia, dysmenorrhea; preoperative nervousness and postoperative pain. It is an analgesic and slightly sedative. The dose is $7^1/_2$ to 15 gr. or more, three times daily. It is marketed as tablets, gr. 5; tube of 10; bottles of 50 and 250.—*Australasian J. Pharm.*, 22 (1941), 715. (A. C. DeD.)

Cupridium Ampuls (Dr. Willmar Schwabe, Leipzig) consists of metallic copper "Colloo" and natural amino acids in a physiological aqueous base. These are marketed in two forms, Cupridium and Cupridium "Forte," and are indicated in bronchial asthma.—*Pharm. Zentralhalle*, 81 (1940), 185. (N. L.)

Enterofagos (Continental Laboratories, London) contains polyvalent bacteriophages, against the following microörganisms: staphylococci, streptococci, *B. coli*, *enterococci*, *B. typhosus*, *B. paratyphosus*, A and B; *B. dysenteriæ* Shiga, Hiss, Flexmer, Russell, Strong and Sonne. It is used in cases of appendicitis, bacillary dysentery, *B. coli* infections, para-typhoid fever, peritonitis, shellfish poisoning, typhoid fever, etc. Clear broth filtrate for administration: one ampul in a little alkaline water before breakfast; in acute cases, 2 or 3 ampuls daily between meals. Non-peptous filtrate for intramuscular injection: 1 cc. daily. It is marketed in boxes of 5, 10 and 50 × 2 cc. ampuls (oral or injectable).—*Australasian J. Pharm.*, 22 (1941), 715. (A. C. DeD.)

Eucortone (Allen and Hanburys Ltd., London and Sydney) is an extract of suprarenal cortex. It is used in cases of Addison's disease. The dose is about 10 to 20 cc. daily, intravenously or subcutaneously, in divided doses. The dosage should be increased cautiously from a small amount and injections given

slowly. It is marketed in rubber-capped bottles of 25 cc.—*Australasian J. Pharm.*, 22 (1941), 715. (A. C. DeD.)

Euvalerol-D (Allen and Hanburys Ltd., London and Sydney) is an elixir, containing an extract of valerian from the fresh root, chloral hydrate gr. 20 and strontium bromide gr. 10 in each fl. oz. It is a sedative and hypnotic. The dose is one to two tablespoonfuls. It is marketed in 4- and 8-oz. bottles.—*Australasian J. Pharm.*, 22 (1941), 625. (A. C. DeD.)

Ferrolac (Glaxo Laboratories Ltd., Greenford Middlesex) contains in each pint 1.1 gr. of iron (5 gr. iron and ammonium citrate); 200 I. U. of vitamin D (fat modified); 165 I. U. (full cream). It is used in the feeding of infants liable to nutritional anemia. It is used in the treatment of nutritional anemia. It is supplied in 16-oz. tins.—*Australasian J. Pharm.*, 22 (1941), 715. (A. C. DeD.)

Fluagel (George A. Breon and Co., Inc., Kansas City, Missouri) is a palatable, fluid, hydrated aluminum hydroxide in a form that requires no mixing or preparing, and it is standardized to combine with not less than 100 cc. of 0.36% hydrochloric acid per teaspoonful (4 cc.); also it is unequaled in acid-neutralizing ability. It is used for peptic ulcer and other hyperacid states. In severe hyperchlorhydria one teaspoonful is given every 2 hrs.; later the doses are reduced to after meals and at bedtime and then after meals only. It is supplied in widemouth bottles of 10 fluidounces.—*Amer. Professional Pharm.*, 7 (1941), 531. (F. J. S.)

Furmerane (G. D. Searle and Co., Chicago, Ill.) is 2-hydroxy-mercuri furan. It is a powerful germicide and is bactericidal and bacteriostatic in very low concentrations; has great penetrative ability; it is unusually free from tissue injury and is effective against a wide variety of organisms. It is indicated wherever antisepsis is required for skin or instrument sterilization, the treatment of wounds and minor burns, management of infections, in gynecological or genito-urinary procedures, or in otolaryngological work. Furmerane is supplied as a tincture 1:400 in 4-oz., pint- and gallon-bottles; also as a solution 1:3000 in 4-oz., pint- and gallon-bottles.—*Amer. Professional Pharm.*, 7 (1941), 452. (F. J. S.)

Hexasalyl Tablets (Dr. H. Grothe, Fabrik chem.-pharmaz. Präparate, Berlin) contain as their active ingredient, hexamine sulfosalicylate, and are recommended as a urinary antiseptic.—*Pharm. Zentralhalle*, 81 (1940), 258. (N. L.)

Hydrated Alumina Tablets (Schieffelin and Co., 16 Cooper Square, New York, N. Y.) is aluminum hydroxide in a form which is convenient for administration and one tablet neutralizes 75 cc. of 0.1 *N* HCl. It is indicated in the treatment of peptic ulcer and hyperacidity associated with other affections of the gastro-intestinal tract. The tablets are supplied in bottles of 100, 500 and 1000.—*Amer. Professional Pharm.*, 7 (1941), 593. (F. J. S.)

Indina 150 (H. Kohler, pharmaz. Präparate, Berlin) are dragees, which contain extracts of rhubarb, aloes, cascara and fucus.—*Pharm. Zentralhalle*, 81 (1940), 234. (N. L.)

Insulin "Leo" Retard (Nordisk Insulin-Laboratorium, Kopenhagen), is insulin "Leo" with protamin which has been precipitated out as a compound by sodium phosphate solution. It is indicated in the treatment of diabetes.—*Pharm. Zentralhalle*, 81 (1940), 234. (N. L.)

Kaglusan Tablets (Chemosan-Hellico A.-G., Prag II) contain in each tablet, 0.5 Gm. calcium gluconate, and are recommended in the treatment of rachitis, tuberculosis, etc.—*Pharm. Zentralhalle*, 81 (1940), 259. (N. L.)

Liver Concentrate (Intramuscular) (Frederick Stearns and Company, Detroit, Mich.) is a concentrate of the antipernicious anemia fractions prepared from edible equine livers and standardized according to the U. S. P. In pernicious anemia in relapse, one ampul (3.3 cc.) injected intramuscularly every 7 to 10 days; in pernicious anemia maintenance, one ampul every 3 to 4 weeks; and larger doses as prescribed by the physician. It is supplied in boxes of three (3.3 cc.) vials.—*Amer. Professional Pharm.*, 7 (1941), 591. (F. J. S.)

Ludozan Tablets (Schering Corporation, Bloomfield, N. J.) are plain tablets containing 1 Gm. of hydrated sodium aluminum silicate; also tablets with belladonna containing in addition 0.0667 mg. total alkaloids of belladonna. They are used for the symptomatic relief of heartburn, sour eructation and pain in gastric hyperacidity, and to promote the healing of peptic ulcer lesions. The dosage is one to two tablets four to five times daily; one to two tablets taken before the ingestion of alcoholic beverages act as gastric protection. Both forms are available in boxes of 24, 60 and 250 tablets.—*Amer. Professional Pharm.*, 7 (1941), 452. (F. J. S.)

Myocrisin (May and Baker (India) Ltd., 11 Clive Street, Calcutta) is the sodium salt of aurothiomalate with a gold content of 50%. It is recommended in rheumatoid arthritis with the claim that it cures 50% of the early cases.—*Indian Med. Gaz.*, 76 (1941), 192. (W. T. S.)

Orgakinine (Organon Laboratories Ltd., London) are tablets each containing 75 mg. of quinine di-ascorbinate, equivalent to 36 mg. of quinine, and 39 mg. of vitamin C. It is used in cases of influenzal colds. The dose is two tablets three times a day. It is marketed in packages of 20, 100, and 500. Ampuls containing 520 mg. of quinine di-ascorbinate will be available shortly.—*Australasian J. Pharm.*, 22 (1941), 625. (A. C. DeD.)

Parintol (Dr. Braun 8c Herberg, Hamburg) is an emulsion of paraffin with the addition of a small quantity of phenolphthalein and is recommended as a purgative.—*Pharm. Zentralhalle*, 81 (1940), 234 (N. L.)

Paroleine (Burroughs Wellcome and Co., London and Sydney) is liquid paraffin, for internal use, also as a dressing for burns and granulating area. It is marketed in 4- and 16-fl. oz. bottles. Paroleine, for spraying the nose and mouth is supplied in 4- and 16-fl. oz. bottles. **Paroleine Spray Compound:** Menthol, gr. 5; chlorbutol, gr. 6; "Eucalyptin" brand of 01. Eucalypt., min. 15; "Paroleine" paraffin, liquidi, as fl. oz. 1. To be used with a Paroleine or other suitable atomizer; or a few drops instilled into the nostrils by means of the dropper supplied with the smaller size. It is marketed in bottles of 1 and 16 fl. oz.—*Australasian J. Pharm.*, 22 (1941), 626. (A. C. DeD.)

Pectevan is an elixir containing guaiacol and codeine phosphate. It is indicated as an antiseptic, expectorant and sedative in diseases of the respiratory tract. The dose for adults is 1 fluidrachm in sweetened water two or three times daily. Pectevan is supplied in bottles of three fluidounces.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 96. (S. W. G.)

Pelonin is nicotinic acid. It is issued in tablets containing 50 mg. and in sterile aqueous solution in ampuls each containing 50 mg. in 2 cc. The oral dose in prophylaxis is 1 tablet daily and the therapeutic dose is 2 to 10 tablets daily. The solution is administered in doses of 1 to 2 ampuls a day by slow intramuscular injection. If it is given intravenously, the contents of each ampul should be diluted to 10 cc. with sterile water. The tablets are supplied in bottles of 25 and 100, and the ampuls in boxes of 6

and 12.—ANON. *Quart. J. Pharm, Pharmacol.*, 14 (1941), 208. (S. W. G.)

Pharka Herbagetten (Pharka, Fabrik pharmaz. Präparate, Berlin) contains acetophenetidin, caffeine citrate, lithium carbonate and amidopyrine. It is recommended in the treatment of neuralgia, grippe and toothache.—*Pharm. Zentralhalle*, 81 (1940), 211. (N. L.)

Pinoka Healing Salve (Dr. Rentschler & Co., Laupheim (Wttbg.)) consists chiefly of yellow wax, colophony, oil of arachis, zinc oxide, starch and a saponified solution of cresol. It is recommended in the treatment of abscesses, fistules, furuncles, carbuncles, frost bites, hemorrhoids, etc.—*Pharm. Zentralhalle*, 81 (1940), 234. (N. L.)

Prephysin (Frederick Stearns and Company, Detroit, Michigan) is a potent gonadotropic extract of the pituitary gland and is standardized in terms of the Fevold-Hisaw unit. It is indicated in male hypogonadism—infantilism, Froehlich's syndrome, cryptorchidism, eunuchoidism, sterility; in female hypogonadism—infantilism, primary or secondary amenorrhea, Froehlich's syndrome, infrequent menses, menorrhagia, anovulatory flowing, sterility, repeated abortion. The dosage is as follows: male, usual initial dose is $^1/_2$ to 1 cc. injected subcutaneously or intramuscularly once daily; female, follicle stimulation is ordinarily accomplished by the injection of $^1/_2$ to 1 cc. daily, beginning at the onset of menstruation and continuing for 14 days, in a cycle manner similar to the normal menstrual cycle. More infrequent administration of larger doses may be necessary. Prephysin is supplied in packages containing one 5-cc. vial, 25 units per cc. (125 units); one 15-cc. vial, 25 units per cc. (375 units); or one 5-cc. vial special potency, 100 units per cc. (500 units). —*Amer. Professional Pharm.*, 7 (1941), 453. (F. J. S.)

Primicol (G. H. Sherman, M. D., Inc., Detroit, Mich.) employs colostrum from breasts of primiparous, Kahn-negative women, according to exact requirements of Falls-Freda technique and is a simplified test for pregnancy. It is injected intradermally into the arm of the patient, with 96–98% accuracy of skin reaction noted at intervals of 10 minutes, half-hour and one hour. Half-hour weal disappearance is evidence of pregnancy. Reactions are negative. It is supplied as a diagnostic kit containing two capillary tubes, one primicol and the other control saline.—*Amer. Professional Pharm.*, 7 (1941), 593. (F. J. S.)

Proctoids (John Wyeth and Brother Ltd., London) are torpedo-shaped suppositories, containing ephedrine sulfate, bismuth oxyiodide, bismuth subcarbonate, belladonna and other antiseptic and protective ingredients. They are used in cases of internal and external hemorrhoids, fistula, fissure and pruritis. The dose is one nightly before retiring. They are marketed in boxes of 6 and 12 suppositories.—*Australasian J. Pharm.*, 22 (1941), 715. (A. C. DeD.)

Prolactin (Schering Corporation, Bloomfield, N. J.) is a highly purified lactogenic hormone obtained from the anterior pituitary and furnished as a stable, dry substance, deposited as a film on the inner surface of the ampul. An ampul of solvent is provided to be employed at the time of injection. It is standardized in International Units. To stimulate lactation, the dosage is 300 I. U. daily in divided doses for two days, followed by 200 I. U. daily for three days, by intramuscular injection. Prolactin is available in ampuls containing 100 I. U. supplied with ampuls of solvent, in boxes of three and twelve.—*Amer. Professional Pharm.*, 7 (1941), 593. (F. J. S.)

Proscabin is an emulsion of benzyl benzoate recommended for the treatment of scabies. It is non-irritating and suitable for use for secondarily infected cases and for infants. In the treatment the body is well soaped and, after immersion in a bath at 100° F. for 10 min., the emulsion is painted on with a stiff brush. The application is repeated when the skin is almost dry. Next day, after a hot bath, fresh clothing is put on. All contacts must be treated at the same time. Clothing and bedding should be sterilized after the treatment. In severe secondarily infected cases a repetition of the treatment or further local application may be necessary after an interval of about a week. Proscabin is available in bottles of 4 oz. and 8 oz.—*Quart. J. Pharm. Pharmacol.*, 14 (1941), 96. (S. W. G.)

Pyridoxine Hydrochloride (Sharp and Dohme, Philadelphia, Pa.) is 2-methyl-3-hydroxy-4,5-hydroxy-methyl pyridine hydrochloride, a white, odorless crystalline compound soluble in water in the proportion of 22 Gm. per 100 cc. It is indicated in the prophylaxis and treatment of vitamin B_6 deficiencies; and is supplied as follows: For oral administration, 1-mg. tablets in bottles of 100 and 500 and 25-mg. tablets (slotted) in vials of 10; for parenteral administration, 1-cc. ampul-vials containing 50 mg. per cc.—*Amer. Professional Pharm.*, 7 (1941), 453. (F. J. S.)

Riddobron (Riddell Products Ltd., London) is equivalent of bronchovydrin. It is used in cases of asthma inhalant.—*Australasian J. Pharm.*, 22 (1941), 626. (A. C. DeD.)

Ronone 2% (Abbott Laboratories, North Chicago, Ill.) is a non-greasy, non-irritating lotion containing 2% rotenone in a mucilage of quince seed, Irish moss and chloroform; it does not stain bedclothes and underwear. It is indicated for topical application in the treatment of scabies and may be useful in treating other parasitic invasions of the skin by mites, lice and fleas. It is applied topically after bathing thoroughly, repeated night and morning for four applications, followed by bath and complete change of clothing. Repeat if necessary. Ronone 2% is supplied in 4-oz. and 1-pint bottles.—*Amer. Professional Pharm.*, 7 (1941), 452. (F. J. S.)

Sanolidon Tablets (Apoth. A. Herbert, Fabrik pharmaz. Präparate, Wiesbaden) contain as their principal ingredients, naphodyl (a mixture of barbital and amidopyrine), acetophenetidin and sodium phosphate. These are recommended as an antipyretic, antineuralgic and analgesic.—*Pharm. Zentralhalle*, 81 (1940), 234. (N. L.)

Schlirfatonin (Dr. W. Dernbach, Bad Salzschlirf) is a homeopathic tonic containing arsenic iodide, nux vomica, sodium glycerophosphate potassium phosphate, kola, manganese salts and bitters. It is indicated in nervous disorders, anorexia and convalescent cases of various types.—*Pharm. Zentralhalle*, 81 (1940), 234. (N. L.)

Sodium Ascorbate Solution (E. R. Squibb and Sons, 745 Fifth Avenue, New York, N. Y.) is the sodium salt of pure synthetic ascorbic acid (vitamin C) in solution containing the equivalent of 100 mg. of ascorbic acid per 1 cc. It is used for patients who are severely ill; patients with abnormal requirements of vitamin C such as in connection with surgery; patients with poor utilization or faulty absorption of this vitamin. By intravenous injection the average dose is 1 cc. (equivalent to 100 mg. ascorbic acid). The solution is supplied in 1-cc. ampuls in boxes of 6, 25; also 4 boxes of 25.—*Amer. Professional Pharm.*, 7 (1941), 591. (F J. S.)

Sulamyd (Schering Corporation, Bloomfield, N. J.) is a sulfonamide of low toxicity for the treatment of urinary tract infections especially those due to *B. coli*, and for gonorrhea. It is *p*-aminobenzene sulfonylacetylimide ($H_2N \cdot C_6H_4 \cdot SO_2 \cdot NH \cdot$-

$COCH_3$), a white crystalline powder, odorless with slightly acid taste, melting point, 181–182° C. and its solubility in water at room temperature is about 1:100. The dosage is as follows: In *B. coli* and non-specific urinary tract infections, 4 Gm. per day may be given for the first three days; 3 Gm. per day for the second three days and 2 Gm. per day for the last four days. Each of the ten daily doses should be divided into four parts. In acute gonorrhea, 4.5 Gm. daily for seven days. Sulamyd is supplied as 0.5-Gm. tablets in boxes of 30, 60, 100 and 1000 tablets.—*Amer. Professional Pharm.*, 7 (1941), 530. (F. J. S.)

Tetanol (Behringwerke, Marburg a. L.) is concentrated tetanus formol toxoid adsorbed on aluminum hydroxide. By adsorption of the antigen on aluminum hydroxide, the vaccine possesses a greater degree of immunization.—*Pharm. Zentralhalle*, 81 (1940), 235. (N. L.)

Thiazoint (Hart Drug Corporation, 25 N. E. 25th Street, Miami, Florida) is 10% sulfathiazole in an emulsion base and is a valuable supplement to the usual surgical procedures in acutely infected superficial wounds, boils and carbuncles; varicose, diabetic and decubitus ulcers. It is effective in certain streptococcal and staphylococcal skin infections such as impetigo and secondarily infected fungus lesions. It is supplied in $^6/_8$-oz. tubes, 1-lb. jars and 5-lb. jars.—*Amer. Professional Pharm.*, 7 (1941), 590. (F. J. S.)

Thyreoidin "Merck" (Chemische Fabrik E. Merck, Darmstadt) is the new designation for the standardized Merck's desiccated thyroid gland product.—*Pharm. Zentralhalle*, 81 (1940), 235. (N. L.)

Toniphlebine (Bengue and Co. Ltd., Alperton, Middlesex) consists of two preparations. The one for women consists of suprarenal, pituitary, thyroid, ovary, extracts of hydrastis, marron d'inde, viburnum and anemone and iodized casein. The preparation for men consists of the same formula, orchitine replacing ovary. It is used in cases of venous system; varicose veins, varicocele, phlebitis, hemorrhoids, varicose ulcers. The dose is three to five dragees daily before meals. It is marketed in boxes of 36 dragees.—*Australasian J. Pharm.*, 22 (1949), 626. (A. C. DeD.)

Typhus-Paratyphus-B Vaccine "Schering" (Schering A.-G., Berlin) is a polyvalent vaccine containing in 1 cc. about 750,000,000 typhoid and 250,000,000 paratyphoid B bacilli. It is indicated in the prophylaxis of typhoid and paratyphoid fevers.—*Pharm. Zentralhalle*, 81 (1940), 235. (N. L.)

Uba Corn Collodium (Chem. Fabrik Schmolz, G.m.b.H., Breslau) is a solution of glacial acetic acid and salicylic acid in collodium.—*Pharm. Zentralhalle*, 81 (1940), 235. (N. L.)

Uba Wart Remover (Chem. Fabrik Schmolz, G.m.b.H., Breslau) contains glacial acetic acid and salicylic acid dissolved in collodium.—*Pharm. Zentralhalle*, 81 (1940), 235. (N. L.)

Urophile (Bengue and Co. Ltd., Alperton, Middlesex) contains thyminic acid, hexamine, lithium carbonate, sodium benzoate. It is used in cases of arthritis, rheumatism, uric diathesis, arteriosclerosis, gout, obesity, hepatic colic, nephritic colic, cholecystitis. The dose is one teaspoonful in water three times a day. For an acute crisis, one tablespoonful morning and evening in water. It is marketed in tins of $3^1/_4$ oz., approx.—*Australasian J. Pharm.*, 22 (1941), 715. (A. C. DeD.)

Vinothiam (Sharp and Dohme, Inc., Philadelphia, Pa.) consists of thiamine hydrochloride (vitamin B_1) 8 mg. (2660 I. U.) per oz., in a wine base, with 15% alcohol. It is used in the treatment of vitamin B_1 deficiency and the dose for adults is one teaspoonful three times daily before meals, or as directed by the physician; for children 6 to 12 yrs., one teaspoonful twice daily. Vinothiam is supplied in pint and gallon bottles.—*Amer. Professional Pharm.*, 7 (1941), 590. (F. J. S.)

BACTERIOLOGY

Active Immunization with a Mixed Heat-Killed Vaccine. After immunization of animals with mixed vaccine of *Bact. typhosum* and *Br. abortus*, or of *Br. abortus* and *melitensis*, the authors injected subcutaneously into 29 persons a heat-killed vaccine containing the three organisms, 1000 million of each per cc.—three doses at weekly intervals containing a total of 2500 million of each organism. The reactions were generally more severe than those following the injection of ordinary T. A. B. vaccine. The subjects were bled before the first injection and again two weeks after the last. The sera were tested for *Bact. typhosum* H and O agglutinins, *Br. abortus* agglutinins and opsonocytophagic response, and for protective antibodies against all three cultures injected into mice. The results, given in detail in ten tables, were very satisfactory. By every method of measurement almost every subject showed considerable or high antibody response. The amount of sensitization to brucellergen shown by skin tests was so small that the diagnostic utility of the test after injection with undulant fever will probably not be lessened. The *abortus* and *melitensis* agglutinins following vaccination may later cause confusion, but this difficulty will presumably be obviated, as in the case of enteric agglutinins, by watching for progressive increase. The authors suggest that, in proper circumstances, the triple vaccine should be employed instead of T. A. B.—J. A. KOLMER, A. BONDI, JR. and A. M. RULE. *J. Infect. Diseases*, 67 (1940), 258; through *Bull. Hyg.*, 16 (1941), 418. (T. C. G.)

Aerosol OT and Hydrogen-Ion Concentration—Effect of, on the Bactericidal Efficiency of Antiseptics. Of the six antiseptics studied in combination with a non-bactericidal concentration of Aerosol OT at the various *p*H values, the following exert, *in vitro*, a marked increase in bactericidal efficiency with an increase in the hydrogen-ion concentration of the mixture: Phenol, Bichloride of Mercury, Solution Merthiolate (1:1000), and Hexylresorcinol (1:1000). Zonite and Zephiran Solution (1:1000), due to their chemical incompatibility with Aerosol OT do not exert a significant increase and in some instances especially in the case of Zephiran even show a decrease in bactericidal efficiency for reasons given (chemical incompatibility). A list of dilutions which kill *Staphylococcus aureus* at 37° C. within 5 min. at the *p*H noted is given. Weaker dilutions in most instances are effective at the same *p*H as in the foregoing if the 10-min. period is noted. Stronger concentrations of the antiseptic (containing the same amount of a non-bactericidal percentage of Aerosol OT) are required to exert a bactericidal effect, within the 5- and 10-min. periods, when the hydrogen-ion concentration is decreased approaching neutrality.—L. GERSHENFELD and D. PERLSTEIN. *Am. J. Pharm.*, 113 (1941), 237. (A. C. DeD.)

***p*-Aminobenzoic Acid—Anti-Sulfapyridine and Anti-Sulfathiazole Effect of Local Anesthetics Derived from.** Each of 7 local anesthetics derived from aminobenzoic acid partially or completely blocked the *in vitro* bacteriostatic effect of sulfapyridine on *B. coli* grown in a simple medium. None of 9 local anesthetics not derived from aminobenzoic acid showed that property. Each of 3 local anesthetics derived from aminobenzoic acid blocked the bacteriostatic effect of sulfathiazole on *B. coli* and *Staphylococcus aureus* whereas 3 other anesthetics

were free from that effect.—A. K. KELTCH, LINVILLE A. BAKER, M. E. KRAHL and G. H. A. CLOWES. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 533. (A. E. M.)

p-Aminobenzoic Acid—Effects of Sulfonamide Compounds on Growth of Staphylococci in Presence and Absence of. Sulfathiazole and sulfadiazine have a definitely greater inhibitory effect on growth compared to sulfapyridine and sulfanilamide, with sulfathiazole superior to sulfathiazine. While *p*-aminobenzoic acid inhibits this bacteriostatic action of all compounds studied, the greater the effect of a compound on growth of staphylococci, the less inhibitory is *p*-aminobenzoic acid against the action of the compound.—WESLEY W. SPINK and JEAN JERMSTA. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 395. (A. E. M.)

N - (*p* - Aminophenylsulfonyl) benzamide. This compound, a colorless crystalline solid substantially insoluble in water and forming a water-soluble sodium salt, is produced from benzoyl chloride and *p*-acetylaminobenzenesulfonamide and may be used in combating pneumococci, etc.—MICHAEL N. DVORNIKOFF, assignor to MONSANTO CHEMICAL CO. U. S. pat. 2,240,496, May 6, 1941. (A. P.-C.)

Anaerobiosis—A Simple Method of Obtaining. A simple and efficient method for obtaining anaerobiosis consists of placing moist iron filings along with the culture under examination in a vessel capable of being hermetically sealed. An indicator, alkaline-glucose-methylene blue, shows that the oxygen is removed within 6 to 12 hrs. A liter vessel requires some 60 Gm. of iron.—C. L. PASRICHA and S. K. GHOSH. *Indian Med. Gaz.*, 76 (1941), 88–89. (W. T. S.)

Antibodies and Sulfapyridine—Mode of Action of, in Pneumonia. In the present study, microscopic examination of the actively spreading lesion of pneumonia revealed three characteristic zones: an outer "edema zone" in which the alveoli contained many pneumococci floating freely in edema fluid, a middle zone where both leucocytes and organisms were present many of the latter being phagocytized, and an inner zone of advanced consolidation in which the alveoli contained many leucocytes but no organisms. Pneumococci spread into normal alveoli principally by way of the infected fluid in the outer zone. It was pointed out that the primary effect of serum is to cause immobilization of the pneumococci in the advancing edema zone enabling leucocytes to overtake and destroy the organisms. Mention was made of some preliminary experiments which apparently indicate that sulfapyridine exerts a similar effect through a different mechanism. It is thought that the temperature falls when the organisms cease to invade new tissue.—W. B. WOOD, JR. *Bull. Johns Hopkins Hosp.*, 47 (1940), 464; through *Abbott Abstract Service*, (1941), No. 884. (F. J. S.)

Antigenic Components of V-Form B. Typhosus—Salt Effects upon, Especially Calcium Chloride.—ANON. *Kitasato Arch. Exp. Med.*, 18 (1941), 1–12. (W. T. S.)

Antiserum. A process of refining and concentrating type-specific antipneumococcic rabbit serum involves adding a preservative, such as sodium ethylmercurisalicylate, aging the serum at a low temperature, removing the precipitate formed, diluting the so-clarified serum with distilled water, heating to about 54° to 58° C., removing the precipitate formed, adding to the serum a sufficient quantity of a saturated solution of ammonium sulfate to make the resultant mixture about one-third saturated with the salt, filtering, adding to the filtrate a sufficient quantity of the saturated solution to make the mixture about one-half saturated with the salt, separating the precipitated antibody-containing protein and removing the salt from it, as by dialysis.—TILLMAN D. GERLOUGH, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,246,355, June 17, 1941. (A. P.-C.)

Antituberculous Vaccination—Effect of Seal Oil and Glycerol Broth on. Guinea pigs were given 10 weekly injections of 1 mg. of heat-killed tubercle bacilli. Another group of animals received in addition to the above, weekly injections of 0.1 cc. of seal oil. A similar number of animals without any treatment served as the controls. All animals were infected with 0.001 mg. of a virulent strain of *Myco. tuberculosis*. The results showed that full protection was given to 10 out of 27 animals not given seal oil; full protection was given to 21 out of 27 animals given the seal oil, while only 2 out of the 32 control animals survived. A second experiment was performed in which the animals were injected with glycerol broth and seal oil alone. This treatment gave no significant protection against infection. Therefore it was concluded that the seal oil stimulates the protective action of the vaccine.—W. PAGEL. *J. Path. Bact.*, 52 (1941), 383. (T. C. G.)

Asporogenic Microbes—Action of Alcohol in Varying Concentration on Moist and Dry. In higher concentrations—90–96%,—alcohol rapidly kills moist vegetative microbes at room temperature. Absolute alcohol acts less energetically under like conditions. The most rapid killing application is 70–90% alcohol on moist microbes; the slowest by absolute alcohol or dry microbes. Seventy per cent alcohol acts on moist and dry microbes essentially the same, moist microbes being rather uniformly susceptible to 70% and absolute alcohol. Fourteen references.—T. SABALITSCHKA and URSULA PENNER. *Deut. Apoth. Ztg.*, 55 (1940), 477–478; through *Chem. Abst.*, 35 (1941), 1931. (H. M. B.)

Bacillary Dysentery—Value of Bacteriophage in the Diagnosis of. In an institutional outbreak of dysentery due to *Bact. flexneri* (Strong) cultural examination of the feces which could not be done at the outset of the epidemic was supplemented by examination for specific phage as a means of identifying infected individuals. From the 3rd to the 9th week of illness, when only 13.8% of the specimens from clinical cases gave positive cultures, 72.7% showed the presence of phage. Nine out of 20 patients showed phage and were culturally negative. There were, however, a number of culturally positive cases from which phage was not isolated. In a small control group (unfortunately mostly from the same building) 3 of 25 persons showed the presence of phage, but 2 of these were or had been probably infected with *B. flexneri*.—K. M. WHEELER and A. L. BURGDORF. *Am. J. Pub. Health*, 31 (1941), 325; through *Bull. Hyg.*, 16 (1941), 499. (T. C. G.)

Bacterial Infections—Chemotherapy of. II. Chemistry of Some Organo-Selenium Compounds Related to Sulfanilamide. The chemistry of some 4:4′-substituted diphenylphenyl diselenides, selenides, 4-substituted seleninic, selenonic acids and selenophenols has been described. **III. N^1-β-Phenylethylsulfanilamides.** In order to throw light on the so-called specificity of antibacterial action of a drug to its chemical structure and also to discover a sulfanilamide drug for use in enteric diseases, some N^1-β-phenylethylsulfanilamides have been synthesized. The results of the pharmacological examination of these compounds will be published later.—P. L. NARASIMHA RAO. *J. Indian Chem. Soc.*, 18 (1941), 1, 316. (F. J. S.)

Bacterial Substances—Isolation of, from Cultures of Bacillus Brevis. From peptone cultures of *Bacillus brevis* there have been isolated two crystal-

line compounds, designated gramicidin and tyrocidine hydrochloride, which are antagonistic toward a variety of microörganisms. The preparation and characterization of these substances are described.—ROLLIN D. HOTCHKISS and RENE J. DUBOS. *J. Biol. Chem.*, 141 (1941), 155. (F. J. S.)

Bactericidal and Antiseptic Preparations for Human Use. Compositions for use as, for example, tooth pastes when mixed with magnesium carbonate and calcium carbonate, or hair shampoo when mixed with sodium lauryl sulfate, are made by bringing a chlorinated hydrocarbon, for example, trichloroethylene, into colloidal solution or suspension in conjunction with colloidal silicates, for example, bentonite, and/or silicon dioxide, and/or ortho-silicic acid, together with water, ethyl alcohol, and a wetting agent, for example, sodium lauryl sulfate, sulforicinoleic acid, or soap.—J. F. MOSELEY. Brit. pat. 523,107; through *J. Soc. Chem. Ind.*, 59 (1940), 710. (E. G. V.)

Bacteriophage—Effect of Sulfanilamide and Sulfapyridine on. As a result of studying the effect of sulfanilamide and sulfapyridine upon bacteriophage against *Staphylococcus aureus* and *Escherichia coli*, these investigators came to the following conclusions: (1) Sulfanilamide and sulfapyridine do not significantly interfere with the lytic action of specific bacteriophages on *S. aureus* or *E. coli* when these organisms are completely susceptible to the corresponding phage *in vitro*. (2) With strains of these organisms which are not completely susceptible to the lytic action of the phage, the associated use of sulfapyridine and to a less extent sulfanilamide, frequently completes the destruction of the bacteria *in vitro*—a synergistic effect. (3) Sulfanilamide and sulfapyridine may be used together with specific bacteriophage in the treatment of *E. coli* and *S. aureus* infections. (4) Phage is generally more bactericidal upon the homologous organisms than either sulfanilamide or sulfapyridine. (5) In the treatment of staphylococcus or *E. coli* septicemia, the use of potent bacteriophage, when it is available, should not be delayed because of the attempted use of sulfanilamide or sulfapyridine.—H. ZAYTZEFF-JERN and F. L. MELENEY. *J. Lab. Clin. Med.*, 26 (1941), 1756. (T. C. G.)

BCG Vaccination in Montreal. BCG vaccination has had little vogue in Britain. Partly because the incidence of tuberculosis in young children is relatively low (of the 26,176 deaths attributed to all forms of tuberculosis in 1938, 1377 were at ages under five and of the 21,932 assigned to respiratory tuberculosis, only 149 cases were in children under five years), partly because the claims of Calmette and his disciples were extravagant and their statistical data grossly defective. But there was nothing biologically absurd in Calmette's argument, and room for further careful statistical analysis. The present paper is an example of such careful work. The data are not numerous, but cover some thousands of years of life, and are derived from the observation of more than two thousand children. Pains have evidently been taken to secure real comparability of controls and vaccinated children and precision of diagnosis. The result is to make it probable that in respect of both mortality and morbidity, the vaccinated children had a significant advantage over the controls; mortality rates and morbidity rates were uniformly lower; for instance, taking active tuberculosis, the morbidity rate on the controls (ages 0–5) was 120 per 1000, on the vaccinated 3.1. Mortality rates were 54 per 1000 and 19 per 1000, respectively. Mortality rates for causes other than tuberculosis showed no significant difference between the groups.—J. W. Hopkins. *Am. Rev. Tuberc.*, 43 (1941), 581; through *Bull. Hyg.*, 16 (1941) 504. (T. C. G.)

BCG Vaccine—Preparation and Local Reactions to. This is a record of careful work. During the period February, 1936, to February, 1938, 1565 persons from 1 to 19 years of age were vaccinated intracutaneously with 0.1 or 0.15 cc. of BCG. During the same period, 1460 persons of the same ages and living in the same area under the same conditions were injected with sterile physiological salt solution (1 cc.) as controls. Both groups had previously failed to react to the tuberculin test with PPD, and in most cases their chests had been examined radiologically. Details are given of the methods of culture used in preparing the vaccine, and of the growth characters of the organism. There was no evidence of increase in virulence, and in experimental work on guinea pigs the injection of vaccine caused considerable modification of the lesions produced by subsequent virulent infection. In the field work, carried out among American Indians in Arizona, Wyoming, N. Dakota, S. Dakota and Alaska, the vaccine was prepared by means of a mobile laboratory, the utmost care being taken that no sputum or other material suspected of containing tubercle bacilli should be permitted in the laboratory. No cultures of virulent tubercle bacilli or of other bacteria were possessed. Details of the actual preparation of the vaccine are given; it was always used within three days and usually within 12 hrs. of preparation. In the 1565 injections, the Koch phenomenon was observed five times—in three cases injected because of mistaken identity; these three persons were tuberculin positive. In one of the other two, death took place from miliary tuberculosis two months after vaccination, which had probably been performed in the preallergic stage of the disease. The reactions which occurred after the injection are described; they varied in different subjects but consisted essentially of nodule formation with subsequent ulceration followed by healing, the whole process taking 8–12 weeks. One year after vaccination 93.3% of the subjects reacted to tuberculin; three years after vaccination the proportion was 95.3%. There appeared to be advantage in culture on Sauton's fluid medium over veal-broth-potato medium. "Further observation over a period of years will be necessary to determine whether or not in man the local response to injection of BCG vaccine possesses prognostic value in determining resistance to tuberculosis."—J. D. ARONSON, E. I. PARR and R. M. SAYLOR. *Am. Rev. Tuberc.*, 42 (1940), 651; through *Bull. Hyg.*, 16 (1941), 456. (T. C. G.)

Carbon Dioxide—Simple Apparatus for Culturing Bacteria in. Many organisms such as the Brucella and gonococci require several atmospheres of carbon dioxide for optimal growth when first isolated. The usual apparatus for supplying the carbon dioxide may be too expensive or elaborate for the small laboratory. The author has ingeniously utilized the small "Sparklet" bulbs supplied for Seltzer bottles as a source of carbon dioxide. These bulbs contain about 4500 cc. of gas, or sufficient to replace one-tenth the atmosphere of an ordinary McIntosh and Fildes jar 14–18 times. The bulb is connected to the soda siphon in the usual way and the outlet of the siphon is connected by a rubber tube to a displacement apparatus consisting of a flask filled with colored water and a mercury displacement bulb. Another rubber tube leads from the displacement apparatus to an ordinary anaerobic jar. When carbon dioxide is released into the siphon bottle it displaces a measured amount of water into the displacement bulb. The gas is then forced into the anaerobic jar by the pressure of the water in the displacement bulb.—J. B. POLDING and W. EDWARDS. *J. Path. Bact.*, 52 (1941), 145. (T. C. G.)

Chemotherapy—Failure of, in Relapsing Cerebro-

spinal Fever. This case is of some interest as being the only one in a series of 248, with a case mortality of 10.1%, to exhibit a return of symptoms after apparent cure. Worster-Drought and Kennedy consider that recurrence of symptoms should not be termed a true relapse until there is freedom from signs and symptoms for at least a fortnight, the C.S.F. being normal in all respects. This case appears to be one of true relapse and not a recrudescence, because there was complete freedom from symptoms for thirty days after the C.S.F. had become normal. In spite of massive chemotherapy there was no response either clinically or in the C.S.F., which, however, improved temporarily after the intrathecal administration of human convalescent serum. The meningococci had apparently become "drug fast" after the first course of chemotherapy, because massive dosage had no effect on them when the relapse took place. Repeated leucocyte counts revealed no tendency to granulocytopenia. It seems advisable, in a case of relapse, to introduce the use of human convulescent serum by the intrathecal route as soon as possible.—D. T. THOMAS. *Lancet*, 239 (1940), 297. (W. H. H.)

Diphtheria Antitoxin—Studies on the Physical Properties of. Tiselius, in 1937 found that electrophoresis divided the proteins in normal horse serum into four components, albumin and the three globulins, *alpha*, *beta* and *gamma*. The antibody to egg albumin in rabbit serum is associated with *gamma*, whereas in antipneumococcus horse serum an electrophoretic component not present in normal serum contains the antibody. Kekwick and Record established their constants for normal horse serum, and then examined sera of horses being immunized with purified diphtheria toxoid. The sera were all tested for antitoxin by flocculation, *Lf*, for flocculation time, *Kf*, nitrogen content of floccules in the Ramon test, and for serum ratio, *i. e., in vivo*:*in vitro* antitoxin value. During immunization the *gamma* globulin remains almost constant, while the *beta* globulin increases rapidly; the antitoxin is associated with these two components. The two globulins show sharp differences in *Kf*, serum ratio and floccule nitrogen. The authors state that *beta* globulin and toxin indicating-mixture in the Ramon test consists of one molecule of toxin and two of antitoxin (TA_2), and since the floccules from the *gamma* globulin indicating-mixture contain twice as much nitrogen, they presumably have the constitution (TA_4). The *gamma* globulin antitoxin combines more rapidly with toxin, but probably is less stable.—R. A. KEKWICK and B. R. RECORD. *Brit. J. Exptl. Path.*, 22 (1941), 29; through *Bull. Hyg.*, 16 (1941), 415. (T. C. G.)

Drug Resistance During Sleeping Sickness. From a study of tests made in rats on the sensitivity to tryparsamide and Bayer 205 of 23 strains of trypanosomes (*I. rhodesiense*) it was concluded that the organism developed resistance to the former but not to the latter.—FRANK HAWKING. *Am. J. Trop. Med.*, 21 (1941), 469-479. (W. T. S.)

Dysentery and Enteric Fevers—Ultraviolet Vaccines against. The authors have shown that the effect of ultraviolet rays on *Bact. dysenteriæ* is to remove practically all its toxicity. A vaccine made from a culture so treated will protect against a living culture but not against toxins of the organism. The latter can be achieved by partial detoxication through the application of the rays. The authors are of the opinion that for protection against dysentery it is antibacterial immunity that is the chief aim. They have studied the toxic, antigenic and immunizing properties of an "Ultraviolet" tetravaccine, against *Bact. typhosum*, *Bact. paratyphosum* B, *Bact. dysenteriæ* Shiga and *Bact. dysenteriæ* Flexner-Hiss. Their experiments tend to show that the toxicity of the components is not enhanced by their combination. As regards immunizing properties, that of Shiga's organism is lowered to some degree by association with the others, but this can be made good by increasing the proportion of that constituent.—W. TROITZKI, S. MILOWANOWA and T. SWIRIDOWA. *J. Microbi l., Epidemiol. Immunobiol.*, 5 (1940), 23; through *Bull. Hyg.*, 16 (1941), 320. (T. C. G.)

1162 F—Results of, Employed in Certain Cases of Flexner's Dysentery Bacillus. The authors report to have obtained favorable results in severe and dragging forms of Flexner's dysentery bacillus by employing 1162 F given orally during several days in doses of 6, then 5, and 4 Gm. Nitrogenation is not a contraindication, it is justified only when there is rechlorinization. 1162 F appears to have neither a preventive nor curative action upon the occulosynovial syndrome of bacillary dysentery. Perhaps it may have an acute phase in preventing the development of secondary intestinal microbes.—H. GOUNELLE, A. BOHN, C. KOSKAS and J. MARCHE. *Soc. Méd. des Hopitaux*, Aug. 9, 1940; through *Presse méd.*, 62-63 (1940), 672. (W. H. H.)

Ficin. Parasiticidal Properties of the Proteolytic Enzyme. The crude latex of *Ficus glabrata* and *F. doliaria* is highly parasiticidal, preserved latex is somewhat weaker. Amorphous ficin, prepared from the latex, although relatively stable, is about half as efficient as the semi-refined crystoid. The latter however, deteriorates rapidly if exposed to air. The most satisfactory results were obtained with whipworms, those with hookworm were less satisfactory. Amebostatic and, at times, amebicidal properties were observed.—E. C. FAUST and L. F. THOMEN. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 485. (A. E. M.)

Fungistatic and Fungicidal Agents—Further Laboratory Tests on. It had been previously found that the dilution of some 20 well-known fungistatic and fungicidal chemicals (including dyes) necessary to inhibit the growth or kill certain fungi varied widely from the next higher dilution which failed to do so. The present paper is to report the effective endpoints of the same substances (mercurials, dyes, phenols, etc.) against four species of fungi, *Epidermophyton floccosum*, *Achorion vialaceum*, *Microsprum audouini* and *Achorion actoni*. The technique used for the fungicidal and fungistatic tests was the same as that previously reported (*Indian J. Med. Res.*, 25 (1938), 603). In the present study the dilutions of the agents ranged from $^1/_{1000}$ to $^1/_{100,000}$. The results are tabulated in 6 tablets.—P. S. MAPLESTONE and N. C. DEY. *Indian J. Med. Research*, 29 (1941), 23-49. (W. T. S.)

Fungistatic Value of Certain Ointments. Though generally there is a close relationship between bactericidal and fungicidal action of most substances, there are exceptions. The purpose of this investigation was to determine the fungistatic value of some of the official ointments and certain other non-official ointments prepared from substances of known fungicidal value in solution form. Also it was to determine whether the base used in an ointment affected fungistatic value. Official ointments tested were ointments of iodine, ammoniated mercury, yellow mercuric oxide, phenol, sulfur and compound benzoic acid. Non-official ointments were made from thymol, oil of cinnamon and chlorthymol. All were tested for fungistatic value. Experimental details are given, plates shown, formulas submitted and measurements of fungistatic effects tabulated. Conclusions were that "a bacteriostatic ointment may or may not be fungistatic, the fungicidal value of a substance in solution form is not an indication that it will have the same value or any value at all in ointment form and the fungi-

static effect of a substance in ointment form may depend upon the base into which it is incorporated." The U. S. P. ointments of phenol, yellow mercuric oxide, ammoniated mercury, sulfur and iodine have little or no fungistatic effect when tested against *Monilia albicans* or *Trichophyton interdigitale;* ointment of benzoic acid compound, N. F. has decided fungistatic property; thymol and oil of cinnamon have excellent fungistatic action in any base tried but especially in vanishing cream or cold cream; ointments of thymol or oil of cinnamon or a combination of them in either cream are superior to any ointment tested. A formula containing both is submitted.—FRANCIS J. O'BRIEN and WILLIAM I. BONISTELL. *Jour. A. Ph. A.*, 30 (1941), 191.
(Z. M. C.)

Gangrene in Scarlet Fever. A case of scarlet fever complicated by gangrene of the foot is described. Recovery followed amputation and mastoidectomy. The infecting organism was *Staph. aureus* and not, as might have been expected, a hemolytic streptococcus.—G. E. BREEN. *Lancet*, 239 (1940), 196. (W. H. H.)

Gas Gangrene and Tetanus—Active Immunization Against. A method is described whereby *Cl. welchii* toxin can be satisfactorily concentrated with sodium chloride and acetic acid. An alum precipitated toxoid of tetanus and *Cl. welchii* was mixed and used to actively immunize guinea pigs. From the experimental evidence obtained there is no reason to believe that this would not be a practical procedure for human immunizations, especially among military personnel. Injection of the mixed toxoids into human volunteers has caused no untoward reactions.—W. J. PENFOLD, J. C. TOLHURST and D. WILSON. *J. Path. Bact.*, 52 (1941), 187.
(T. C. G.)

Gramicidin and Tyrocidine—Chemical Nature of. Gramicidin is a polypeptide which contains no free amino or carboxyl groups. The total nitrogen and oxygen content is accounted for by α-amino acids and a 1,2-aminohydroxy compound which is not an α-amino acid. Amino acids which have been identified are *l*-tryptophane, *d*-leucine and alanine. Several alternative empirical formulas for gramicidin can be proposed. The data have been discussed in connection with two satisfactory formulas corresponding to molecular weights of 1054 and 1413. Tyrocidine hydrochloride is a salt of a polypeptide having free basic amino groups. The most probable molecular unit has two amino groups, three amide groups and one weakly acidic carboxyl or phenolic group and a molecular weight of 2534. Tryptophane, tyrosine and dicarboxylicamino acids, in part aspartic acid, have been detected.—ROLLIN D. HOTCHKISS. *J. Biol. Chem.*, 141 (1941), 171.
(F. J. S.)

Gramicidin and Tyrocidine—Occurrence of *d*-Amino Acids in. Enzymatic assay with *d*-amino acid oxidase indicates that 45 per cent of the α-amino acids of gramicidin hydrolysates have the *d* configuration. Tyrocidine appears to contain *d*-amino acids amounting to 20% of its α-amino acids.—FRITZ LIPMANN, ROLLIN D. HOTCHKISS and RENE J. DUBOS. *J. Biol. Chem.*, 141 (1941), 163. (F. J. S.)

Halogenated Phenols and Their Phenolates—Relative Germicidal Action of Some. The germicidal strength of phenols increases directly with the number of chlorine atoms substituted. Comparison of the acid and alkaline solution shows that the undissociated phenolic compounds are far more germicidal than their phenolates, although the latter are not without toxicity. From the ration of the phenolate of 2,4,6-trichlorophenol at *p*H 9.80 to that of the phenol at *p*H 5.86 it appears that the undissociated phenol is approximately 100 times more active than its phenolate.—E. J. ORDAL. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 387.
(A. E. M.)

Influenza—Studies on, and Its Virus. A review of work done on influenza, human and porcine, describing the isolation and properties of the virus and relation of the two species. Immunity and vaccination are discussed, and serum therapy and chemotherapy are evaluated.—ETTORE BIOCCA. *Arq. Biol., Sao Paulo*, 25 (1941), 25.
(G. S. G.)

Leprosy—New Method of Diagnosis by Intradermo-Reaction. The authors prepared an antigen in part from the urine of bacteriological positive leprosy cases after the technique of Mas Aron. The intradermal injection of a few drops of this antigen produces in lepers a rise in temperature of 38–39° in 8 hrs.; and the formation of a papule greater than 1 cm. in diameter in from 8 to 24 hrs. accompanied by redness and pain in the majority of cases. The same injection in non-lepers failed to produce a rise in temperature and the diameter of the erythmic papule was always less than 1 cm.—P. BERNY and J. MAUZE. *Soc. de Path. Exotique*, April 10, 1940; through *Presse med.*, 58-59 (1940), 642.
(W. H. H.)

Measles—Immune Globulin in the Modification and Prevention of. In a series of 457 children who were reported as having had close or casual exposure to measles and who were treated in private practice with globulin solution prepared and distributed by the Division of Laboratories and Research, New York Department of Health, 93.5% either had the disease in a mild form or were protected against it. In a group of 201 children in institutions, the corresponding percentage was 77.6. When both groups are classified according to age, those between one and three years appear more susceptible to measles than older or younger children. The greatest protection in children in private practice was obtained in those injected before the third day following exposure. One dose of at least 5 cc. of the product appears necessary if the prevention of the disease is desired. The many variable factors make it impractical to be more specific than to advise a present dose of from 2.5 to 5.0 cc. Of the 457 children, 24.5% developed mild reactions consisting chiefly of local soreness and swelling. An additional 3.9% were reported as having general reactions with fever or malaise. None of the reactions was considered alarming. Two infants under four months of age developed measles despite the fact that their mothers are recorded as having had measles and globulin solution had been administered.—H. W. LYALL and P. H. MURDICK. *N. Y. State J. Med.*, 41 (1941), 452; through *Bull. Hyg.*, 16 (1941), 317.
(T. C. G.)

Meningococci—Use of Guinea Pig in the Typing of. Twenty-nine strains of meningococci were obtained from blood and cerebrospinal fluid. Fourteen strains were group I, eleven were type II when tested by agglutination and absorption of agglutinins; four showed cross agglutination, but the titre was higher in group I serum with one strain, higher in type II in two strains and indefinite with one strain. In most instances group I strains did not survive in any dilution of 1 in 10,000 and 1 in 100,000 so that the ability of survival in blood of normal guinea pigs may be regarded as a mode of distinguishing group I and type II strains. Further study to explain the phenomenon is to be undertaken.—N. SILVERTHORNE. *Canad. Pub. Health J.*, 32 (1941), 120; through *Bull. Hyg.*, 16 (1941), 478.
(T. C. G.)

Nicotinic Acid and Nicotinamide—Comparative Activity of, as Growth Factors for Microörganisms. The growth-promoting properties for microörgan-

isms of nicotinic acid and nicotinamide vary considerably with the type of organism. One type of the *Pasteurella* group whose growth and respiration are promoted by nicotinamide showed no influence of nicotinic acid.—STEWART A. KOSER, SAM BERKMAN and ALBERT DORFMAN. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 504. (A. E. M.)

Paranitrobenzoic Acid—Bacteriostatic Effect of, on Pneumococci in Vitro. Paranitrobenzoic acid and the salt compare favorably with sulfathiazole in their bacteriostatic power against type II pneumococci, *in vitro*.—JOSEPH T. KING and AUSTIN F. HENSCHEL. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 400. (A. E. M.)

Pertussis Toxin and Toxoid. Cultures of pertussis bacilli are grown in a medium of soluble-starch broth, vegetable extract broth or semisolid agar, the bacteria are separated from the medium by filtration and the filtrate preserved as a toxin or, if desired, detoxified, *e. g.*, by addition of formalin, to form a toxoid. In an example the bacilli are cultivated for about 48 hrs. at 37° C. under an atmosphere containing about 1 part by volume of carbon dioxide and 4 parts of oxygen.—EDWIN F. VOIGT and SARA W. PHILLIPS, assignors to LEDERLE LABORATORIES, INC. U. S. pat. 2,240,969, May 6, 1941. (A. P.-C.)

Phenols—Relationships between the Structures and Bactericidal Properties of. A critical review on the correlation of the chemical structure of phenols and phenolic derivatives with their bactericidal properties. The compounds discussed are classified into the following groups: Polyhydroxy phenols; halogenated phenols; alkylphenols; alkylresorcinols; alkylcatechols and alkylhydroquinones; alkylphloroglucinols and alkylpyrogallols; alkylhalophenols and alkylhaloresorcinols; hydroxycarboxylic acids and their derivatives; nitro-, amino- and sulfo-phenols; hydroxyaryl alkyl ethers and sulfides; hydroxy derivatives of biphenyl; hydroxy derivatives of diphenylmethane; and derivatives of aryl ethers and of aryl sulfides. The general conclusions arrived at by the author on the effect of structure on the bactericidal properties of these compounds may be summarized as follows: (1) The introduction of halogen into the nucleus of a phenolic compound without exception increases its bactericidal potency. (2) The introduction of an alkyl group into the phenol nucleus produces a rise in bactericidal action, followed by a decrease as the carbon chain extends beyond five or six carbon atoms (when *B. typhosus* and other Gram-negative organisms are employed for testing). A normal carbon chain has more effect than a branched one containing the same number of carbon atoms. A primary alkyl group has more effect than a secondary or tertiary alkyl group of the same weight. The effect of halogen and alkyl on bactericidal properties is more or less independent, *i. e.*, if an alkyl group raises the phenol coefficient, a halogen atom increases it still further. (3) Separation of an alkyl group from the phenol nucleus by oxygen decreases the germicidal activity, and the presence of oxygen as an alcohol or ether group in the side chain likewise produces this effect. On the other hand, a sulfur atom between the aryl and alkyl group increases the bactericidal action, the sulfur acting somewhat as an additional methylene group. (4) Increasing the number of hydroxyl groups attached to an aromatic nucleus decreases the germicidal activity, a decrease that cannot effectively be compensated for by alkyl and halogen when more than two hydroxyl groups are present. The author suggests that further investigation of the bactericidal properties of aromatic compounds in which the halogen atom is substituted in the meta position to a phenolic hydroxyl group and also of the halogenated hydroxylbiphenyls appears to be justified. The review is accompanied by twenty-nine tables and a bibliography of 162 references.—C. M. SUTER. *Chem. Rev.*, 28 (1941), 269–299. (N. L.)

Pneumococcus Typing—Improved Method for. The author describes his modification of Neufeld's "quellung" method for typing pneumococci. The method is described as follows: The mucoidal rather than the purulent portion of the sputum is selected and from it four very thin smears are made in the form of a ribbon 10 to 15 mm. wide along the long axis of microscopic slides. The smears are alowed to dry at room temperature. Two of the smears are marked with the group designation A, B, C, D, E and F. One loopful of group A antipneumococcus serum is spread on the smear in a round area about 10 mm. in diameter. If methylene blue has been added to the antiserum previously, two loopfuls are used, otherwise another loopful of methylene blue is spread over the antiserum. A round cover glass 18 mm. in diameter is used to cover this area. Similar smears are made with antisera of group B and C on the same slide; groups D, E and F are put likewise on a second slide and properly marked. The smears can be examined immediately under the 4-mm. objective. The dry smears as compared with the usual procedure offer the following advantages: they afford a better concentration of the antiserum, the microscopic field looks clearer and additional smears can be saved for reference at some later date. In one case three-year-old smears gave an excellent "quellung." Dried smears, made by the physician at the bedside, can be sent in to the laboratory. The 4-mm. objective gives a wide field of vision facilitating the rapid examination of the slide; and there is less difficulty in keeping the pneumococci in focus.—A. B. PRANION. *J. Lab. Clin. Med.*, 26 (1941), 1672. (T. C. G.)

Pneumococcus Which Required CO_2 for Its Growth. The simple microscopical examination of infected material should not be omitted. If the nasal mucopus from the case cited had not been examined microscopically it is likely that the profuse pure culture of *B. influenzæ* would have satisfied most bacteriologists that there was a simple *B. influenzæ* infection, but the examination of a gram-stained film made it at once obvious that the culture gave a misleading picture. Even on what it regarded as a suitable culture medium a common organism may fail to develop unless CO_2 is added to the atmosphere.—A. FLEMING. *Lancet*, 240 (1940), 110. (W. H. H.)

Pulmonary Tuberculosis—Vitamin C in. By present known standards and by comparison with a group of healthy individuals, patients with chronic pulmonary tuberculosis show a deficiency in vitamin C. The vitamin C concentration in the blood can be raised in most patients to normal levels by oral administration of synthetic vitamin. After correcting what appeared to be a vitamin C deficiency for a period of six months in a group of 101 patients, no significant favorable effects could be noted as judged by the usual clinical criteria, when compared with a group of controls.—A. KAPLAN and M. E. ZONNIS. *Am. Rev. Tuberc.*, 42 (1940), 667; through *Bull. Hyg.*, 16 (1941), 385. (T. C. G.)

Scarlet Fever—Comparison of Therapeutic Procedures for. Four groups of cases were treated (1) by sulfanilamide, (2) by sulfanilamide and scarlet fever antitoxin, (3) by scarlet fever antitoxin, while the remainder, (4) received no specific treatment. The results were estimated in terms of effects on the early toxic phase of the disease and on complications, but as the controls receiving no specific treatment were all mild, it is difficult to judge the effects of the various methods. The general conclusions were

that the effect of sulfanilamide in scarlet fever is not beneficial as in other streptococcal infections, that the early toxic phase is not much influenced, that the drug should be given in severe and moderately severe cases and that scarlet fever antitoxin should be given early.—H. RASCOFF and S. NUSSBAUM. *Am. J. Dis. Child.*, 60 (1940), 552; through *Bull. Hyg.*, 16 (1941), 317. (T. C. G.)

Spore-Forming Anaerobic Bacteria—Use of Dehydrated Thioglycollate Medium for. In 1940 Brewer suggested for the culture of anaerobic bacteria a clear liquid medium with sodium thioglycollate as the reducing agent. Comparative tests were carried out with Brewer's and five other media. The media were: (1) Brewer's dehydrated thioglycollate made from pork infusion; (2) McClung and McCoy's liver infusion broth with liver particles; (3) Liver infusion broth with 0.1% sodium thioglycollate and 0.01% agar; (4) Beef infusion with beef particles; (5) Beef infusion with thioglycollate and agar as in 3; (6) Corn-liver medium of McClung and McCoy. The organisms tested included *Cl. welchii, œdematiens, septicum, œdematoides, tetani, parabotulinum, sporogenes, acetobutylicum, felsineum, roseum* and *butyricum*. Two or more tubes of each medium were inoculated with 1.0 cc. of decimal solution from 10^{-3} to 10^{-9} of broth cultures of the organisms and incubated at 37° C. For the pathogenic bacteria, the best media were (1) and (3); for the butyric acid and butyl alcohol group (2) and (6) were the best. Owing to the ease of preparation and the fact that the medium stays reduced for days after sterilization, Brewer's is recommended for general adoption for pathogenic and proteolytic anaerobes.—L. S. MCCLUNG. *J. Bact.*, 40 (1940), 645; through *Bull. Hyg.*, 16 (1941), 478. (T. C. G.)

Streptococcic Antifibrinolysin—Relation of, to Acute Rheumatic Fever. Certain strains of the beta-hemolytic streptococcus produce a substance capable of liquefying human fibrin. A specific antibody, antifibrinolysin, has been demonstrated in human serum. The amount of streptococcic antifibrinolysin present in the blood of 73 children with acute rheumatic fever was studied. Twenty-eight per cent of the patients had typical rheumatic fever without an appreciable increase in antifibrinolysin during the active stage of the disease. The titer of antifibrinolysin was measured by the time required for an effective strain of beta-hemolytic streptococcus to produce complete lysis of the subject's plasma clot. A comparison of the data suggests that a patient with acute rheumatic fever who has a low titer of antifibrinolysin may be less apt to have arthritis but may be more apt to have a heart block, pericarditis and cardiac decompensation. It may be that, in the acute stage, a high titer of the antibody is associated with some mechanism which tends to prevent cardiac involvement.—J. A. LIGHTY, JR. *Am. J. Dis. Child.*, 62 (1941), 92; through *Abbott Abstract Service*, (1941), No. 1002. (F. J. S.)

Streptococcus Viridans Septicemia—A Cure of, with Sulfapyridine. The author summarizes his work as follows: This case is presented to show: (1) How decisive must be the action of the chemotherapeutic agent sulfapyridine on the streptococcus viridans in the blood stream. Four positive blood cultures prove conclusively the blood stream was infected, and then after the blood pyridine concentration was raised to and maintained at 16 mg. % for four consecutive days the subsequent blood cultures remained sterile. (2) The fact that for several days in the early stages of this illness there was every reason to believe that we were dealing with an endocarditis as well as a pericarditis as complications in this case. (3) The case illustrates very forcefully how critically and how desperately ill a case of this type can be and yet make a one hundred per cent recovery as revealed by the fact that subsequent examination six months after the onset of illness reveals no abnormal physical or laboratory findings.—GEORGE B. MOORE, JR. *Military Surgeon*, 90 (1942), 155. (F. J. S.)

Sulfadiazine and Sulfathiazole—Comparative Study of Effect of, on Staphylococcus Aureus. Sulfadiazine increases the bactericidal action of normal blood when added *in vitro* or after oral administration. Comparative tests show that sulfathiazole is somewhat superior to sulfadiazine in its effect on *Staphylococcus aureus*.—CHARLES H. RAMMELKAMP and MARJORIE L. JEWELL. *Proc. Soc. Exptl. Biol. Med.*, 48 (1941), 27. (A. E. M.)

Sulfadiazine—Bacteriostatic and Bactericidal Action of, in Vitro on Gram Negative Bacteria. When small inocula are planted in a semi-synthetic medium sulfadiazine and sulfathiazole are bactericidal in concentrations as low as 1 or 2 mg. % on *E. coli, Shigella paradysenteriæ* (Flexner) and *S. choleræ suis* (suipestifer); and in 5 mg. % on *S. enteridilis, S. schottmuelleri* and *S. typhi murium* (aertrycke). In the latter concentration they are bacteriostatic for *S. paratyphi* and in 10 mg. % they are bactericidal for *Klebsiella pneumoniæ*, type A.—ELIAS STRAUSS and MAXWELL FINLAND. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 432. (A. E. M.)

Sulfanilamide—Chemotherapeutic Evaluation of Some Derivatives of. 2-(Sulfanilamido)-5-ethyl-4-thiazolone (sulfaethylthiazolone) has less antistreptococcic activity and approximately the same antipneumococcic activity as sulfapyridine. Its antistaphylococcic activity is of the same order as that of sulfathiazole and sulfadiazine. Sulfadiazine produces urolithiasis medicamentosa capable of causing death by acute suppression of urine in mice and rats, whereas sulfaethylthiazolone is free from this defect but may cause fatal anemia.—FRANK B. COOPER, PAUL GROSS and MARION LEWIS. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 508. (A. E. M.)

Sulfanilamide and Azochloramide—Combined Bacteriostatic Acitivity of, upon Group A Hemolytic Streptococcus and Enterococcus. Sulfamilamide (1 mg. %) used in combination with azochloramide ($^1/_{800,000}$) may completely prevent growth of enterococcus and exert greater bacteriostatic activity than azochloramide alone even in a concentration twice as great.—ERWIN NETER. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 303. (A. E. M.)

Sulfanilamide Derivatives. VI. Substituted N^1-Aliphatic Sulfanilamides. Eighteen new sulfanilamide derivatives are reported. These are sulfanilyl derivatives of aliphatic amines, polyamines, amino alcohols, diamino alcohols and aminoacid esters. Closely allied derivatives of morpholine and difurfurylamine are included. The available pharmacological results indicate that these compounds as a class are less effective than sulfanilamide against infections by beta hemolytic streptococci in mice.—M. L. CROSSLEY, E. H. NORTHEY and M. E. HULTQUIST. *J. Am. Chem. Soc.*, 62 (1940), 532–534. (E. B. S.)

Sulfanilamide, Sulfapyridine and Sulfathiazole—In Vitro Effect of, on Corynebacterium Diphtheriæ. Marked bactericidal action of several sulfanilamide compounds on *C. diphtheriæ* with appropriate inoculum was observed. Sulfathiazole was most active on the largest number of strains tested and sulfanilamide the least. It requires 24 hrs. of contact between the chemicals and the organisms before the bactericidal action can be appreciated, which fact explains the failure in the treatment of diphtheria carriers by local application.—GEORGE

OUYANG. *Proc. Soc. Exptl. Biol. Med.*, 48 (1941), 41. (A. E. M.)

Sulfanilamidobenzenesulfonic Acids—Some Fluorine and Chlorine Derivatives of. The isomeric 4-fluoroaniline- and 4-chloroaniline-sulfonic acids have been prepared. The sulfanilamidohalobenzenesulfonic acids prepared from these did not exhibit action against streptococcus and type I pneumococcus infections in white mice. *N*-Sulfanilyl-4-fluoroaniline showed a slight effect against streptococcus infections.—C. M. SUTER and A. W. WESTON. *J. Am. Chem. Soc.*, 62 (1940), 604-606. (E. B. S.)

Sulfathiazole in Some Experimental Bacterial and Virus Infections. Experiments have shown that sulfathiazole has appreciable therapeutic effect in experimental *Bact. typhosum* infections in mice but is of no therapeutic value in experimental *V. cholera* and fixed rabies virus infection in the same animal and vaccinia virus infection in rabbits. Sulfanilamide and sulfapyridine were used in some of the infections for the sake of comparison.—R. SANJIVA RAO and K. GANAPATHI. *Indian Med. Gaz.*, 76 (1941), 78-81. (W. T. S.)

Sulfonamide Drugs—Selective Inhibition of, by Various Media. Sulfathiazole and sulfadiazine are inhibited to varying degrees in different media. In blood broth, sulfadiazine is selectively inhibited to a greater degree than sulfathiazole. In human serum sulfathiazole is inhibited to a greater degree than it is in blood broth, in human plasma, in defibrinated blood or in horse serum, while sulfadiazine is inhibited to about the same extent in these media. In liver infusion both are about equally effective at a concentration of 5 mg. %, but sulfathiazole is more effective at lower concentrations. Proper selection of media for comparative *in vitro* tests of various sulfonamides seems to be of importance in order to avoid errors by selective inhibition.—ELIAS STRAUSS and MAXWELL FINLAND. *Proc. Soc. Exptl. Biol. Med.*, 47 (1941), 428. (A. E. M.)

Surface Tension Reducements in Bactericidal Solutions and Their in Vitro and in Vivo Efficiencies. The authors noted the following findings: (1) The addition of thirty-nine available marketable surface tension reducing chemicals, commonly employed as wetting agents, in concentrations of 0.1%, 0.5% and 1.0%, respectively, to the antiseptic dilutions of sixteen phenolic, ten mercurial and two halogen compounds (and without making adjustments to specific hydrogen-ion concentrations) did not increase their bactericidal or bacteriostatic efficiencies. (2) Regardless of whether antiseptic solutions were or were not applied to experimentally produced puncture wounds in normal rabbits, the wounds healed by primary repair within 12 to 13 days. The use of twenty-eight antiseptic solutions containing separately 0.1%, 0.5% and 1.0% of the twelve surface tension reducing agents and various controls (unadjusted to specific hydrogen-ion concentrations) did not appear to affect the healing rate of experimentally produced puncture wounds in rabbits. (3) The addition of twelve wetting agents to aquesous solutions of mercuric chloride and arsenic trioxide did not increase the penetration of the inorganic compounds when applied to the unbroken skin of the rabbits. (4) Sterilization of uniform pieces of rabbit skin exposed to the antiseptic solutions, with and without the addition of twelve surface tension reducing agents and various control agents was not accomplished. Disinfection of the skin was a variable factor, varying in the same disinfectant and from experiment to experiment. (5) The toxicity of the twelve wetting agents employed appeared to be negligible, since rabbits were capable of withstanding large doses intravenously, intraperitoneally and *per os*, without displaying change in weight, activity or in the blood picture over a period of three months.—GERSHENFELD and B. WITLIN. *Am. J. Pharm.*, 113 (1941), 215. (A. C. DeD.)

Syphilis—New Serology of. Indications are that the serology of syphilis, as it has developed during the past three decades, embraces two distinct types of positive reactions. One is essentially an immune reaction, similar to agglutination, precipitation and other antigen-antibody reactions in immunity, which apparently is specifically associated with syphilis. The other type of reaction may or may not be associated with immunity; in lower animals it occurs under apparently normal conditions; in human beings it most frequently occurs under pathologic conditions, but it is definitely not associated with syphilis. In the new serology of syphilis every positive reaction in which there is a question as to its relationship to syphilis will be subjected to special studies, not alone with the verification test but also, should it prove necessary, with all possible supplementary procedures. The serologist then will assume full responsibility for his report just as the roentgenologist, for example, is responsible for his. Should the serologic reaction be found to be of the general biologic type and unrelated to syphilis, clinicians will not disregard it, but will investigate the reason for this reaction, especially as to whether some pathologic condition is responsible for it. Repeated serologic studies might reveal an increase or a decrease in the potency of the reaction, and these changes might correspond to changes in the pathologic condition. Then again, the studies might reveal, in some cases, a tendency toward positive serologic reactions in the apparent absence of pathologic conditions. The new serology of syphilis will thus lead not only to more dependable laboratory diagnosis of syphilis, but also to the study of the significance of those reactions not associated with this disease. A positive serologic reaction in the diagnosis of an asymptomatic case will first of all require "typing" of the reaction to determine whether it is syphilitic or general biologic. This determination may necessitate repeated serologic studies, considering that a person who shows no signs or symptoms of syphilis is to be diagnosed as syphilitic or as free from syphilis. The increased dependability of the serologic diagnosis of syphilis should remove objections against routine blood testing. This step in turn should greatly aid in the control of syphilis.—R. I. KAHN. *J. Lab. Clin. Med.*, 26 (1940), 139. (T. C. G.)

Tetanus in the Soil of Key West, Florida—Survey of. Of one hundred soil specimens taken from various places in the city of Key West, Florida, six were shown to contain tetanus bacilli.—ALVAN G. FORAKER and JOE F. JAYCOCKS. *The Military Surgeon*, 89 (1941), 747. (F. J. S.)

Tuberculin Testing in Chicago Schools. The figures of positive reactors in this survey range from 4.4 to 30% for whites and from 10 to 58.7% for Negroes, between the ages of 5 and 19. Thus the Negroes showed more positives than the whites, and it is noted that they also showed twice as many intense reactions. In the group of 23,532 X-ray films taken, 218 cases of reinfection tuberculosis were found: 107 were also found in follow-up work in suspects, 226 through follow-up into the homes and 35 in teachers and school workers. Thus 586 new cases were discovered. As a result of this work the author does not think that the tuberculin testing of children and the following up of the positive reactors is a procedure which is worth while; it was estimated that the cost worked out at $450 for each case found. It was also found that in following positive reactors to their homes, the source of infection had already been established in 90 per cent, which reflects credit on the efficiency of existing case-finding

machinery. He discusses the question at some length and concludes finally that the method of case-finding of greatest value in the total X-ray survey of areas of high tuberculosis mortality is by means of miniature radiography with a mobile unit. In two months, by X-raying 10,000 persons, more cases have been found than in the whole three years' tuberculin survey here reported.—T. FICE. *Am. Rev. Tuberc.*, 43 (1941), 96; through *Bull. Hyg.*, 16 (1941), 325. (T. C. G.)

Tuberculins—Comparison in Same Individual of Different. A group of 437 colored children was subjected to X-ray examination, and each child was, at or about the same time, tested with OT (the preparations of two companies being used simultaneously), PPD and the Vollmer patch test. The first dose of OT was 0.01 mg. followed by 1.0 mg. if negative; the first dose of PPD was 0.00002 mg. followed by 0.005 mg. if negative. The results cannot be given in detail, but it was found that there were marked variations in the reactions of the group to different products; for instance, positive results were given in 60.0% with one brand of OT and in only 47.6% with the other. Of 274 total reactors only 166 reacted to all four tests, 26 reacted to three, 33 to two and 49 to one test. X-ray showed 31 children (7%) with possible tuberculous lesions and of these all but five reacted to one or more tests. In a second study, on white children who had a family history of tuberculosis, tests with OT (of the first company referred to above) and PPD were carried out, with 49 and 39.6% positive results, respectively, but in certain respects these results did not run parallel to those found in the Negro children. Whether the discrepant results are due to non-specific reactions or not, cannot be determined from this study, but it is evident that the establishment of reliable standards for all commercial preparations is advisable. The findings do not confirm the work of others who have found that the Vollmer patch test can replace at least the first dose of intracutaneous tuberculin, but for the detection of clinically significant lesions all preparations appear to be of equal value.—C. L. SAVAGE. *Am. Rev. Tuberc.*, 43 (1941), 527; through *Bull. Hyg.*, 16 (1941), 453. (T. C. G.)

Typhoid Vaccine—Protective Antibodies Produced by the Oral Administration of. Each of 25 subjects was given a course of oral typhoid vaccine consisting of three capsules taken at 24-hr. intervals and containing, in each capsule, 10,000 million heat-killed typhoid bacilli (Strain No. 58). One capsule was taken on three successive mornings, one hour before breakfast. Specimens of blood were taken from each subject before and from two to six weeks after immunization. Agglutinin titres were determined by the authors and in addition, samples of blood were sent to the Army Medical School in Washington, D. C., to be examined for their mouse protective antibodies. Agglutinin titres varying from 1:160 to 1:640 were found in most specimens six weeks after immunization. On the other hand, the results of the mouse protection tests for protective antibodies were practically 100% negative. The authors conclude that despite the reported success of oral typhoid vaccination in other countries, on the basis of their studies, they cannot recommend it at the present time.—H. D. MOOR and L. B. WALLACE. *J. Lab. Clin. Med.*, 26 (1941), 1583. (T. C. G.)

Typhoid Vaccine—Revaccination and Duration of Immunity with. This report is one of a series from the laboratories of the U. S. Army Medical School. In the absence of any definite method of estimating immunity to typhoid infection, the mouse protection test was used to measure the circulating antibody content of the blood. The sera of 94% of a group of uninoculated men with no history of infection did not protect against 100 m. l. d. of *Bact. typhosum*, and only one serum out of 21 from young children protected against 1 m. l. d. On the other hand, the sera of all of 9 typhoid convalescents and 10 carriers protected mice against 100 to 100,000 m. l. d. of the test organism, only one in each group failing to protect against at least 1000 m. l. d. It is believed, therefore, as a working basis, that if the serum of a subject protects against at least 100 m. l. d., he may be regarded as immune. The standard course of vaccine for military personnel consists of three doses of 0.5 cc., 1 cc. and 1 cc. at weekly intervals, and it has been the practice to revaccinate at 3-yr. intervals with a similar course. The authors have now examined the response to revaccination with a single dose. They find that, 2 weeks after revaccination the sera of 95% of the men receiving 0.1 cc. (100 million organisms) intracutaneously, 92% of those receiving 0.5 cc. subcutaneously and and 96% of those receiving the standard 3 doses protected against 100 m. l. d. Examining the sera of men inoculated at various times previously with the standard course of vaccine, the authors found that in 12–18 months 20%, in 2 yrs. 40% and in $2^1/_2$–3 yrs. 57% failed to attain the above standard of immunity. Where 2 or more courses had been given, the group immunity remained relatively longer at a higher level but decreased with time. Revaccination of personnel is advised preferably at intervals of one year and certainly not less frequently than every two years. The single intracutaneous dose of 0.1 cc. is recommended, as the immunity attained is as good as that given by other methods and there is less tendency to severe reactions, which were observed to increase in frequency in groups receiving repeated subcutaneous injections.—D. LONGFELLOW and G. F. LUIPPOLD. *Am. J. Pub. Health*, 30 (1940), 1311; through *Bull. Hyg.*, 15 (1941), 499. (T. C. G.)

Ultraviolet Irradiation—Incidence of Infections in Hospital Reduced by. The authors have noticed that infections, particularly respiratory infections, occurred in a children's hospital with little change or abatement in spite of all ordinary precautions. Investigations went to prove that organisms pathogenic for the respiratory tract were demonstrable, as would be expected, in the wards, and that the mode of spread of infection was aerial. In order to test the effect of ultraviolet radiation, the beds in one ward were "protected" across the front and top by ultraviolet lamps, and the number of patients infected compared with those in a control ward, with beds not so protected. During a period of six months 224 patients were admitted to the control ward and 28 infections occurred among them, *i. e.*, 12.5%; in the protected ward among 154 admitted there were only 4 infections, or 2.7%.—F. DEL MUNDO and C. F. MCKHANN. *Am. J. Dis. Child.*, 61 (1941), 213; through *Bull. Hyg.*, 16 (1941), 314. (T. C. G.)

Urinary Infections—Effect of the Sulfonamide Drugs on. The disinfecting action of sulfapyridine, sulfanilamide, sulfathiazole and sulfamethylthiazole on *Proteus vulgaris*, *Bacterium coli*, *Staphylococcus pyogenes* and *Streptococcus fecalis* in urine was tested by an *in vitro* technique. Sulfapyridine was found to be the most effective drug against the first three organisms when used in a concentration of 50 mg. per 100 cc. of urine. None of the drugs was effective against *S. fecalis*. Sulfapyridine was most effective against *Proteus vulgaris* when the reaction was adjusted to *p*H 8.0. The organisms susceptible to these drugs multiply during the first 5 hrs. of contact, but after that their numbers diminish. None of the drugs was effective against a large number of bacteria. The maximum number disposed of by sul-

fapyridine (50 mg.% concentration) was as follows: *P. vulgaris* 37,000, *Bact. coli* 24,000 and *S. pyogenes* 2,900,000. An "artificial bladder" was devised whereby the continuous filling and intermittent and incomplete emptying of the obstructed bladder could be imitated. Using this apparatus, sulfapyridine and sulfathiazole were found to be much more effective than in the flask experiments described above.—J. W. BIGGER and P. A. MCNALLY. *J. Path. Bact.*, 52 (1941), 247. (T. C. G.)

Vaccination—Preventive, for Whooping Cough. A report on 1556 young children and infants vaccinated to prevent whooping cough. Only 5% contracted the disease, and in a very mild form in every case.—ANGEL ARGUDIN GARCIA. *Sanidad y Ben. Municip. (Habana)*, 1 (1941), 103. (G. S. G.)

Vaccine Lymph—Purification and Stabilization of. The authors have retested the various methods suggested and in use for the purification of vaccine lymph and the effects on its potency. Addition of ether or exposure to ether vapor has a variable effect on the lymph suspended in water or diluted glycerin. It reduces greatly the bacterial count in 24 hrs. or less, but as regards virulence it has no effect in some cases, whereas in others the virulence is markedly lowered. Carbolic acid, 1%, reduces the bacteria without altering the virulence, unless it has been glycerinated or kept *in vacuo*. Lymphs from four sources were kept at 37° C., the potency in each case fell rapidly, whether "protective" substances had or had not been added. The best protective seemed to be ox-serum at *p*H 7.4 and inactivated by heating to 56° C. Lymph purified by ether, by phenol and protected by ox-serum rapidly loses its virulence at 37° C. Shaking with glass beads and added water and centrifuging at 1000 r. p. m. for 15 min. give a cell-free suspension which contains the virulent elements; centrifugation at 25,000 r. p. m. separates the cells and "elemental corpuscles," but virulence is unaltered.—A. SORDELLI, J. FERRARI and I. GVIRTZMAN. *Rev. inst. bacteriol. dept. nacl. hy. (Buenos Aires)*, 9 (1940), 542; through *Bull. Hyg.*, 16 (1941), 500. (T. C. G.)

Vitamin C—Influence of, on Staphylococcus and Its Toxin Production. A high concentration of vitamin C slightly inhibits the action of hemolysin of staphylococcus, but it has no preventive action for acute intoxication in mouse. It also inhibits the growth of staphylococcus to some extent.—TARO KOJIMA. *Saikingaku Zasshi*, No. 525, Nov. 1939; through *Kitasato Arch. Exptl. Med.*, 17 (1940), 1. (W. T. S.)

Whooping Cough and Diphtheria—Simultaneous Immunization Against. Experiments on guinea pigs and rabbits demonstrate the compatibility of diphtheria toxoid and pertussis vaccine. In neither case does the antigenic potency of the one suffer by the inclusion of the other in the inoculum. It may, therefore, be concluded that it is both convenient and effective to immunize simultaneously against diphtheria and whooping cough in children.—H. SCHÜTZE. *Lancet*, 239 (1940), 192. (W. H. H.)

BOTANY

Carbon Dioxide Prevents the Rapid Increase in the Reducing Sugar Content of Potato Tubers Stored at Low Temperatures. The rapid increase in reducing sugar which occurs in potato tubers stored at 5° C. was prevented by storing the tubers in an atmosphere containing 5% carbon dioxide. At the end of two months at 5° C. the reducing sugar content of the CO_2-treated lot was approximately one-fifth of that of the control lot in air.—F. E. DENNY and NORWOOD C. THORNTON. *Contrib. Boyce Thompson Inst.*, 12 (1941), 79–84. (B. M. B.)

β-2-Chloroethyl-*d*-Glucoside—Synthesis of, by Wheat Plants Grown with Ethylene Chlorohydrin Added to the Nutrient Medium. A chlorine-containing β-glycoside is formed in both roots and tops of wheat plants grown in a medium containing ethylene chlorohydrin. This glycoside has been shown to be β-2-chloroethyl-*d*-glucoside through the preparation of the acetyl derivative which was found to be identical with synthetic β-2-chloroethyl-*d*-glucoside tetracetate.—LAWRENCE P. MILLER. *Contrib. Boyce Thompson Inst.*, 12 (1941), 25–28. (B. M. B.)

Diatoms—Lipids of. The lipids of freshly collected marine diatoms contain a very high per cent of free fatty acid, apparently irrespective of species. When a suspension of diatoms is allowed to stand for six months, the content of free acids falls markedly, and the content of hydrocarbon may rise.—H. T. CLARKE and ABRAHAM MAZUR. *J. Biol. Chem.*, 141 (1941), 283. (F. J. S.)

Ethanolysis Products from Spruce and Maple Wood—Structure of the. A reinvestigation of the "aldehyde fraction" obtained in the ethanolysis of maple and spruce wood has shown that two compounds supposed to be aldehydes are in reality 1,2-diketones, proof being had by synthesis of the compounds and comparison with the natural product.—L. BRICKMAN, J. J. PYLE, W. L. HAWKINS and H. HIBBERT. *J. Am. Chem. Soc.*, 62 (1940), 986. (E. B. S.)

Hay Fever Plants in the South. The botanical aspect of the hay fever problem.—ROGER P. WODEHOUSE. *Southern Med. J.*, 34 (1941), 986–993. (W. T. S.)

Lignin and Related Compounds—Studies on. XLVII. The Synthesis of Xylosides Related to Lignin Plant Constituents. Methods are given for the synthesis of the α-*d*-xylosides of α-hydroxypropiovanillone, α-hydroxypropiosyringone, guaiacol and acetovanillone, and their corresponding fully acetylated derivatives.—J. H. FISHER, W. L. HAWKINS and H. HIBBERT. *J. Am. Chem. Soc.*, 62 (1940), 1412–1415. (E. B. S.)

Membrane Structure of Halicystis—Some X-ray Observations Regarding the. X-ray examination of three species of untreated *Halicystis* shows the presence of diffraction lines corresponding to mercerized crystalline cellulose. There is also present a crystalline non-cellulosic pattern and an amorphous pattern. Both the cellulosic and non-cellulosic constituents have a random orientation in the plane of the membrane but a selective orientation with reference to the surface. When the membrane is stretched a new orientation is produced parallel to the direction of stretching. X-ray and microscopic data on *Halicystis* are compared and discussed in relation to similar data on *Valonia*. Some physical properties of *Halicystis*, *Valonia*, and cellophane are measured and discussed in relation to membrane structure. The non-cellulosic constituents are not removed by the usual cellulose purification treatments. After pretreatment with warm dilute hydrochloric acid the purification treatment leaves a residue which gives only the diagram of mercerized cellulose. The orientation and purification studies indicate a close bond between the cellulosic and non-cellulosic constituents, the exact nature of which is not indicated. When *Halicystis* is treated with hot glycerin the mercerized cellulose is partially converted to the native form. The cellulose in *Halicystis* forms swelling compounds with ethylenediamine and yields the definite derivative cellobiose octaacetate. The mercerized cellulose in *Halicystis* has the same crystalline structure as mercerized cotton cellulose, but exhibits different colloidal and chemical reactions. The identification of mercerized cellulose in *Halicystis* is of both biological and chemical interest since it is the first example

of a plant membrane subjected to X-ray diffraction analysis which shows the cellulose to exist in the mercerized form.—WAYNE A. SISSON. *Contrib. Boyce Thompson Inst.*, 12 (1941), 31–44. (B. M. B.)

Nitrogen Fixation in Dacca Soil—Influence of Light on. Experiments have been made with Dacca soil with an organic carbon content of 365 mg. per 100 Gm. of soil according to conditions as laid down by Dhar for the fixation of nitrogen in the presence of carbohydrates.—M. SULAIMAN. *J. Indian Chem. Soc.*, 18 (1941), 40. (F. J. S.)

Peach Buds—Sprays That Break the Rest Period of. *p*-Thiocresol-4-chloro-*o*-phenyl-phenol and α-nitronaphthalene break the rest period of peach buds when applied in sprays.—JOHN D. GUTHRIE. *Contrib. Boyce Thompson Inst.*, 12 (1941), 45–47. (B. M. B.)

Plant Names—Meaning of. Pokeberries and Their Allies. The Pokeberry family (*Phytolaccaceæ*) consist of a single genus with few species of limited range. *Phytolacca* comes from the Greek *phytos*, a plant, and the Latin *lac* or lake, red, alluding to the color of the berries. The term poke is from the word "pocan" and "coacum," the Indian names for the plant. The meanings of the names of some non-medicinal plants of this family are given.—WILLARD N. CLUTE. *Am. Botanist*, 47 (1941), 42–46. (W. T. S.)

Plant Respiration—Mechanism of. An oxidation-reduction system involving α-hydroxypropiovanillone as the "donator" and methyl guaiacyl diketone as the "acceptor" is presented which seems to explain several phenomena and point the way to the synthesis of lignin in the plant.—H. HIBBERT. *J. Am. Chem. Soc.*, 62 (1940), 984–985. (E. B. S.)

Provitamin—Distribution of, in Plants. Quantity of carotin in edible plants was determined. It was found that green leaves contain it in large quantity and about 90% of carotin in the leaves of several vegetables was β-carotin. The skin part of pumpkin contains the most and carrot also contains a large quantity. The "Asakusa sea weed" contains about 80% of β-carotin. About 20% to 30% of carotin in green tea is α-carotin and the rest is β-carotin. Yellow flowers do not contain it.—MASANOBU AJISAKA. *Tokyo Ijishinshi*, Mo. 3188, June, 1940; through *Kitasato Arch. Exptl. Med.*, 17 (1940), 3. (W. T. S.)

Salt Content of Soils—Conductometric Method of Determining the Soluble, for Use in Soil Survey Work. The conductivity of soil suspensions has been determined with Dionic water tester. The salt content of soils may be derived from the conductivity of 1:15 soil suspensions by a very simple relationship, *i. e.*, the conductivity value, if divided by one thousand, gives the percentage salt content of soils. To determine the total salt content of soils by the present method, the use of distilled water only for making the soil suspensions is suggested as it has been shown that the use of salt-containing water brings about depression in the conductivity value which varies with the nature of the salts present in the water used. This conductometric method of determining soluble salt content has been tested for a set of soils derived from various parts of India and the results seem to justify the adoption of this method in this country for soil survey work.—R. C. HOON, J. K. MALHOTRA and LAKSHMI CHAND JAIN. *J. Indian Chem. Soc.*, 18 (1941), 103. (F. J. S.)

Soils—Activation of the Blast Furnace Slag for Employment to Correct Acidity and Alkalinity of. A special treatment with sulfuric acid of the iron slag has been given by which ordinary slags can be rendered useful for purposes of removing acidity and alkalinity from soils and of adding calcium to them at the same time.—K. SITARAMA IYER and S. VISWANTHA IYER. *Ind. & News Ed., J. Indian Chem. Soc.*, 4 (1941), No. 2, 88. (F. J. S.)

Tomato Leaf Mould. Advisory leaflet No. 263, issued by the Ministry of Agriculture and Fisheries gives information on the cause and treatment of tomato leaf mold, a disease of tomatoes caused by the fungus *Cladosporium fulvum*. The fungicidal treatments suggested are spraying with sulfur compounds, salicylanilide and colloidal copper spray.—ANON. *Chemist and Druggist*, 135 (1941), 72. (A. C. DeD.)

β-2,2,2-Trichloroethylgentiobioside—Formation of, in Tomato Plants Grown in Media Containing Chloral Hydrate, Trichloroethyl Alcohol, or Chloral Cyanohydrin. The tops and roots of tomato plants, grown in a medium to which chloral hydrate had been added, were found to contain a chlorine-containing β-glycoside, which was obtained in crystalline form as the acetyl and as the propionyl derivative. The same β-glycoside was obtained when trichloroethyl alcohol instead of chloral hydrate was added to the nutrient medium. Through the synthesis of β-2,2,2-trichloroethylgentiobioside heptaacetate and heptapropionate, which were prepared for the first time, this glycoside has been shown to be β-trichloroethylgentiobioside. β-Trichloroethylgentiobioside is also formed from absorbed chloral cyanohydrin. It thus appears that the tomato readily reduces trichloracetaldehyde to the corresponding alcohol. With chloral cyanohydrin, hydrolysis apparently precedes the reduction. Quantities of β-trichloroethylgentiobioside up to one Gm. per 100 cc. of expressed juice were present in the plants grown with added chloral hydrate.—LAWRENCE P. MILLER. *Contrib. Boyce Thompson Inst.*, 12 (1941), 15–23. (B. M. B.)

β-2,2,2-Trichloroethylgentiobioside—Synthesis of, by Gladiolus Corms Treated with Trichloroethyl Alcohol. Gladiolus corms have been shown to form β-2,2,2-trichloroethylgentiobioside from absorbed trichloroethyl alcohol.—LAWRENCE P. MILLER. *Contrib. Boyce Thompson Inst.*, 12 (1941), 29–30. (B. M. B.)

Valerian Root—Etymology of Swedish Folk Names for. The origin of the Swedish name for valerian root is considered. Variant forms used by the people are: vändrot, vändlarot, vänört, vänngräs, vändsrot. Norwegian uses: venderod, vendingsrod, vendelrod, allied to the German term: "Wendwurzel." The name has arisen from the fact that the root and stem twisted or turned ("Vända") in the earth so that what was stem one year became root the next. Another possibility was that, due to the fine inflorescence with pale rose-colored flowers, the name may have arisen from the fact it was a winsome ("vän") flower. A further possibility was that it was a folk-conversion from the Latin: Valeriana. Returning to the idea of the root word "Vända," to turn or direct away, the author suggests derivation from the ancient medical use of the drug, to turn away ("avvända") sickness. Such use was long prior to any knowledge of sedative action. In Norway, the root was hung up in ancient times in cow stalls to protect the cows from trolls. In Germany valerian is sometimes called "Viehkrautwurzel" and also "Hexenkrautwurzel."—L. GENTZ. *Farm. Revy*, 40 (1941), 97. (C. S. L.)

Water Hyacinth—Paper from. The dried water hyacinth plants which have developed to be serious menace to agriculture and health in Bengal may be utilized as a raw material for the manufacture of wrapping paper, writing paper and pressed boards. A few years back a detailed scheme to utilize water hyacinth for the production of power alcohol and

potassium chloride was also submitted.—M. A. AZAM. *Ind. & News Ed., J. Indian Chem. Soc.*, 4 (1941), No. 2, 143. (F. J. S.)

Wheat Starch—Fractionation of. I. The Process of Grinding. The grinding of wheat starch in a ball mill has been extensively investigated. As grinding progressed, the granules were increasingly broken up and the starch extensively depolymerized. Samples of the ground starch were fractionated at intervals and the physico-chemical properties of the fractions determined. Dry grinding in a ball mill is considered to be a general method of considerable value in investigating substances of high molecular weight. **II. The Reducing Powers of Starch Fractions.** The reducing powers of the starch fractions from ground wheat starch indicate that far-reaching depolymerization of the starch macromolecule has taken place during grinding in a ball mill; the molecular weights of the fractions have been calculated from the reducing power data. Unground wheat starches have been shown to contain a small quantity of water-soluble material of high reducing power.—L. H. LAMPITT, C. H. FULLER and N. GOLDENBERG. *J. Soc. Chem. Ind.*, 60 (1941), 1–6; 25–29. (E. G. V.)

Yeasts—Relationship of Inositol, Thiamine, Biotin, Pantothenic Acid and Vitamin B_6 to Growth of. The growth curves of three distinct (and highly different) strains of "*Saccharomyces cerevisiæ*" were studied in media containing different combinations of inositol, thiamine, biotin, pantothenic acid (or β-alanine) and vitamin B_6. Among the conclusions drawn are the following. At least two of the yeasts can grow continuously without inositol. Thiamine is especially important for one yeast only. Biotin alone will not immediately stimulate the yeast growth but in proper combination its effect is striking and evident at very minute doses. Pantothenic acid (or its precursor β-alanine) is highly essential for the immediate growth of all the yeasts and when added alone is capable of inducing continued growth of all the yeasts tested. Vitamin B_6 is relatively unimportant as a constituent of the culture media. Substances of unknown nature present in liver and yeast extracts play an important part in promoting rapid growth. Yeasts during a long incubation period show considerable ability to grow in the absence of various nutrilites, and under such conditions one nutrilite alone may serve whereas for rapid growth several are required.—R. J. WILLIAMS, R. E. EAKIN and E. E. SNELL. *J. Am. Chem. Soc.*, 62 (1940), 1204–1207. (E. B. S.)

CHEMISTRY

GENERAL AND PHYSICAL

Acid-Base Theory—Modern. A brief review is given of the modern acid-base theory with consideration of the formation of hydronium ion in aqueous solution, of the meaning of the terms acid and base, of the concept of the acid constant and the base constant, of protolytes, with examples of type reactions.—C. FAURHOLT. *Farm. Revy*, 40 (1941), 126. (C. S. L.)

Analytical Precipitates—Decomposition Temperatures of. The dissociation of calcium carbonate was studied by the gas saturation method. Results indicate that equilibrium values are not attainable at rates which are convenient to use; the slower the gas rate, the nearer the pressures approach equilibrium. Loss in weight of lead sulfate due to decomposition first becomes appreciable at 730° C.—M. L. NICHOLS and B. E. WHITE. *Ind. Eng. Chem., Anal. Ed.*, 13 (1941), 251–256. (E. G. V.)

Cadmium—Electrodeposition of, on Iron. Results are given for the optimum conditions for the production of a smooth and adherent deposit of cadmium on iron in respect to inter-electrode distance, the electrolyte concentration, the current density, the duration of electrolysis, the temperature, proportion of free sulfuric acid and of sodium sulfate. Data are also given for the cathode efficiency in respect to cadmium deposition under the influence of the above factors and that of the addition of a large number of inorganic and organic agents in different proportions, *e. g.*, stannous chloride, aluminum sulfate, dextrin, gelatin, etc. The possible role of these agents is also discussed in the light of the current theories.—DUSHYANT NARASINGASA SOLANKI and BHASKAR GOVIND JOSHI. *J. Indian Chem. Soc.*, 18 (1941), 177. (F. J. S.)

Colloids—Coagulation of, by Exposure to High Frequency Oscillations. Results are given of the exposure of 14 sols to high frequency oscillations from a condensed spark discharge. Coagulation was copious in the majority of cases. The possible effects of intermittent cataphoresis and micellar orientation have been considered. Dielectric absorption and rectification of part of the input a. c. by the micella are suggested as additional factors.—SHRIDHAR SARVOTTAM JOSHI and A. PURUSHOTTAM. *J. Indian Chem. Soc.*, 18 (1941), 138. (F. J. S.)

Cyanine Dyes Derived from α-Picoline—Sensitization Spectra of Certain. The sensitization spectra of the methochloride, the methobromide and the methiodide of 2-*p*-dimethylaminostyrylpyridine have been photographed and the relative sensitizing power of these compounds compared.—M. Q. DOJA. *J. Indian Chem. Soc.*, 18 (1941), 281. (F. J. S.)

Electrolyte Mixtures in Aqueous Solution—Apparent Molal Volumes of. The variation of apparent molal volume (ϕ) of an electrolyte with concentration is governed by the relation: $\phi = \phi_0 + k\sqrt{C}$ (at least for concentrations greater than $0.03M$) where ϕ_0 and k are constants. The apparent molal volume of a mixture of electrolytes at any concentration can be calculated as in the case of a single electrolyte, if the average molecular weight of the mixture is calculated from the mixture rule. It was found (*a*) that a mixture of electrolytes also obeys the above equation with the same limitations as a single electrolyte and (*b*) that both ϕ_0 and k in case of mixtures are linear functions of the composition (molar percentage of any one of the components).—AMERITANSU SEKHAR CHAKRAVARTI and BALBHADRA PRASAD. *J. Indian Chem. Soc.*, 18 (1941), 239. (F. J. S.)

Grating Microspectrograph—Application of, to the Problem of Identifying Organic Compounds. The complete microspectrographic set-up is described together with its applications in the determination of optical properties of organic compounds.—E. E. JELLEY. *Ind. Eng. Chem., Anal. Ed.*, 13 (1941), 196–203. (E. G. V.)

Hydrogen Bond Formation—Studies in. I. Amides. The Raman spectra of formamide, acetamide and urea were studied in solutions of water and at increased temperatures. From the changes observed in the C=O frequencies, it is concluded that the amides, particularly formamide and acetamide are highly polymerized at laboratory temperature, and that they break up into lower polymers as higher temperatures as well as in solutions in polar solvents like water.—A. L. SUNDARA RAO. *J. Indian Chem. Soc.*, 18 (1941), 337. (F. J. S.)

Hydrogen Ion Dissociation Curve of β-Lactoglobulin. The following summary is given: (1) Studies are reported of the effects on the dissociation curve of β-lactoglobulin, of temperature, the concentration of KCl, the concentration of protein and the addition of formaldehyde. (2) The results are consistent with the presence of 58 carboxyl, 34 amino,

6 imidazole and 6 guanidino groups in 1 mol (40,000 Gm.) of β-lactoglobulin. (3) Analyses are reported of the amounts of histidine, arginine, lysine, total dicarboxylic acids, amino nitrogen and amide nitrogen in β-lactoglobulin. (4) The shape of the dissociation curve and the effect of [KCl] thereon are described in terms of electrostatic interaction theory. (5) The ratio of net charge to electrophoretic mobility is substantially constant from *p*H 4 to 9. The value of this ratio is about 15% greater than that computed from the Debye-Hückel-Henry theory of the mobility of spherical ions.—R. KEITH CANNAN, ALBERT H. PALMER and ANDRE C. KIBRICK. *J. Biol. Chem.*, 142 (1942), 803.
(F. J. S.)

Indian Bentonites—Physicochemical Effects of Treating Some of the, with Sodium Carbonate. The Kashmir and Jodhpur varieties of bentonites do not manifest swelling in contact with water to the same extent as the Wyoming bentonite. This is attributed to the difference in their exchangeable base contents. The swelling property of these Indian bentonites can be increased by treating them with sodium carbonate. The quantity of Na_2CO_3 which produces the optimum swelling in the shortest time has been determined indirectly by measuring the quantity of water absorbed by a known weight of the sample. The rate of percolation through briquettes made from a mixture of sand and 3% to 4% of Na_2CO_3 treated Kashmir bentonite is very low and the latter can, therefore, serve as a substitute for Wyoming bentonite.—R. C. HOON and GANGA SINGH AHLUWALIA. *Ind. & News Ed., J. Indian Chem. Soc.*, 4 (1941), No. 1, 29. (F. J. S.)

Iodination. I. Studies on the Equilibrium in Systems of Iodine and Various Unsaturated Organic Compounds in the Dark in Different Non-Polar Solvents. Investigations have been carried out on the thermal iodination of β-amylene and *d*-pinene in non-polar solvents, like benzene, carbon tetrachloride and carbon disulfide. The reactions have been found to be reversible and the equilibrium constants have been determined under different experimental conditions.—J. C. GHOSH, S. K. BHATTACHARYYA, M. M. DUTT and M. J. RAO. *J. Indian Chem. Soc.*, 18 (1941), 171. (F. J. S.)

Magnetism and Catalysis. III. Chlorination of Chloroform to Carbon Tetrachloride in the Presence of Ferric Chloride. The role of ferric chloride as an inhibitor in the chlorination of chloroform to carbon tetrachloride has been studied with the help of the magnetic method. The inhibitory action has been observed to be absent if the sample of chloroform be completely free from moisture which in itself has a catalytic effect upon the reaction. The action of ferric chloride has been explained as an outcome of the presence of moisture with which ferric chloride forms a hydrated complex which acts as an inhibitor in this case.—S. S. BHATNAGAR, N. A. YAJNIK, P. L KAPUR and ANAND SWAROOP BHATNAGAR. *J. Indian Chem. Soc.*, 18 (1941), 350.
(F. J. S.)

Optical Activity and Chemical Constitution—Studies on. V. Rotatory Powers of Camphoranilic Acids, α- and β-Naphthylcamphoramic Acid at Various Degrees of Neutralization. The rotatory powers of camphoranilic acid, 2′-, 3′-, 4′-methylcamphoranilic acids and α- and β-naphthylcamphoramic acids have been determined at various degrees of neutralization. In every case the alkali salts have greater rotatory power than the acid. In some cases there is a sudden fall at the half neutralization point and then a progressive increase until the complete neutralization point. In other cases, after a gradual increase the rotatory powers become constant and then increase until the acid is completely neutralized.—MAHAN SINGH and ARJAN SINGH. *J. Indian Chem. Soc.*, 18 (1941), 89.
(F. J. S.)

Photosensitization by Solids. III. Photosensitized Oxidation of Ammonia in Aqueous Solution with Colloidal Titania as the Photosensitizer. The photosensitized oxidation of ammonia in the total ultraviolet light from the quartz-mercury vapor lamp has been studied using negatively charged colloidal titania as the photosensitizer. The rate of reaction is found to be practically unaffected by temperature and the concentration of ammonia. The decrease of reaction velocity on the addition of suitable flocculating ions shows that the reaction is a heterogenous one. The mechanism of the reaction is discussed.—G. GOPALARAO and C. I VARADANAM. *J. Indian Chem. Soc.*, 18 (1941), 361.
(F. J. S.)

Prussian and Turnbull's Blues—Composition of. IV. Study of Their Adsorptive Properties. Studies on the adsorption of ferrocyanogen and ferric radicals by Prussian blue, and of ferrous and ferricyanogen radicals by Turnbull's blue have been carried out. Evidence has been produced to show that in some cases chemical action and in some cases negative adsorption may take place. **V. Role of Hydrolysis and Their Compositions.** It has been observed in several samples of Prussian and Turnbull's blues, prepared under wide range of dilutions of the mixed reactants at a definite temperature that the composition of Prussian blue is much affected by its hydrolysis while Turnbull's blue is much less affected, because of the presence of an excess of acid in ferrous sulfate. By extrapolation of the values of CN/Fe against the dilutions of the mixed constituents, a probable ratio of Fe:CN for Prussian and Turnbull's blues of identical composition has been obtained. **VI. Magnetic Susceptibility of the Compounds.** Magnetic susceptibility of various samples of Prussian and Turnbull's blues have been determined and the P_{weiss} values were found to be roughly ranged between 20 and 21 P_{weiss} magnetons, although their calculated values were 16.5 and 19.6, respectively. The aged samples of Prussian and Turnbull's blues gave much closer P_{weiss} values showing that, on aging, they become more identical in composition. Slight variations by changing the concentration of the respective reactants have been attributed to the influence of adsorption on the composition of the sols.—ABANI K. BHATTACHARYA. *J. Indian Chem. Soc.*, 18 (1941), 71, 81, 85.
(F. J S.)

Organic and Inorganic Acids—Adsorption of Polybasic. Discontinuities in Adsorption Process from Solutions of Sugar Charcoal. Adsorption of a few polybasic acids, both organic and inorganic, by sugar charcoal has been investigated. Results indicate a discontinuous nature of the process.—KESHO DASS JAIN and J. B. JHA. *J. Indian Chem. Soc.*, 18 (1941), 321. (F. J. S)

Salt Bridge—Simple Sintered-Glass. Pyrex glass is ground to a fine powder in a porcelain mortar. The 3- to 10-mm. Pyrex tubing to be used is sealed at one end and filled to a length of a few centimeters with the powdered glass. The glass powder is warmed gently to allow expansion of the gases in it, and the glass is tapped to settle the powder in the end of the tube. The tubing is now heated with rotation, at some distance from the end, in a very small oxygen flame. As soon as the tubing begins to soften it is withdrawn rapidly from the flame and suction is applied with the mouth partially to collapse the tubing. The end of the tube is cut off, and the excess powdered glass is removed. The sintered-glass membrane can be tested by suction; it should be dense enough so that water can barely be sucked up by mouth. With practice the membranes can

be easily constructed; the main difficulty is in preventing complete fusion of the powdered glass. Either one or both ends may be provided with the sintered-glass diaphragm. The bridge is cleaned and filled by applying aspirator or suction pump to the vertical arm, shutting off each end of the bridge in turn, if necessary, by means of a piece of rubber tubing provided with a clamp.—H. A. LAITINEN. *Ind. Eng. Chem., Anal. Ed.*, 13 (1941), 393. (E. G. V.)

Silicic Acid and Hydrogen Bentonite Sols—Variations in the Electrochemical Properties of, with Temperature. Variation with temperature of free and total acidity, degree of dissociation and forms of the titration curves of silicic acid sol and hydrogen bentonite sol are given.—JNANENDRANATH MUKHERJEE, BARADANANDA CHATTERJEE and AMITABHA SEN. *J. Indian Chem. Soc.*, 18 (1941), 283. (F. J. S.)

Sterilamp. Its Electrical and Radiation Characteristics. A new mercury-arc lamp, which radiates both in the 2537 and 1850 Å. regions, is described. Rays of the longer wave length have a strong germicidal effect, whereas those of the shorter wave length are useful in converting atmospheric oxygen into ozone, which effectively sterilizes irregular o- shaded areas of the irradiated surface. Applications of the lamp include its use in hospitals, for air-conditioning, etc.—D. D. KNOWLES and E. REUTER. *Trans. Electrochem. Soc.*, 78 (1940), Preprint 27, 361-372; through *J. Soc. Chem. Ind.*, 60 (1941), 47. (E. G. V.)

Sugar Charcoal—Properties of Activated, Coated with Various Organic Substances. III. Catalytic Decomposition of Hydrogen Peroxide. Influence of coats of palmitic acid and α-naphthylamine on activated sugar charcoal on the decomposition of hydrogen peroxide has been studied. Both of the coats are equally active and increase the catalytic decomposition of hydrogen peroxide irrespective of acidity or alkalinity of the coats.—HARENDRA KUMAR ACHARYA. *J. Indian Chem. Soc.*, 18 (1941), 15. (F. J. S.)

Ternary System. Ammonium Nitrate–Ammonium Sulfate–Water at 25°. In the system $NH_4NO_3 \cdot (NH_4)_2SO_4 \cdot H_2O$ studied at 25°, two double salts $(NH_4)_2SO_4 \cdot 2NH_4NO_3$ and $(NH_4)_2SO_4 \cdot 3NH_4NO_3$ are formed, respectively. No salt hydrate is formed.—R. K. BAHL and SURJIT SINGH. *J. Indian Chem. Soc.*, 18 (1941), 307. (F. J. S.)

Urea and Arginine—Kinetics of the Hydrolysis of. The work is summarized as follows: (1) Data are presented on the rate of hydrolysis of urea, cyanate, arginine and citrulline under various conditions of *p*H and temperature. (2) Urea is hydrolyzed to ammonia and cyanate. This reaction is reversible at *p*H values at which ammonia is ionized. The reversibility is limited in acid solution by the rapid hydrolysis of cyanate. (3) Cyanate is hydrolyzed to ammonia and carbon dioxide. The rate of hydrolysis is independent of *p*H in alkaline solution, but increases rapidly below about *p*H 9. (4) The assumption of cyanate formation as the only intermediate step in urea hydrolysis quantitatively accounts for the course of the reaction at all *p*H values. (5) Arginine is hydrolyzed by two simultaneous reactions: one producing ammonia and citrulline; the other, urea and ornithine. Each reaction is of the first order with respect to arginine concentration. (6) The change in the rate of hydrolysis of the above substances with respect to *p*H is discussed.—ROBERT C. WARNER. *J. Biol. Chem.*, 142 (1942), 705. (F. J. S.)

Vitamin K_1—Oxidation-Reduction Potential of. The oxidation-reduction potential of pure vitamin K_1 was found to be 363 mv. at 20°.—B. RIEGEL, P. G. SMITH and C. E. SCHWEITZER. *J. Am. Chem. Soc.*, 62 (1940), 992. (E. B. S.)

Wetting Agents. Much of the development of wetting agents and their technical applications has been of an empirical nature because no suitable method for a detailed evaluation of these products has been available. To evaluate a given wetting agent, information should be available concerning the following: its surface tension lowering properties when in water and in organic liquids; its interfacial tension lowering properties when in systems of water in contact with given organic liquids (immiscible or only slightly miscible with water); its interfacial lowering properties in systems of given liquids against given solids. This last type of information can be obtained through measurement of adhesion values, which necessitates measurement of contact angles.—F. E. BARTELL. *Ind. Eng. Chem.*, 33 (1941), 737-740. (E. G. V.)

INORGANIC

Atomic Weights. In the 11th report of the Committee on Atomic Weights of the International Union of Chemistry, the authors review pertinent publications appearing between September, 1939, and September, 1940. Only one change was adopted in this period, in the case of holmium from 163.5 to 164.94. A table of International Atomic Weights (1941) is appended.—G. P. BAXTER, M. GUICHARD, O. HONIGSCHMID and R. WHYTLAN-GRAY. *J. Chem. Soc.*, (1941), 146-152. (W. T. S.)

Biguanide—Complex Compounds of, with Tervalent Metals. VIII. Resolution of Cobaltic Trisbiguanide Complex into Its Optically Active Enantiomerides. Cobaltic trisbiguanidinium chloride has been resolved into its optically active enantiomerides by combining with *d*-tartaric acid and *d*-camphorsulfonic acid. The diastereoisomerides, chloro-*d*-tartrate, *d*-tartrate and *d*-camphorsulfonate of the levo and dextro cobaltic trisbiguanide base, have been prepared in the pure state. The *l*-salt in all cases is less soluble. A solution of the chloro-*d*-tartrate of the racemoid complex base deposited crystals of only the levogyrate on fractional crystallization in the cold until the entire solution was dried up. This is possibly the first instance of a complex inorganic salt manifesting the phenomenon of "asymmetric transformation of the second order" as described by Kuhn. Further evidence on the point is furnished by the study of the "addition curve" obtained by gradually adding the racemoid base to a solution of *d*-tartaric acid and observing the rotation after each addition. It has been shown that in a solution of the chloro-*d*-tartrate of the racemoid complex there is an equilibrium between the dextro and the levo salt with the former in slight excess. From the slight dextrorotatory mother-liquor after the separation of the first crop of levogyrate from a solution of chloro-*d*-tartrate of the racemoid complex, pure dextrogyrate was obtained by repeated fractional precipitation with alcohol. A change in the external condition by changing the nature of the solvent helped to isolate the pure *d*-salt which could not be obtained from aqueous solution. A solution of the *d*-tartrate of the racemoid complex, though exhibiting asymmetric transformation, can, however, be normally fractionated giving pure *l*- and *d*-gyrates as the least and the most soluble fractions, respectively, due to favorable solubility and stability relationship. From the pure levo- and dextrogyrate of the chloro-*d*-tartrate pure optically active enantiomerides of the sulfate, chloride and nitrate of the complex base were prepared. Their molecular rotations were quite high, suggesting an unsymmetrical coördination of the otherwise symmetrical biguanide molecules around the central atom, as was assumed by Ray and Saha.—PRI-

YADARANJAN RAY and NIHAR KUMAR DUTT. *J. Indian Chem. Soc.*, 18 (1941), 289. (F. J. S.)

Carbon and Hydrogen—Apparatus for Semimicrodetermination of. The furnace assembly, combustion train, auxiliary equipment and operation of the apparatus are described.—C. NIEMANN and V. DANFORD. *Ind. Eng. Chem., Anal. Ed.*, 12 (1940), 563-566. (E. G. V.)

Catalysts (for Organic Condensations). Claim is made for the compound $HBO_2 \cdot 2HF$, boiling point 159-160°, density at 25° compared with water at 4° 1.657, formed by treating B_2O_3 with anhydrous HF and distilling off the BF_3 formed simultaneously. The compound gives an additive compound with 1 mol of BF_3 and thus forms a convenient means of transporting BF_3 for use in organic condensations.—J. A. NIEUWLAND and F. J. SOWA. U. S. pat. 2,109,340; through *J. Soc. Chem. Ind.*, 60 (1941), 66. (E. G. V.)

Chlorine—Action of, on the Hydroxides of Iron and Chromium in the Presence of Iodine. By passing a brisk current of chlorine through a boiling solution of iodine in iron (ic) hydroxide and chromium hydroxide, $FeIO_5 \cdot 11H_2O$ and $Cr_2O_3 \cdot 2I_2O_7 \cdot 22H_2O$ were obtained, respectively.—R. K. BAHL and MANOHAR LAL. *J. Indian Chem. Soc.*, 8 (1941), 359. (F. J. S.)

Chlorine in Water—Solubility of. The solubility of chlorine in water was determined experimentally by passing various chlorine-nitrogen gas mixtures through an equilibrium cell contained in a thermostat. Temperatures of 10°, 15°, 20°, and 25° C. were investigated, using partial pressures of chlorine from 0.06 to 1.0 atmosphere. Hydrolysis costants were calculated from the solubility data, assuming Henry's law to apply to the unhydrolyzed chlorine in solution. These hydrolysis constants have one-half to three-quarters of the values as reported by Yakovkin. An equation for extrapolating the solubility to partial pressures of chlorine in excess of 1 atmosphere is presented.—A. P. WHITNEY and J. E. VIVIAN. *Ind. Eng. Chem.*, 33 (1941), 741-744. (E. G. V.)

Chromi-Selenates—Complex. Formation of the complexes, chromi-selenic acid, chromi-seleni-chromic acid and chromi-seleni-chromate has been studied.—PRODOSH CHANDRA RAYCHOUDHURY. *J. Indian Chem. Soc.*, 18 (1941), 97. (F. J. S.)

Chromi-Selenic Alums—Study of the Dehydration of Some Pure and Mixed, and the Formation of Corresponding Complex Chromi-Selenates. The changes of properties of some pure and mixed chromi-selenic alums with rise of temperature have been studied. In the vacuum desiccators and at room temperature, different hydrates are formed. But at higher temperatures up to 160°, the violet alums are converted into green complex chromi-selenates in which the Cr, SeO_4 and SO_4 ions are absent.—PRODOSH CHANDRA RAYCHOUDHURY. *J. Indian Chem. Soc.*, 18 (1941), 277. (F. J. S.)

Mercury and Copper—New Reagent for the Estimation of. 2-Chloro-7-methoxy-5-thiolacridine has been found to be a good reagent for the estimation of mercuric and cupric salts. The presence of the metals of Groups I, II and III interferes with the estimation of copper and mercury; while those of IV and V have no effect. Notwithstanding this limitation, it is an accurate semimicro method and may have varied applications.—S. J. DAS-GUPTA. *J. Indian Chem. Soc.*, 18 (1941), 43. (F. J. S.)

Nitroso Derivatives—Use of, as Reagents in Inorganic Analysis. I. α-Nitroso-4-naphthylamine, β-nitroso-α-naphthylamine and isonitrosodimedone are very satisfactory reagents for the gravimetric estimation of cobalt in the trivalent state. Dinitroso resorcinol and orcinol form bivalent complexes. **II.** α- and β-nitrosonaphthylamines are satisfactory reagents for the estimation of copper. Nickel also forms complexes with these reagents.—S. S. GUHA-SIRCAR and SASANKA CHANDRA BHATTACHARJEE. *J. Indian Chem. Soc.*, 18 (1941), 155, 161. (F. J. S.)

Paris Green—Technology of Preparation of. I. Oxide Method of Preparation. Paris green is prepared according to the reaction $4CuO + 3As_2O_3 + 2AcOH \rightarrow 3\ Cu(AsO_2) \cdot 2Cu(OAc)_2 + H_2O$. CuO 314, arsenic trioxide 586, and acetic acid (8% solution) 137 parts are heated under reflux (2 hrs. at the boiling point). Copper oxide is rendered inactive by heating at over 300°.—G. P. LUTSCHINSKI and V. F. TSCHURILKINA. *J. Applied Chem. Russ.*, 13 (1940), 367; through *J. Soc. Chem. Ind.*, 59 (1940), 736. (E. G. V.)

Periodates of Quadrivalent Metals. Ceric paraperiodate, thorium paraperiodate, titanium periodate, stannic periodate and zirconium periodate have been prepared and their percentage composition determined.—PRODOSH CHANDRA RAYCHOUDHURY. *J. Indian Chem. Soc.*, 18 (1941), 335. (F. J. S.)

Permanganates—Action of Hydrogen Sulfide on. I. Calcium and Silver Permanganates. The action of hydrogen sulfide on 1% solution of calcium and 0.5% solution of silver permanganates is discussed.—SARDAR MOHAMMAD and GANGA SINGH AHLUWALIA. *J. Indian Chem. Soc.*, 18 (1941), 309. (F. J. S.)

Radium in Canada. The discovery of radium in the Canadian Northwest in 1930 is described. The metallurgy of extraction and radium recovery is described.—C. CAMSELL. *Chemistry and Industry*, 60 (1941), 325-327. (E. G. V.)

ORGANIC

Alkaloids

Alkaloids of Rauwolfia Canescens L. I. An alkaloid, rauwolscine ($C_{21}H_{26}O_3N_2$, m. p. 231-232°) has been isolated from *Rauwolfia canescens*. Its physical and chemical properties have been studied and a number of salts and derivatives prepared. The color reactions of rauwolscine show it to be quite different from other rauwolfia alkaloids but similar to yohimbine. Rauwolscinic acid has been obtained from the alkaloid presumably by the hydrolysis of a CO_2Me group in rauwolscine; the acid has been reconverted into the alkaloid.—ASIMA MOOKERJEE. *J. Indian Chem. Soc.*, 18 (1941), 33. (F. J. S.)

Celandine—New Characteristic Microchemical Reaction for the Identification of. The identification of celandine, particularly if powdered, is difficult and uncertain. In a search for a means of characterizing the material, it was found that the difficultly soluble salts of the alkaloids chelidonine and protopine contained in *Chelidonium majus* L. were not satisfactory. However, if fragments of the plant were treated with an aqueous 20% solution of potassium hydroxide on a microscope slide, there was obtained first a yellow solution and, then after several minutes there formed around the periphery of the preparation, more or less matted, zig-zag, sometimes branched, hair-like crystal mass of a yellow or orange-yellow color. The filaments radiate from a nucleus. It is immaterial whether latex, fresh, moistened or dry material is used. Usually the crystals do not grow longer than 250 microns. The crystals begin to form in a few minutes and reach their maximum in 15-20 min. A mixture of the isolated alkaloids does not give the test. It was found that a concentration of 1.5 to 7.0 *N* KOH was necessary to obtain a positive test, the optimum concentration being 2.5 to 5.0 *N*. Other bases

such as barium hydroxide, ammonia and sodium hydroxide did not give the reaction. The potassium ion was essential since the addition of potassium salts (potassium iodide, carbonate, chloride or nitrate) in about 2 normal concentration to 1 normal sodium hydroxide also gave the test. The test was positive with all parts of the plant except the seeds. The reactive principle was present in the plant in all seasons and did not appear to deteriorate on exposure to light or with aging. The reaction is quite specific and is not given by more than 100 plants of various families or by other plants of the same family.—EGIL RAMSTAD. *Pharm. Acta Helv.*, 16 (1941), 15–21. (M. F. W. D.)

Cocaine—Method for the Rapid Isolation and Spectrographic Measurement of, from Brain Tissue. A spectrographic method is described for the quantitative determination of cocaine in tissue. *In vitro* experiments showed a recovery of 90% when 1 mg. of cocaine was present in 25 Gm. of tissue. The method was found to be sensitive to 0.05 mg. in *in vivo* experiments. The procedure requires from 7 to 9 hrs.—L. A. STRAIT, R. B. AIRD and S. WEISS. *J. Pharmacol.*, 73 (1941), 363–374. (H. B. H.)

Ephedrine and Thymol Iodide Composition. A reaction product of ephedrine alkaloid and thymol iodide in a solution of poppyseed oil is prepared which is suitable for the treatment of asthma and hay fever.—BERNARD L. WYATT, assignor to WYATT RESEARCH FOUNDATION. U. S. pat. 2,218,900, Oct. 22, 1940. (A. P.-C.)

Ephedrine Preparations (Especially Those Containing Aldehydes)—Assay of. In the absence of other basic substances (such as ammonia) free ephedrine in inhalants can be determined by direct titration as follows: to 5 Gm. of inhalant in a small glass-stoppered flask add 5 cc. of water and 1 or 2 drops of bromothymol blue indicator, and titrate with fiftieth-normal sulfuric acid; moderately violent shaking is necessary toward the end of the titration. Ephedrine combines with certain aldehydes (some of which may result from the decomposition of ephedrine itself) to form loose compounds, which are insoluble in water and would not be included in the above direct titration of free ephedrine, but which are weakly basic in nature and follow ephedrine in the A. O. A. C. method of determination of the latter. Free ephedrine and ephedrine-aldehyde compound may be separated by titrating free ephedrine directly, washing out the resultant ephedrine sulfate, adding excess of acid, shaking and proceeding as in the A. O. A. C. method, evaporating the final ethereal solution to dryness without the application of heat. It has been suggested that ephedrine be determined in inhalants by extracting with dilute hydrochloric acid, evaporating to dryness and weighing the ephedrine hydrochloride; if the inhalant contained any ephedrine-aldehyde compound, it would be extracted as such thereby giving high results unless the aldehyde portion of the molecule was broken off during evaporation. Ephedrine in inhalants may be determined by shaking with a measured amount of standard acid, in divided portions, followed by water, and titrating the excess acid with standard alkali; this method is simpler than the official A. O. A. C. method and eliminates several steps where ephedrine may be lost; ammonia, amines and water-soluble acids interfere, but oil-soluble acids and aldehydes do not.—E. H. GRANT. *J. Assoc. Official Agr. Chem.*, 23 (1940), 790–792. (A. P.-C.)

Nicotine and Chlorophyll—Extracting, from Tobacco. An arrangement of apparatus is described, and a process which involves subjecting a processing compartment containing tobacco to a vacuum of about 26 in., partially satisfying the vacuum with steam to an extent that by admitting sufficient gaseous ammonia at normal temperature and pressure into the compartment theoretically to replace the nicotine content of the tobacco being processed the remaining vacuum will be satisfied, the tobacco at no time being subjected to a temperature sufficient to destroy the chlorophyll.—LYELL M. RADER, assignor to CHEMICAL EXTRACTION CORP. U. S. pat. 2,235,589, March 18, 1941. (A. P.-C.)

Nicotine Color Reaction with Cyanogen Bromide and β-Naphthylamine—Quantitative Characteristics of the. The optimum *p*H for maximum sensitivity of this reaction is about 10; in the presence of excess alkali or acid, neutralization to the phenolphthalein end-point is a practical means of adjusting a solution for the test. If an alkaline solution is to be prepared for the test, the sensitivity attained by neutralizing is in the following descending order of acids: acetic, hydrochloric, sulfuric; when hydrochloric is used the sensitivity is practically equal to that in the absence of any salt. The optimum developing period in the presence of sodium acetate is 45 min. in concentrations of the salt from 0.25 to 8.0 Gm. per 100 cc.; in lower concentrations the period approaches 2.5 hrs. as the concentration decreases. Sodium acetate markedly sensitizes the reaction; maximum sensitivity is attained at a salt concentration of 0.2 Gm. per 100 cc. with a developing period of 1 hr. Sodium chloride exerts a slightly desensitizing effect on the development of color; the concentration may vary within ±0.5 Gm. per 100 cc., the optimum developing period s 2 to 3 hrs. Sodium sulfate desensitizes the reaction more than does sodium chloride; the color diminishes fairly regularly with increasing concentration of salt, and the latter should therefore be kept uniform in a series of determinations; the optimum developing period is 2 hrs., except below a salt concentration of 0.2 Gm. per 100 cc., when it is 3 hrs. The color reaction follows Beer's law at least to 0.080 mg. of nicotine per cc.—L. N. MARKWOOD. *J. Assoc. Official Agr. Chem.*, 23 (1940), 792–800. (A. P.-C.)

Nocotine—Determination of, in Fresh Tobacco Leaf. The principle of the method is as follows: a 19-mm. disk of the fresh leaf is treated with 6 drops of 90% sulfuric acid (by volume) to disintegrate the tissue and brings the nicotine into solution; the material is transferred to a 100-cc. volumetric flask containing 1.2 Gm. of litharge and 30 cc. of water, shaken until flocculation or clotting is evident (usually 2 to 3 min.), the mixture is made to volume, mixed thoroughly and filtered rapidly through a dry paper; 0.25 Gm. of powdered magnesium is added to precipitate all the lead, the mixture is shaken for about 1 min. and filtered, and nicotine is determined in the filtrate by the phosphotungstate turbidimetric procedure, or by the colorimetric method with cyanogen bromide and β-naphthylamine. Data are presented showing the applicability of the method to several types of *Nicotiana tabacum* and *N. rustica*. Comparison with the nicotine-distillation method showed that the present method gives true results where nicotine is the only alkaloid, but high results where other alkaloids (generally nornicotine) are present. A low-nicotine Maryland tobacco was found to contain about 95% of the total alkaloids as nornicotine.—L. N. MARKWOOD. *J. Assoc. Official Agr. Chem.*, 23 (1940), 804–810. (A. P.-C.)

***dl*-Pelletierine Derivatives—Synthesis of Some.** The bark of the pomegranate tree yields three main alkaloids: pelletierine, pseudopelletierine and isopelletierine. The latter two have been synthesized, while the first has not although its formula is established. Wibaut and Beets (*Rec. trav. chim.*, 59 (1940), 653) have approached the synthesis of pelletierine by using phenyllithium to condense α-picoline

with bromacetal to give β-(2-pyridyl) propionacetal which was hydrolyzed to a crude *dl*-β-(2-piperidyl) propionacetal. The approach failed beyond this point. The present authors have extended the work. The diethyl acetal of *dl*-pelletierine was prepared by reducing β-(2-pyridyl) propionacetal to pure *dl*-β-(2-piperidyl) propionacetal (optically inactive pelletierine acetal). From this numerous derivatives of pelletierine were made and described, but none could be converted to free pelletierine due to the marked instability of the alkaloid. Being both a strong secondary amine and a primary aldehyde it easily undergoes aldol condensation. Further, it assumes a carbinol amine structure similar to that of cotarnine. This is conducive to self-condensation by virtue of the methylene group present. The work is not being continued.—M. A. SPILLMAN, SAMUEL SWADESH and C. W. MORTENSON. *J. Org. Chem.*, 6 (1941), 780–785. (W. T. S.)

Pilocarpine—Colorimetric Determination of, and Its Separation from Other Alkaloids. To separate pilocarpine from quinine (and other alkaloids), to 10 cc. of aqueous solution of the alkaloids add about 0.1 Gm. of sodium bisulfite and a 3-cc. excess of 10% sodium hydroxide, mix, let stand 5 min., extract with five 20-cc. portions of chloroform, wash the extracts with 5 cc. of water (the washed chloroform extracts may be retained for the determination of quinine and other alkaloids), to the combined wash water and residual alkaline solution add 2 cc. excess of concentrated hydrochloric acid, let stand about 15 min., add a slight excess of ammonia, extract immediately with five 20-cc portions of chloroform, filter through a pledget of cotton into a beaker, and evaporate the chloroform on a steam bath. Dissolve the residue in water to exactly 25 cc. and determinate the approximate amount of pilocarpine by titration of a 10-cc. aliquot with fiftieth normal acid (1 cc. = 4.16 mg. pilocarpine) using methyl red indicator. To six 150-cc. separatory funnels transfer a 10-cc. (or smaller) aliquot of sample containing 0.2 to 2.0 mg. of pilocarpine and 10, 5, 2.5, 1.0 and 0.5 cc. of standard pilocarpine solution (0.2 mg. per cc.), add water to 10 cc. if necessary; to each funnel add 1 cc. of acetic acid and exactly 20 cc. of chloroform, then 1 cc. of 5% potassium chromate and 1 cc. of 3% hydrogen peroxide, shake vigorously about 30 sec., allow the layers to separate, filter the chloroform through filter papers into glass-stoppered flasks, protect from direct sunlight and as much as possible from daylight, and compare the colors, preferably in a photometer. The separation is based on saponification of the lactone group of pilocarpine with alkali to yield a water-soluble salt and regeneration of the pilocarpine (after extraction of the other alkaloids by chloroform from alkaline solution) by acidification. The colorimetric procedure is based on the Helch qualitative test (*Pharm. Post*, 35 (1902), 289). Experiments made to justify the various steps, concentration of reagents, etc., are described. Recoveries of 97.0% to 99.0% were obtained.—IRWIN S. SHUPE. *J. Assoc. Official Agr. Chem.*, 24 (1941), 757–766.

(A. P.-C.)

Quinine—Determination of, and the Assay of Quinine and Strychnine in Mixtures. There has always been difficulty in applying acidimetric titration to determination of quinine. Presence of two amino nitrogens with widely different ionization constants may be responsible. Titration of the more basic of these amino nitrogens forms the mono-acidic salt. This salt acts as a buffer and precludes accurate determination of end-point by means of an indicator. Previous workers titrated weak bases dissolved in glacial acetic acid with a strong acid in the same solvent successfully. Others applied the principle to amino acids determining end-point potentiometrically or by use of crystal violet, α-naphthol-benzein or benzoyl as an indicator. These latter workers used weight burettes because of the high thermal expansion of glacial acetic acid. Since the thermal expansion is a linear function of the temperature volume, burettes may be used. Quantitative separation of quinine and strychnine has been difficult. The method most widely used was tentatively adopted by the Association of Official Agricultural Chemists, but recoveries showed a great range. Separation by means of immiscible solvents was not possible but a study of a number of acid salts of the alkaloids showed that a mixture of quinine and strychnine in strong sulfuric acid could be quantitatively separated by extracting the strychnine wth a solution of dichloracetic acid in chloroform. Experimental work reports details of procedure.—ROBERT L. HERD. *Jour. A. Ph. A.*, 31 (1942), 9. (Z. M. C.)

Sinine, A New Antimalarial Alkaloid. A Preliminary Report. *Fraxinus malacophylla* (Pai-chi'-ang-kan), an indigenous tree of South China, has been used for thirty years as an antiperiodic and a laxative. The bark contains tannins, sugar, fats, resins, alkaloids and unidentified organic and inorganic substances. The specific alkaloid (sinine) may be extracted by acidic alcohol and isolated with ammonia and chloroform. Sinine gives the reactions of an alkaloid, but unlike quinine a solution of its sulfate is not fluorescent. A fluidextract of the drug immobilizes infusoria and is antipyretic. Its toxicity in rabbits is low. Calculated doses of the powder or a fluidextract of the root-bark in 34 malarial children caused a disappearance of parasites from the blood and reduced enlarged spleens. It was less effective in chronic subtertian cases. There was no recurrence. Pharmacologically the drug resembles quinine producing senism evidenced by vomiting or tinnitus aurium. A related drug of even greater power is mentioned.—SHAO-KWANG LIU, YAU-TEH CHANG, TZ'E-KWANG CH'UAN and SHIH-CHIEH TAN. *Chinese Med. J.*, 59 (1941), 575–577.

(W. T. S.)

Therapeutic Substances—Chemistry of. VII. The Atropine Alkaloids. A review.—F. PRESCOTT. *Chemist and Druggist*, 135 (1941), 168.

(A. C. DeD.)

Umbellatine from Berberis Insignis Hook f. European varieties of Berberis have been studied, but there are few references for Himalayan Berberis. A tabulation shows alkaloids that occur in the species. Several other alkaloids occur with berberine. Study of *B. umbellata* Wall, and *B. insignis* Hook f. showed them to contain umbellatine. Total alkaloid of the latter was 1%.—R. CHATTERGEE. *Jour. A. Ph. A.*, 30 (1941), 247.

(Z. M. C.)

Essential Oils and Related Products

Alcohols in Essential Oils. A discussion of determination of alcohols by acetylation in the presence of water-soluble adulterants.—J. E. S. HAY. *Am. Perfumer.*, 42 (1941), No. 6, 41–43. (G. W. F.)

Bay Leaves—Use of Salt in Distilling. Immersion of the leaves in a 25% sodium chloride solution as compared to water resulted in oils with the following characteristics: yield—1.160% *vs.* 0.958%; phenol content 70% *vs.* 63.33%; sp. gr. 0.9889 *vs.* 0.9910; refractive index 1.5131 *vs.* 1.5122. Analyses at various times indicated that salt immersion increased the speed of the distillation process. It was found that greater yields and higher phenol content were obtained in concentrated solutions as compared with dilute solutions. The effect of various salts was determined. The decreasing order of yields was: sodium nitrate, calcium chloride, potas-

sium chloride, sodium chloride, sodium sulfate, ammonium nitrate and sodium carbonate. Salt is thought to (1) lower vapor pressure of water; (2) change solubility of phenol; (3) act by osmosis; (4) prevent emulsification.—N. G. ARTILLAGA and M. JONES. *Am. Perfumer.*, 43 (1941), No. 6, 29–32; 79. (G. W. F.)

Essential Oil Production—Development of. A discussion of cultivating plants to produce oils of caraway, fennel and lovage.—A. KATZ. *Am. Perfumer*, 42 (1941), No. 5, 35–38. (G. W. F.)

Ocimum Oils from Africa—Two New. Ocimum kilimandscharicum oil from Sudan and Ocimum suave oil from Tanganyika are discussed.—ANON. *Perfumery Essent. Oil Record*, 33 (1941), 330. (A. C. DeD.)

Oil of Artemisia Tridentata (American Sage Brush). *A. tridentata* is a most common desert plant in 10 western states. Preliminary investigation showed this plant to contain 1% of a steam-volatile oil composed of α-pinene, cineol, *l*-camphor and unidentified substances. Present importations of eucalyptus oil and camphor demanded further study of this plant. The oil was steam-distilled from air-dried shoots and then fractionated into four main divisions by making cuts at 120°, 140° and then at 4° intervals until 193° was reached. Fraction 1 contained the aldehyde, methacrolein. Fraction 2 contained principally α-pinene, and in addition other terpenes. Fraction 3, cineol, α-terpinene and an unidentified substance in smaller quantity. Fraction 4, *d*-camphor, an alcohol isomeric with terpineol named artemisol, and the acetate of the latter. Proof for the presence of these substances is submitted. The authors claim that in an emergency this plant is a dependable source of *d*-camphor and eucalyptol.—CORLISS R. KINNEY, TAYLOR W. JACKSON, LOUIS E. DEMYTT and ARNOLD W. HARRIS. *J. Org. Chem.*, 6 (1941), 612–625. (W. T. S.)

Oil of Bois de Rose. A discussion of the cultivation, production and properties of this South American oil.—E. GUENTHER. *Am. Perfumer.*, 42 (1941), No. 4, 39–41; No. 5, 31–35. (G. W. F.)

Peppermint Oil—Ukranian. The story of its beginning.—ANON. *Perfumery Essent. Oil Record*, 32 (1941), 237. (A. C. DeD.)

Sweet Orange Oil—French Guinea. A discussion of methods of adulteration, and analysis of the oil; the common adulterants are orange terpenes, petroleum products and old oxidized oils.—E. GUENTHER. *Am. Perfumer.*, 44 (1942), No. 1, 31–33. (G. W. F.)

Tuber of Coqui (Cyperus Rotundus L.)—Some of the Constituents of the. II. The Volatile Oil. The volatile oil from this plant has been studied and several reports made since 1922. This literature is reviewed. Some experimental work has been done on Puerto Rican tubers and yield and constants of the oil are reported.—CONRADO F. ANSENJO. *Jour. A. Ph. A.*, 30 (1941), 628. (Z. M. C.)

Glycosides, Ferments and Carbohydrates

Ascorbic Acid Oxidase from Summer Crook-neck Squash (C. Pepo Condensa). A method has been described for the preparation of a highly purified ascorbic acid oxidase having an activity of 600 to 630 units per mg. dry weight. At high concentrations the enzyme was green, at lower concentrations blue or bluish green. The ascorbic acid oxidase was found to be a copper-protein compound, containing 0.15% of copper. The purest enzyme preparations obtained had an activity of 432 units per gamma of copper. Manganese seems to play no part as activator for this enzyme. The purest enzyme preparation was found to have lost 99.65% of the peroxidase accompanying the enzyme in the crude juice and may be considered practically free of this enzyme. Ascorbic acid oxidase has no action toward *p*-cresol and only shows a slight action toward catechol and hydroquinone at comparatively high concentrations.—P. L. LOVETT-JANISON and J. M. NELSON. *J. Am. Chem. Soc.*, 62 (1940), 1409–1412. (E. B. S.)

Carbohydrate Reaction—General. The well-known test for pentoses, namely, warming the pentose with concentrated hydrochloric acid and testing the vapors with a piece of filter paper moistened with a solution of aniline in acetic acid can be extended to many hexoses if 70–80% sulfuric acid is used in place of the hydrochloric acid. The reaction is positive not only with pentoses but also with glucose, fructose, galactose, maltose, sucrose, glycogen, lichenin, inulin, starch and cellulose, also with some glycosides (α-methylglucoside, arbutin, salicin, loganin, naringin, linamarin). Mannitol and sorbitol gave negative tests.—L. ROSENTHALER. *Pharm. Acta Helv.*, 15 (1940), 265. (M. F. W. D.)

Cocarboxylase—Purifying. For purifying impure synthetic cocarboxylase containing large amounts of unreacted vitamin B_1, a process is employed which involves treating an aqueous neutral solution of the material with a soluble silver salt such as silver nitrate (various other treatment details are also described).—JOHN WEIJLARD, assignor to MERCK & CO., INC. U. S. pat. 2,224,174, Dec. 10, 1940. (A. P.-C.)

Enzymes—Oxidative Inactivation of. Evidence has been produced to show that enzymes contain labile groups which undergo reversible oxidation-reduction which determines the activity of the enzymes. It has been shown that easily oxidizable substances either protect or activate many enzymes. Mild oxidizing agents inactivate enzymes, the inactivation can often be reversed by treatment with reducing agents such as hydrogen sulfide, sodium sulfite, glutathione, etc.—G. GOPALARAO. *Ind. & News Ed., J. Indian Chem. Soc.*, 4 (1941), No. 2, 120. (F. J. S.)

Fructose in Blood—Application of the Skatole Color Reaction to the Determination of. *Reagents:* Dilute tungstic acid. Ten cc. of $^2/_3$ *N* sulfuric acid and 10 cc. of 10% sodium tungstate are added to 480 cc. of water with shaking. Ethanolic hydrogen chloride. Dry hydrogen chloride is bubbled through iced 95% ethanol until it becomes 10.0 to 10.1 *N*. Acid ethanol. Four volumes of hydrochloric acid (sp. gr. 1.1878) are added to 6 volumes of 95% ethanol. Ethanol, 95%. Skatole solution. One Gm. of recrystallized skatole is dissolved in 100 cc. of 95% ethanol. A few drops of potassium hydroxide are added as preservative. *Procedure:* Blood (0.5 cc.) is measured into 5 cc. of the dilute tungstic acid with a capillary pipette and is mixed by a stream of bubbles blown from the tip of the pipette. After 15 min. the mixture is centrifuged and the supernatant fluid decanted; 2 cc. of this "filtrate" are transferred to an Evelyn colorimeter tube graduated at 10 and 20 cc. After 4 cc. of the ethanolic hydrogen chloride have been added, the tube is covered with a large marble and heated for 30 min. in a 60° bath. It is then placed in cold water for three min., after which 0.1 cc. of the skatole solution is added. After another five min. the solution is diluted to 10 cc. with ethanol and between 10 and 15 min. later the light absorption is measured in an Evelyn colorimeter with a filter having a maximum transmission at 520 mμ. The photometer is set against a blank carried through the procedure with the sample and identical with it except that it contains distilled water instead of filtrate. If the light absorption is too great for accurate estimation, the blank and sample are both

diluted to 20 cc. with acid ethanol, the photometer is reset and a new reading taken.—ROGER M. REINECKE. *J. Biol. Chem.*, 142 (1942), 487. (F. J. S.)

Glycosides of Phenolphthalein, Etc. Laxative compounds suitable for use in aqueous solution are obtained by reacting phenolphthalein with an acylhalosaccharide such as acetylbromosaccharide, in the presence of a reagent such as silver oxide to remove the halogen.—STANLEY E. CAIRNCROSS, assignor to BRISTOL-MYERS CO. U. S. pat. 2,216,734, Oct. 8, 1940. (A. P.-C.)

Lichenin and Araban in Oats (Avena Sativa). Two polysaccharides, identified as lichenin and araban, have been obtained from oat seeds. Lichenin is the polysaccharide of oats responsible for its cupric chloride crystallization pattern. Its isolation tends to confirm a hypothesis of Karrer and his co-workers that lichenin is widespread in nature as reserve cellulose. A convenient method is described for the saponification of polysaccharide acetates and determination of their acetyl content.—DANIEL LUZON MORRIS. *J. Biol. Chem.*, 142 (1942), 881. (F. J. S.)

Maltose and Glucose—Note on the Fermentation of, in Alkaline Solutions. Maltose is fermented by bakers' yeast without the need of preliminary hydrolysis to glucose by the action of maltase ("direct fermentation"). At *p*H 8.4 glucose is completely fermented in less than 20 min., whereas under the same conditions no measurable amount of maltose is fermented in 30 min. The fact is employed as the basis of an analytical procedure for the determination of glucose in solutions which contain maltose.—IRENE E. STARK and MICHAEL SOMOGYI. *J. Biol. Chem.*, 142 (1942), 579. (F. J. S.)

Papain—Assay of. The method suggested, which has been used in more than 1000 assays, consists in placing weighed samples of papain in glass-stoppered, graduated cylinders and adding water to the correct dilution (*i. e.*, 50 mg. diluted to 25 cc.) and shaking (mechanically at about 300 shakes per min.) for 5 min., withdrawing samples of the solution and assaying at once. For both this method and the Balls method, the time factor is important, too much shaking or allowing the sample to stand too long being detrimental to the activity of the papain. In preparing samples by either method, the assay should be made as soon as possible after the latex has dissolved in water, preferably at the 5-min. interval.—R. F. THOMSON. *J. Assoc. Official Agr. Chem.*, 24 (1941), 540. (A. P.-C.)

Saponins and Sapogenins. XV. The Interrelationship of Echinocystic Acid and Oleanolic Acid. It is possible that echinocystic acid and oleanolic acid have the same carbon skeletons.—D. TODD, G. H. HARRIS and C. R. NOLLER. *J. Am. Chem. Soc.*, 62 (1940), 1624–1625. (E. B. S.)

Starch Phosphorylase of Potato. The purification and some of the properties of potato phosphorylase are described. The enzyme was concentrated some 370 times by a series of successive ammonium sulfate fractionations. Adenylic acid is not a component of the system, although catalytic amounts of starch, dextrin, or glycogen are required for starch formation from glucose-1-phosphate. Some of the factors affecting starch formation by the enzyme are analyzed.—D. E. GREEN and P. K. STUMPF. *J. Biol. Chem.*, 142 (1942), 355. (F. J. S.)

Sugars—Semimicro Method for Determining Copper Reduced by. The method is a modification of the Bertrand titration method, and consists essentially in adding to 10 cc. of sugar solution in a large test tube 5 cc. each of copper sulfate (20 Gm. per liter) and alkaline tartrate (50 Gm. Rochelle salt, 50 Gm. anhydrous sodium carbonate, 40 Gm. sodium bicarbonate per liter), heating 15 min. in a boiling water bath, filtering through a König A2 filter (or other of equivalent porosity), dissolving the cuprous oxide in 10 cc. of neutral ferric alum (100 Gm. per liter), adding 3 cc. of sulfuric acid (1 + 1), a little water, 3 cc. of approximately 25% phosphoric acid and 1 drop of fortieth-molar *o*-phenanthroline-ferrous sulfate complex, and titrating with hundredth normal potassium permanganate. Blanks are run on the reagents. If y = mg. of the sugar and x = cc. (net titration) of permanganate: for glucose, $y = 0.018 + 0.212\,x$; for fructose, $y = 0.026 + 0.221x$; for sucrose, $y = 0.022 + 0.205x$. The equations for glucose and sucrose cover the range 0.05 to 4.0 mg. For fructose 0.05 mg. = 0.2 cc. permanganate; the equation applies to the remainder of the range to 4.0 mg. The method has been used satisfactorily with extracts of tomato leaves and of various parts of the timothy plant; it gives no additional blank with well-washed yeast.—THOS. G. PHILLIPS. *J. Assoc. Official Agr. Chem.*, 24 (1941), 181–183. (A. P.-C.)

Vitamin C—Influence of, on the Inactivation of Enzymes by Ultraviolet Light. Liver phosphatase, sweet potato amylase and pepsin are inactivated when their solutions are exposed to ultraviolet radiation, and vitamin C is found to protect the enzymes against the inactivation.—K. V. GIRI. *J. Indian Chem. Soc.*, 18 (1941), 141. (F. J. S.)

Other Plant Principles

Brassicasterol. II. Degradation by Ozone. On ozonizing brassicasteryl acetate, a C_{22} acid, β-3-hydroxy-bisnorcholenic acid, and a C_6 aldehyde are obtained. The empirical formula of brassicasterol is therefore $C_{28}H_{46}O$. The C_6 aldehyde appears to be a partially racemized 1-methylisopropyl-acetaldehyde, which is a degradation product of ergosterol. The structural formula of 7,8-dihydroergosterol is proposed for brassicasterol.—E. FERNHOLZ and H. E. STAVELY. *J. Am. Chem. Soc.*, 62 (1940), 428–430. (E. B. S.)

Citric Acid from Citrus Fruits—The Production of. A detailed description of the method employed. Out of the available citrus fruits, three varieties, namely the limes (*Citrus medica*, var. *acida*), the dabba (*Citrus medica*) and the matheepala (*Citrus decumana*) contain 6.5, 7.4 and 6.9% citric acid, respectively, in their juices.—K. C. PATNAYAK and C. J. DASSA RAO. *Ind. & News Ed., J. Indian Chem. Soc.*, 4 (1941), No. 2, 91. (F. J. S.)

Hesperidin—The Chemical Nature of, and Its Experimental Medical Use as a Source of Vitamin P. Literature dealing with the occurrence, preparation, properties and medicinal uses of hesperidin has been reviewed. Hesperidin is a flavanone glucoside occurring in most varieties of citrus fruit and possibly in numerous other plants. A number of methods of preparation are given. Nearly all of them depend on the solubility of hesperidin in dilute alkali for extraction and use alcohol to repress the solution of pectin. Pure hesperidin occurs in long colorless needles, easily soluble in dilute alkali and in pyridine, slightly soluble in methyl alcohol and in hot glacial acetic acid, almost insoluble in acetone, benzol and chloroform. Several views of its chemical structure are discussed and reactions for its formation given. The history of its use in medicine is traced from a beginning with lemon juice in cases of purpura hemorrhagica and leading to latter developments and to the clinical work on vitamin P by Scarborough, using hesperidin from oranges as the source of the vitamin. Reports from several other workers indicate the successful use in treatment of disorders caused by abnormal capillary fragility.—RALPH H. HIGBY. *Jour. A. Ph. A.*, 30 (1941), 629. (Z. M. C.)

Tannin from the Kernels of Green Betel Nuts. Tannins are extracted from numerous plants for medicinal use as astringents, in tanning leather, for dyeing and for preserving fish nets and sails. The plant sources for tannins commonly used in the Philippines are kamachile, which is preferred, and bakauan. Of other plants investigated the kernel of green betel nuts contains much tannin, twice as much as the ripe nuts. Analysis of the kernels shows: total solids 32.19%, soluble solids 29.67%, non-tannins 9.51% and tannins 20.16%. The percentage of tannins compares favorably with that from bakauan and with imported materials such as oak, hemlock, chestnut, etc. Leathers tanned with betel nut have a fine smooth grain and natural light color. This tannin is of pharmaceutical interest. Since the nuts are chewed there is probably no danger from internal use of the tannin. This possibility is being studied.—LUZ BAENS. *Rev. Filipina Med. Farm.*, 32 (1941), 143. (G. S. G.)

Fixed Oils, Fats and Waxes

Cacao Butter—Synthetic Substitute for. Postonal, a synthetic product available from Bayer, may be had in bars or a pale yellow non-greasy powder. It melts 60–61° and solidifies at about 54°. It has a specific gravity of 1.19 and is water soluble. It melts to a viscous liquid. It is more expensive than cacao butter. It is made by a catalytic polymerization of ethylene oxide and is composed of about 300 units. It is non-irritant to the mucous membranes and does not envelop medicaments in an oily film from which absorption is retarded. Drugs may easily be incorporated and it will absorb up to 10% water and does not rancidify. Suppositories may be prepared by either the fusion or the compression method. Insufficient study has yet been made of the base to determine the full extent of its usefulness.—R. FREUDWEILER. *Schweiz. Apoth.-Ztg.*, 79 (1941), 149. (M. F. W. D.)

Chaulmoogra Oil. The oil is pressed from the seeds of *Hydnocarpus kurzii*, though for many years before 1900 there was used another oil from *Gynocardia odorata*. It is a specific for leprosy. The oil is yellow and clear, but solidifies below 25°. Other species of *hydnocarpus*, *laurifolia* and *anthelmintica* possess similar chemical and physical properties. There are some twenty other chaulmoogric oils which may or may not be effective against leprosy. Their fusion points vary from 22° to 42°, and they solidify between 8° and 24°. The preference is for an oil with a fusion point between 21° and 25° and solidification between 8° and 16°. The oil is soluble in petroleum ether, acetone, amyl alcohol, acetic ether and slightly so in ethyl or methyl alcohols. This slight solubility in ethyl alcohol is useful in verifying its free fatty acids and also in checking adulteration with castor oil. Most pharmacopœias agree on a range of rotation in 10% chloroform, between +48° to +60°, some arbitrarily set it at +52° or +53°. Its refractive index should be between 1.473 and 1.476. The iodine number ranges for the various species from 98 to 104; saponification index is 196 to 213 and acid number from 7.7 with organic solvents and 8.6 in cold extraction to 15.6 with hot water extraction. Chaulmoogric oils produce unsaturated acids with the general formula $C_nH_{2n-4}O_2$. The oil keeps well in closed containers away from air, light and heat. Ethyl esters of chaulmoogra oil are produced by ethyl alcohol with sulfuric acid as the catalyst. The yellow oil produces specific color reactions with sulfuric acid and chloroform, turning a distinctive greenish shade.—HELENA POSSOLO. *Rev. quím. farm.*, 5 (1940), 35, 53. (G. S. G.)

Fats and Oils—Observations on the Splitting of, by Lipase and by Twitchell's Reagent. Two methods for the splitting of fats and oils have been tried. In the lipase fermentation process, with coconut oil, hydrolysis came to almost a dead stop after 50% conversion. In the Twitchell process, working with tallow, 95% conversion can be obtained with 1% reagent in 24 hrs. It is found that among the catalysts tried, the naphthalene reagent is the most efficient; increasing the concentrations of the reagent from 1% to 2% does not accelerate hydrolysis to any considerable extent; a small amount of H_2SO_4 is essential; and the removal of the glycerin liquor when the reaction rate has slowed down shortens the total conversion period to a great extent. The yield of the fatty acids obtained has been of the order of 96%. The process should permit industrial utilization, particularly if the glycerin is recovered.—SACHINDRA NATH BASU. *Ind. & News Ed., J. Indian Chem. Soc.*, 4 (1941), No. 2, 113. (F. J. S.)

Fatty Acids—Studies on the Chemistry of the. IX. A Spectroscopic Study of Methyl Arachidonate Purified by Crystallization and Distillation and Its Alkali Isomerization Product. The following summary is given: (1) A critical study of the method of isolating methyl arachidonate by crystallization and distillation has been made and the product thus obtained compared with that prepared by reduction of the octabromide. (2) The absorption spectra of these samples show even better than the diene number and the molecular refraction that these samples are relatively free from conjugated unsaturation. (3) A correction has been recommended for the empirical factor in the equation for the estimation of methyl arachidonate by the polybromide number. (4) The kinetics of the alkali isomerization of arachidonic acid have been followed spctroscopically and the similarity to the behavior of the 1,4,7-triene system present in the linolenic acid noted. (5) The alkali isomerization product of arachidonic acid has been described. **X. The Structure of Arachidonic Acid as Evidenced by Oxidative Degradation and Selective Hydrogenation.** Summary: (1) Ozonolysis of methyl arachidonate has been found to yield caproic, acetic, glutaric, succinic and malonic acids, acetaldehyde and carbon dioxide. (2) Oxidation of methyl arachidonate by potassium permanganate in acetone has been found to yield caproic, glutaric, succinic and oxalic acids. (3) The structure of arachidonic acid has been assigned as 5,8,11,14-eicosatetrenoic acid. (4) The hydrogenation of methyl arachidonate has been found to proceed in two stages, the diethylenic intermediate product consisting of 80% to 90% methyl 5,14-eicosadienoate and 5% to 10% methyl 8,14-eicosadienoate.—DAVID T. MOWRY, WALLACE R. BRODE and J. B. BROWN. *J. Biol. Chem.*, 142 (1942), 671, 679. (F. J. S.)

Fatty Oil from the Seeds of Solanum Indicum L. The oil from the seeds of *Solanum indicum* consists of the glycerides of lauric palmitic, stearic, arachidic, oleic and linoleic acids together with the phytosterols, sitosterol and carpesterol, and a hydrocarbon of a high molecular weight, m. p. 66–67°.—S. V. PUNTAMBEKAR and S. KRISHNA. *J. Indian Chem. Soc.*, 18 (1941), 329. (F. J. S.)

Insects—Needed Raw Materials from. A discussion of dyes, fats and waxes obtained from insects. E. HARDY. *Am. Perfumer.*, 43 (1941), No. 5, 33–34. (G. W. F.)

Methylated Fatty Acids—Synthesis of Some. A method has been developed for the synthesis of higher fatty acids. The α-methyl acids with even-numbered fundamental carbon chains from α-methylstearic to α-methylhexacosanoic acid have been synthesized. 10-Methyldocosanoic, 10-methyltet-

racosanoic and 10-methylhexacosanoic acids were also prepared. The corresponding amides were prepared as derivatives.—A. K. SCHNEIDER and M. A. SPIELMAN. *J. Biol. Chem.*, 142 (1942), 345. (F. J. S.)

Oils—Purification of. The oil is first decolorized or clarified by treatment with a solid adsorbent, *e. g.*, infusorial earth, and the resultant oil is then freed from all suspended matter by electrostatic precipitation.—J. BIBBY and SONS, LTD. Brit. pat. 520,233; through *J. Soc. Chem. Ind.*, 59 (1940), 511. (E. G. V.)

Sterols and Emulsifiers—New Data on. A discussion of the constituents of wool fat including oxy-, meta- and dihydroxy-cholesterol, cholestandiol, isocholesterol, phytosterols, epi-isomers of sterols and wool fat alcohols.—H. JANISTYN. *Am. Perumer.*, 43 (1941), No. 6, 33–34. (G. W. F.)

Vitaminous Oils—Obtaining, from Fish Tissues Such as Fish Livers. The method employed involves heating the tissues with substantially the amount of alkali metal hydroxide required for fixing the acids and coloring matter within the fish-tissue proteins, extracting vitaminous oil from the thus-treated tissues with a solvent for fatty oils, and recovering the oil from the extract. Ethylene dichloride is preferably used as the solvent, and is evaporated for the oil recovery.—WM. S. JONES, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,238,059, April 15, 1941. (A. P.-C.)

Unclassified

Acetic Acid—Synthetic. The oxidation of an aldehyde to acid is generally made by a catalyzer manganese acetate with a base of pure oxygen from liquid air or pure air.—L. BLAS. *An. Real Soc. Espana Fis. y Quim.*, II, 36 (1940), 17; through *Sup. An. Farm. Bioq.*, 12 (1941), 40. (G. S. G.)

Acids of the Polyhydrocyclopentanophenanthrene Series and Their Esters. Acid substances the salts of which have emulsifying and hemolytic properties and which can be used for the preparation of pharmaceuticals of digitalis-like action or for the preparation of the female sex hormone series are produced by reaction of ketopolyhydrocyclopentanophenanthrene compounds with acids or their esters, preferably in the presence of a catalyst. Their synthesis may be carried out, for instance, by the aid of the Reformatskiĭ reaction or the Knoevenagel reaction or modifications of such reactions. The reaction in the first case yields mainly hydroxy acids. However, if α,β-unsaturated ketones, such as chlolestenone or testosterone are used, the condensation yields directly the unsaturated acids, water being split off during the condensation. If diethyl malonate or succinate or ethyl acetoacetate, ethyl cyanoacetate, ethyl phenylacetate or their free acids are condensed with these ketones in the presence of bases such as an alkali metal ethylate or piperidine, the unsaturated esters are directly obtained, while if mixed anhydrides, such as malonic and acetic, alkylamalonic and acetic or succinic and acetic anhydrides, are used, the β-lactones are obtained which on hydrolysis yield the hydroxy acids. From the hydroxy acids water may be split by distilling under high vacuum or by any other usual way. These unsaturated acids are easily reduced by known methods. Various examples with details are given.—ERWIN SCHWENK and BRADLEY WHITMAN, assignors to SCHERING CORP. U. S. pat. 2,247,822, July 1, 1941. (A. P.-C.)

Acridine Derivatives. VI. Certain sulfanilamidoacridines and acridyl aminobenzene-sulfonamide derivatives have been prepared. **VII. Compounds with Mercury, Copper and Antimony.** Certain mercury, copper and antimony compounds have been prepared from 5-thiolacridines.—S. J. DAS-GUPTA. *J. Indian Chem. Soc.*, 18 (1941), 25, 93. (F. J. S.)

Aminoethanol Derivatives—Some, Possessing Local Anesthetic Activity. The following aminoethanol derivatives in which the hydroxyl group remains unesterified have been prepared: dimethylaminomethyl-7-methoxy-1-naphthylcarbinol, piperidinomethyl-1-phenylcarbinol, hexylbenzene, *p*-hexyl-ω-chloracetophenone, piperidinomethyl-1-(*p*-hexylphenyl)carbinol, butylbenzene, *p*-butyl-ω-chloracetophenone, piperidinomethyl-1-(*p*-butylphenyl)-carbinol, ethyl-piperidinomethyl-1-(*p*-butylphenyl)-carbinol,methyl-piperidinomethyl-1-(*p*-butylphenyl) carbinol, 1-chlorotridecanone-2, piperidinomethyl-undecylcarbinol. Some of these are very potent local anesthetics, but are too irritant to be of practical value.—F. C. MACINTOSH and T. S. WORK. *Quart. J. Pharm. Pharmacol.*, 14 (1941), 16–25. (S. W. G.)

Aminophenyl Sulfonamidophenyl Sulfone. Compounds of the general formula $[NH_2C_6H_4SO_2C_6H_4N(SO_2R)\text{-}]_nX$, in which R is an alkyl or aryl radical, X is hydrogen, ammonium or a metal and n is a small whole number, may be prepared in good yield by the reaction of *p*-acylaminophenyl, *p*-aminophenyl sulfones with alkyl, aryl or heterocyclic sulfonyl chlorides, followed by deacylation. The compounds are the sulfur analogs of monoacylated diaminodiphenyl sulfones which have high therapeutic activity against various bacterial infections such as those due to pneumococci, streptococci and the like, and are much less toxic than the monoacylated diaminodiphenyl sulfones. Details are given of the preparation of *p*-aminophenyl, *p*-octylsulfonamidophenyl sulfone (m. p. 130° C.) and *p*-aminophenyl, *p*-sulfanilamidophenyl sulfone (m. p. 211° C.).—JAMES J. WILLIAMS, assignor to AMERICAN CYANAMID CO. U. S. pat. 2,240,383, April 29, 1941. (A. P.-C.)

Ammonium Mandelate. Mandelic acid is treated with about 20% excess of strong ammonia water, and the ammonium mandelate formed is dried by heating under reduced pressure.—JOS. S. BAKER, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,209,314, July 30, 1940. (A. P.-C.)

Antihemorrhagic Esters—Water-Soluble. A series of water-soluble sulfuric and phosphoric acid ester derivatives of vitamin K_1 and other quinones of established vitamin K activity have been prepared as a possible means of providing antihemorrhagic compounds which can be administered parenterally in a small volume of aqueous solution. Some of the salts were less potent than the parent base, but the sodium salt of 2-methyl-1,4-naphthohydroquinone disulfuric acid showed antihemorrhagic activity at 2 γ.—L. F. FIESER and E. M. FRY. *J. Am. Chem. Soc.*, 62 (1940), 228–229. (E. B. S.)

Apparatus for Classifying Material. The apparatus comprises an inverted conical vessel which is counterpoised so that when settled material accumulates an underflow valve is opened and the contents are partly discharged. The inflowing material is directed toward the conical wall, and through it are distributed wash-water inlets.—J. E. KENNEDY. Brit. pat. 519,485; through *J. Soc. Chem. Ind.*, 59 (1940), 506. (E. G. V.)

Arsanilic Acid—Preparation of. Arsenic acid is slowly added to an excess of aniline which has been heated to about 82° C., while agitating, and the temperature is then raised to about 155° to 160° C. and such temperature is maintained for about 4 to 5 hrs.—WALTER G. CHRISTIANSEN, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,245,572, June 17, 1941. (A. P.-C.)

Aryl Arsine Oxides. 2-Mercaptobenzimidazole-4- and -5-arsine oxides, suitable for therapeutic spirocheticidal and trypanosomicidal use, are obtained from 2-mercaptobenzimidazole-4- and -5-arsonic acids, by reduction, *e. g.*, with sulfur dioxide with or without the addition of hydriodic acid, or with phenylhydrazine. Various details are given.—WALTER HERRMANN and FRIEDRICH HAMPE, assignors to WINTHROP CHEMICAL CO. U. S. pat. 2,242,581, May 20, 1941. (A. P.-C.)

Ascorbic Acid—Complex Formation of, with Formaldehyde. Formaldehyde forms a complex with ascorbic acid as shown by two independent methods of estimation of ascorbic acid, the titration with dichlorophenol indophenol and the titration with iodine solution. The complex formation has been found to vary with the *p*H of the solution containing the ascorbic acid. Quantitative estimations of formaldehyde also support the above conclusion.—P. V. KRISHNAMURTHY. *J. Indian Chem. Soc.*, 18 (1941), 383. (F. J. S.)

Azo Dye Containing the Arseno Group. 4,4′-Dihydroxyarsenobenzene-3,3′-bis (2-azo-1-naphthol-4,8-disulfonic acid) is produced by a process which involves reducing the azo dye obtained from diazotized 4-hydroxy-3-aminobenzenearsonic acid and 1-naphthol-4, 8-disulfonic acid, with hypophosphorous acid in presence of hydriodic acid. The product is stable to air and suitable for therapeutic use, having a tolerance and therapeutic margin twice that of neoarsphenamine.—ERNST A. H. FRIEDHEIM. U. S. pat. 2,235,478, March 18, 1941. (A. P.-C.)

Biguanide—Complex Compounds of, with Bivalent Metals. II. Nickel Biguanidines. Nickel bisbiguanide dihydrate has been prepared and found to behave as a diacidic base in all its compounds. This has been found to lose water at 110° and form the anhydrous base $Ni(C_2N_5H_6)_2$. Like the corresponding chromium, cobalt and copper compounds, it also forms a special type of inner metallic complex of the second order. A series of salts of the base with simple and complex anions, including polyiodides, has been prepared and their properties studied. These are, namely, chloride, bromide, iodide, fluoride, double acid fluoride, chlorate, bromate, iodate, periodate, perchlorate, permanganate, borofluoride, nitrate, nitrite, sulfite, thiosulfate, dithionate, thiocyanate, selenate, chromate, carbonate, ferrocyanide, ferricyanide, nitroprusside, cobalticyanide, cobaltinitrite, mercuri-iodide, iodotri-iodide and chloro-tri-iodide. They resemble the corresponding copper compounds in many respects.—PRIYADARANJAN RAY and BHUPESH CHANDRA PURAKAYASTHA. *J. Indian Chem. Soc.*, 18 (1941), 217. (F. J. S.)

Bis(aminoalkyl)disulfoxides. Therapeutic compounds of the general formula $NH_2RSOSORNH_2$ (where R is a lower alkylene group), especially of the general formula $NH_2(CH_2)_nSOSO(CH_2)_nNH_2$ (where n represents an integer from 1 to 4 inclusive), and acid-addition salts thereof, may be prepared from the acid-addition salts of the corresponding disulfides, *e. g.*, from bi(β-aminoethyl)disulfide dihydrochloride, by oxidation thereof with hydrogen peroxide; and the resulting salt, *e. g.*, bis(β-aminoethyl)disulfoxide dihydrochloride, may be converted into the corresponding monohydrochloride or free base in the usual manner, *e. g.*, by careful neutralization of an aqueous solution thereof with a base such as sodium hydroxide; and acid-addition salts other than the hydrochloride may be used to obtain the corresponding acid-addition salt of the sulfoxide, among others the borate, nitrate, lactate, sulfate and picrate. Details are given of the production of a number of such compounds.—WALTER G. CHRISTIANSEN and MORRIS A. DOLLIVER, assignors to E. R. SQUIBB & SONS. U. S. pat. 2,242,236, May 20, 1941. (A. P.-C.)

Brominated Organic Acids and Their Esters—Highly Branched. Therapeutic and bactericidal compounds are produced, of the general formula $(CH_2)_2CR(CH_2)_nCBrYCOOR'$, where R is a lower alkyl or aryl group, n is a lower integer, Y is hydrogen, or a hydrocarbon, aryloxyalkyl, alkyloxyalkyl or carboxy radical, and R' is hydrogen or a hydrocarbon radical. Numerous examples are given.—FRANK C. WHITMORE and AUGUST H. HOMEYER, assignors to MALLINCKRODT CHEMICAL WORKS. U. S. pat. 2,240,275, April 29, 1941. (A. P.-C.)

Cadalene—New synthesis of. A new synthesis of cadalene is described starting with *p*-methylacetophenone.—PHANINDRA CHANDRA DUTTA. *J. Indian Chem. Soc.*, 18 (1941), 233. (F. J. S.)

Camphor Series—Studies on. VI. Thiocamphor-α-carboxylic acid, thiocamphor-α-dithiocarboxylic acid and oxymethylene-thiocamphor have been prepared by the action of carbon dioxide, carbon disulfide and formic ester, respectively, on sodiothiocamphor. The constitution of these compounds has been established and a few derivatives described.—DINESH CHANDRA SEN. *J. Indian Chem. Soc.*, 18 (1941), 76. (F. J. S.)

Cannabidiol—Structure of. III. Reduction and Cleavage. Cleavage of cannabidiol with pyridine hydrochloride resulted in formation of *p*-cymene and olivetol, demonstrating that cannabidiol probably is a dihydrocymyl group attached to an olivetol residue. Reduction of cannabidiol resulted in the rapid absorption of two mols of hydrogen with formation of a tetrahydro derivative which showed the same color reactions as cannabidiol. From this experiment it was deduced that the olivetol nucleus was unattacked and confirmed the fact that two double bonds were present in the $C_{10}H_{15}$ grouping. Oxidation of tetrahydrocannabidiol led to the isolation of a menthane carboxylic acid identical with that which previously has been synthesized from *l*-menthol. The linkage of the $C_{10}H_{15}$ residue thus is established as on the carbon adjacent to that holding the isopropyl group. Evidence is presented that cannabidiol is a dihydrocymyl olivetol.—ROGER ADAMS, M. HUNT and J. H. CLARK. *J. Am. Chem. Soc.*, 62 (1940), 735–737. (E. B. S.)

Cardiac Aglycones—Studies on Lactones Related to. V. Synthesis of 5-Alkyl-α-Pyrones. A small group of cardiac aglycones (active constituents of *Scilla maritima* and certain toad venoms) are characterized by a side chain consisting of an α-pyrone ring substituted by the cyclopentano-phenanthrene ring system at position 5. Presence of the α-pyrone side chain on carbon 17 of the above ring system is established. Doubt remains as to the position of hydroxyl groups and double bonds in the main ring stem of the molecules. An intact α-pyrone side chain is essential for full cardiotonic action, while simple lactones related to α-pyrone such as coumarin and dehydracetic acid are devoid of activity. Synthesis of 5-substituted α-pyrones was undertaken to find direct synthetic methods for preparing cardiac aglycones. Ring closure of γ-oxalylcrotonic acids containing a primary alkyl substituent in the γ-position yields 5-substituted 6-carboxy-α-pyrones, and these on decarboxylation yield 5-substituted α-pyrones. Improved synthesis of α-pyrone, cyclohexylacetaldehyde and γ-cyclohexylcrotonic acid are described. **VI. The Action of Diazomethane on Certain Derivatives of α-Pyrone.** α-Pyrone derivatives containing a negative substituent in the 5-position will, on treatment with diazomethane, undergo methylation in the 6-position. A possible mechanism for this reaction is given.—JOSEF FRIED and ROBERT C. ELDERFIELD. *J. Org. Chem.*, *6* (1941), 566–575, 577–583. (W. T. S.)

Cardiac Aglycones—Studies on Lactones Related to. Synthesis of β-Substituted, $\Delta^{\alpha,\beta}$-Butenolides from ω-Methoxy-methyl Ketones. The naturally occurring cardiac aglycones may be divided chemically into the "digitalis-strophanthus group" characterized by a side chain consisting of the lactone of an enolized β-aldehyde acid carrying the cyclopentanophenanthrene ring system as a substituent on the β-carbon atom and into the "squill-toad venom group" in which the side chain is an α-pyrone ring substituted in the 5-position. With a view toward preparing the cardiac aglycones and developing the chemotherapy of these and related compounds, the authors have studied in detail the syntheses of a series of compounds which lead to model unsaturated lactones related to the digitalis-strophanthus group of aglycones. The two unsaturated lactones which were prepared and described are β-phenyl-$\Delta^{\alpha,\beta}$-butenolide and β-cyclohexyl-$\Delta^{\alpha,\beta}$-butenolide.—MARTIN RUBIN, WALTER D. PAIST and ROBERT C. ELDERFIELD. *J. Org. Chem.*, 6 (1941), 260–269. **Synthesis of β-Substituted, $\Delta^{\alpha,\beta}$-Butenolides from Acetoxymethyl Ketones.** Laboratory directions are given for the preparation of β-phenyl-$\Delta^{\alpha,\beta}$-butenolide, β-(β-naphthyl)-$\Delta^{\alpha,\beta}$-butenolide and β-cyclohexyl-$\Delta^{\alpha,\beta}$-butenolide by treating the appropriate acid chloride with diazomethane to yield the intermediate diazomethyl ketones which on decomposition with acetic acid give the acetoxymethyl ketones. The acetoxymethyl ketone under the Reformatskiĭ procedure produced the desired compounds.—ROBERT G. LINVILLE and ROBERT C. ELDERFIELD. *J. Org. Chem.*, 6 (1941), 270–272. **Properties of β-Substituted, $\Delta^{\alpha,\beta}$-Butenolides and a Suggested Revision of the Structure of the Side Chain of the Digitalis-Strophanthus Aglycones.** The chemical properties of the cardiac aglycones are described and the evidence for their previously proposed formulas is reviewed at length. New evidence is presented that the cardiac aglycones of the digitalis-strophanthus group may be more satisfactorily formulated as $\Delta^{\alpha,\beta}$-unsaturated lactones rather than $\Delta^{\alpha,\beta}$-lactones as previously accepted.—WALTER D. PAIST, ELKAN R. BLOUT, FREDERICK C. UHLE and ROBERT C. ELDERFIELD. *J. Org. Chem.*, 6 (1941), 273–288. **Preparation of β-Phenyl-$\Delta^{\alpha,\beta}$-Butenolide from Phenylglyoxyl and from Ethyl β-Methylcinnamate.**—JOHN VAN P. TORREY, J. A. KUCK and ROBERT C. ELDERFIELD. *J Org. Chem.*, 6 (1941), 289–295. (W. T. S.)

Cyclopropane—Preparation of. In a process of preparing cyclopropane in a reactor of metal different from the reduction agent, such as an iron vessel, a trimethylene dihalide is treated with a metal reduction agent, such as zinc dust, in an about 90% to 95% by volume solution of aqueous lower aliphatic alcohol.—FRANK C. CHASE, assignor to E. R. SQUIBB & SONS. U. S. pat. 2,242,235, May 20, 1941. (A. P.-C.)

Cyclopropane—Process for the Production of. *2,240,513*—Trimethylene dibromide or chlorobromide is treated with a metal reduction agent such as zinc in the presence of an alkali or magnesium hydroxide (suitably in water and alcohol at a refluxing temperature). *2,240,514*—Trimethylene dibromide is treated with a metal reduction agent such as zinc in an aqueous medium containing a small proportion of an alkali.—JOHN M. ORT, assignor to E. R. SQUIBB & SONS. U. S. pats. 2,240,513 and 2,240,514, May 6, 1941. (A. P.-C.)

Cyclopropane—Process of Producing. 1,3-Dichloropropane and zinc are brought together in the presence of iodide ions (suitably with use of sodium iodide).—HENRY B. HASS and GEO. E. HINDS, assignors to PURDUE RESEARCH FOUNDATION. U. S. pat. 2,235,679, March 18, 1941. (A. P.-C.)

Cyclopropane—Synthesis of. The process used involves causing a mixture of 1,3-dichloropropane and 1,2,2-trichloropropane to react with a metal such as zinc having affinity for chlorine, to yield a chloride of the metal and a mixture of cyclopropane and 2-chloropropene, and this mixture is fractionated into its components.—HENRY B. HASS and GEO. E. HINDS, assignors to PURDUE RESEARCH FOUNDATION. U. S. pat. 2,235,762, March 18, 1941. (A. P.-C.)

7-Dehydrocholesterol—Relative Efficiency of Active Wave Lengths of Ultraviolet in Activation of. The photochemical activation of crystalline 7-dehydrocholesterol in ether by monochromatic ultraviolet of 2483, 2537, 2652, 2804 and 3025 Å. is substantially uniform per quantum of energy applied. On a quantum basis, the activation by 2967 Å. is significantly greater than for any other wave length examined, with the possible exception of 2894 Å. The activation by 2894 Å. appears to be intermediate between that of 2967 Å. and the other wave lengths tested. No demonstrable antirachitic properties were produced by irradiation of 7-dehydrocholesterol in ether by ultraviolet of 3130 Å. The superior effectiveness of 2967 Å. in antirachitic activation of 7-dehydrocholesterol parallels the significant superiority of this wave length in inducing healing upon direct irradiation of depilated rachitic rats, which supports the hypothesis that 7-dehydrocholesterol is a significant precursor of vitamin D in the skin.—J. W. M. BUNKER, R. S. HARRIS and L. N. MOSHER. *J. Am. Chem. Soc.*, 62 (1940), 508–511. (E. B. S.)

Diethylene Glycol Monoethyl Ether—Capsules Containing. In the manufacture of capsule bodies having a water-soluble gelatinous shell and a filler including diethylene glycol monoethyl ether, action of the ether on the shell is inhibited by substantially saturating the ether with vanillin and coumarin.—ROBERT P. SCHERER. U. S. pat. 2,234,479, March 11, 1941. (A. P.-C.)

3,5-Difluoro- and 3-Fluoro-5-Iodo-*dl*-Tyrosine—Synthesis of. The synthesis of 3,5-difluoro- and 3-fluoro-5-iodo-*dl*-tyrosine from *o*-anisidine in about 0.7% overall yields has been described.—J. ENGLISH, JR., J. F. MEAD and C. NIEMANN. *J. Am. Chem. Soc.*, 62 (1940), 350–354. (E. B. S.)

Distillation—Fractional. The theoretical principles are discussed with reference to the practical determination of the degree of separation (σ) attained in a single distillation and in a series of distillations, and to the relation between σ and rate of distillation, composition of liquid, difference between boiling points of the components and characteristics of still head. Numerous experimental data are recorded.—O. MILLER. *Bull. soc. chim. Belg.*, 48 (1939), 447–550; through *J. Soc. Chem. Ind.*, 59 (1940), 332. (E. G. V.)

5-Ethinylruban-5-ol and Related Compounds. 5-Vinylruban-5-ol is structurally closely related (isomeric) to cinchonine, and its analogs may have possibilities as antimalarials. 5-Ketoruban was condensed with acetylene by the use of potassium in *tert*-amyl alcohol to give 5-ethinylruban-5-ol which was reduced with two mols of hydrogen to the corresponding ethyl derivative. 5-Keto-6:9-rubanene was also condensed with acetylene and then reduced to a compound obtainable by treating the same ketone with EtMgI. 3-Hydroxy-3-ethylquinuclidine was similarly obtained by reducing the corresponding ethinyl compound obtained from 3-keto-quinuclidine and acetylene. There is no reference to the proved antiplasmodial effect of these compounds.—G. R. CLEMO and E. HOGGARTH. *J. Chem. Soc.*, (1941), 476–477. (W. T. S.)