New Books

BIOCHEMISTRY AND PHYSIOLOGY OF NUTRITION, Vol. I, edited by G. H. Bourne and G. W. Kidder (published by Academic Press Inc., New York, xiii plus 569 pages [including 96 pages of indices] $13, 1953). This is the first of a two-volume treatise which includes the following chapters: I. The Early Development of the Science of Nutrition, by E. P. Cathcart; II. The History of Vitamins, by L. J. Harris; III. Water and Electrolyte Metabolism, by R. L. Zwemer; IV. Carbohydrate Metabolism, by T. L. Sourkes; V. Amino Acids, by A. Meister; VI. The Biosynthesis of Proteins, by H. Borsook and C. L. Deasy; VII. Lipid Metabolism, by A. C. Frazer; VIII. The Fat-Soluble Vitamins (with special reference to the requirements of different animals), by T. Moore; IX. The Vitamin B Complex, by S. K. Kon and J. W. G. Porter; X. Vitamins and Hematopoiesis, by T. H. Jukes; and XI. Vitamin C, by B. B. Lloyd and H. M. Sinclair.

The present volume does not represent a complete over-all coverage of the whole field of nutrition but rather summaries of certain phases of the subject by investigators especially qualified to do so. The book is written at a somewhat advanced level and should be a convenient if not a complete reference book for advanced workers in nutrition. According to the editors, it was recognized "that certain phases rightly belonging to 'Nutrition' would have to be curtailed or omitted." Also the sections on the B vitamins and the fat-soluble vitamins were somewhat condensed since "this material has been extensively covered in many recent reviews." One regrets that the subject of carotene probably suffers from condensation since such topics as the provitamin A activity of the carotenoids, extrahepatic conversion of carotene to Vitamin A, and stereoisomerism of the carotenoids are either not mentioned or inadequately treated. The section on essential fatty acids might well be expanded to cover more recent work.

The volume is adequately documented throughout. However, in a book compiled by a series of authors, inconsistencies in abbreviations occur in the bibliography of the several chapters. One of the criteria used by the reviewer to determine the care with which the bibliography is compiled is the spelling of Dr. Woolley's name. Not only is it spelled Wooley as well as Wolley, but there are entries in the author index of both D. W. Wooley and D. W. Woolley which refer to the same investigator. It is probably too much to hope for sufficient imagination among those who compile the index to question these. However, by and large, the errors are not more than one would expect with a book as completely documented as is this one.

H. J. DEUEL JR.
University of Southern California
Los Angeles, Calif.

ORGANIC SYNTHESIS, Vol. 33, by Charles C. Price, editor-in-chief (John Wiley and Sons Inc., New York City, 1953, 115 pp., $3.50). This 33rd annual publication contains, in alphabetical order, satisfactory methods for the preparation of 40 different organic chemicals. In each case the formula procedure, method of preparation, and special precautions are given. As usual, each preparation was checked by a reliable investigator.

Almost all of the preparations listed might serve as possible intermediates for the synthesis of compounds of interest to fat and oil chemists. It might therefore be appropriate to list them: 3-acetamido-2-butanone; alloxantin dihydrate; atrolactic acid; benzhydryl β-chloroethyl ether; benzoguanamine; butyrchloral; creosol; di-tert-butyl malonate; diethyl 1,1-cyclobutanedicarboxylate; diethyl γ-oxopimelate; p-dimethylaminobenzaldehyde; dimethylketene; 2,2-dimethylpyrrolidine; ethyl α-(1-pyrrolidyl)-propionate; 9-fluorenecarboxylic acid; furfural diacetate; itaconyl chloride; 3-methylcoumarone; 1,5-naphthalenedithiol; 1,4-naphthoquinone; nicotinonitrile; m-nitrobenzazide; m-nitrobiphenyl; o-nitrocinnamaldehyde; m-nitrostyrene; 6-nitroveratraldehyde; 4-pentyn-1-ol; α-phenylcinnamic acid; 4-phenyl-m-dioxane; o-phenylene carbonate; 3-phenyl-1-propanol; pyridine-N-oxide; 2-(1-pyrrolidyl-propanol; stearone; cis-stilbene; α-tetralone; 3-thenaldehyde; 3-thenoic acid; 3-thenyl bromide and α,β,β-triphenylpropionic acid.

F. A. KUMMEROW
University of Illinois
Urbana, Ill.

F.A.T.I.P.E.C. CONGRES NOORDWIJK 1953, SECOND CONGRESS. The Physical Examination of Paints with Respect to Their Performance (Vereniging van Vernis—en Verffabrikanten in Nederland. Keizersgracht 255, Amsterdam, 1953, 212 pp.). Some 37 papers delivered at the Congress, together with the discussions, are given. Fifteen of these papers are in English, the remainder in French or German. In all cases however resumés are given in all three languages as well as Dutch. The names of many of the authors of these papers are familiar to paint technologists in this country.

There are six Plenary Lectures, with the balance divided into the following four sections: 1. Physical Examination of Liquid Paints: General Testing Problems; 2. Mechanical and Rheological Properties of Dry Paint Films; 3. Other Physical Properties of Dry Paint Films; 4. Natural and Accelerated Weathering.

This is not a handbook of testing procedures such as Gardner's although it does discuss some of the Gardner and ASTM methods. The tests used are largely those employed in Europe, England, and the Scandinavian countries.

A tremendous amount of new experimental work is reported in these papers. This should be of interest not only to paint and varnish manufacturers but also to those large consumers of organic coatings who do their own testing. These papers cover both industrial and trade sales products. Those on accelerated testing are particularly interesting. There are also several methods not in general use in this country which deserve the attention of our scientists.

Throughout all the papers one aim is evident, namely, the correlation between accelerated physical testing and the actual results obtained in the field. Those interested or engaged in this phase of organic coating technology will find much food for thought in these papers. They will also learn much of use to them in a better understanding of these methods and their interpretation of the results of the methods.

C. G. MOORE
The Glidden Company
Nubian Industrial Division
Chicago, Ill.

HISTORICAL METROLOGY, by A. E. Berriman (J. M. Dent and Sons Ltd., Aldins House, Bedford street, London, 224 plus xvi pages, $3.75, 1953). The history of weights and measures is an extremely fascinating subject to many scientific and technical individuals, and the present author has approached the subject of metrology in an interesting new light. An abundance of detail on the ancient units of weights and measure is presented as evidence of the relationships between ancient and current metrology. This detailed historical and archeological evidence is arranged geographically for India, China, Russia, Babylonia, Egypt, Palestine, Greece, Rome, France, Britain, and the United States. The metrological information relating to the last three areas is especially interesting and important at this time when continual proposals are being made for the standardization of weights and measures. The history of the adoption of the metric system in France reveals in part the struggle and problems which arise when established metrological systems are changed.

The numismatist also can gain historical background from the chapter on the "Metrological Aspects of Money." In fact, the book is filled with interesting information for scientists, hobbyists, and general readers. For example, some of the intriguing questions which are answered in this book are: how long is a lick, a finger, a knuckle, a palm, a hand, a foot, a step, a cubit, or a pole? What measure was called a bath? What is the oldest weight in the world? What is the geometry of the six major pyramids of Egypt? What is a Winchester bushel? What is the difference between a net and a gross hundredweight?

The numerous derivations of mathematical and geometrical relationships do not make this an easy book for casual reading. However it is stimulating whether or not one agrees with all the relationships described by the author. It is surely an important book for every "ologist" of weights and measures and for all others who are truly interested in the historical development of their measuring methodology.

A. R. BALDWIN
Corn Products Refining Company
Argo, Ill.

SEIFEN INDUSTRIE KALENDER 1954, edited by Hans Heller (Delius, Klasing, and Company, Berlin, 288 pp., 57th ed.). This handy little book contains a 38-page chapter of review articles and a 250-page section of tables and statistics of interest to the fat, soap, and detergent industries. The review articles appearing in this 57th edition of the Seifen Kalender deal with two economic and three technical aspects. They were written by nationally known experts in the respective fields. Their headings and the names of the authors are as follows: federal regulation of competitive soap trade (Dr. C. Harz); oil and fat ledger at the close of 1953 (Dr. H. Heller); normal

yields of oil from fat-bearing matter (Dr. Heller); stabilization and bleaching effect of perborate in synthetic washing agents (Dr. H. Stuepel); metal soaps (Dr. C. Rosenthal).

The many tables given refer mainly to physical and chemical constants of fats, fatty acids, detergents, and essential raw materials as well as crude and refined glycerine. The data listed, in general, appear to be well up-to-date. Also included in this section are a short buyers' guide and a 14-page list of the names and suppliers of detergents and other surface active agents.

The book is a recognized aid to the German fat, detergent, and textile chemist. It contains a few items which justify its presence in libraries of industries interested in activities abroad.

H. G. KIRSCHENBAUER
Colgate-Palmolive Co.
Jersey City, N. J.

Markley Goes To Brazil

HEADQUARTERS of Klare S. Markley, vegetable oil specialist, Institute of Inter-American Affairs, Foreign Operations Administration, were transferred from Asunción, Paraguay, to Rio de Janeiro, Brazil, effective February 19, 1954. Dr. Markley was stationed in Asunción from April 8, 1952, until the time of transfer of headquarters. During the ensuing period he made numerous surveys of the fat, oil, and wax resources of Paraguay and Nicaragua. The results of these surveys were published in a series of 19 bulletins and technical articles, principally in Spanish.

K. S. Markley

Although Dr. Markley, as a member of the regional pool, will divide his time between Brazil and various other countries of Latin America, it is expected that he will conduct technical-economic surveys in the State of Bahia and possibly also in Northeast Brazil and the Amazon Basin, particularly with respect to the production, processing, and utilization of dende (African oil-palm) and oiticica oils and licuri, carnaúba, and caranday waxes. He will also act as research consultant to the Instituto de Oleos.

News Letter

MARINE OILS PROGRESS IN SOUTH AFRICA

THE period 1947-1953 has seen the rise of an important new industry in South and Southwest Africa, namely, the production of fish oils from two main fish, the pilchard and maasbanker, or horse mackerel. Total annual production of these oils is now in the neighborhood of 20,000 tons. With the decline of the Californian sardine fisheries, the South African industry has taken careful note of the dangers of over-fishing so that production has now been stabilized, and new regulations recently drafted impose limits to the annual yield of fish oil and meal at each factory. Production of crude fish oils is mainly based on the fishing grounds of St. Helena Bay and Walvis Bay. There are some 20 factories now in operation, and oil from these is shipped in bulk or moved by road and rail tank cars to inland consumers.

Maasbanker oil has an iodine value of about 155-165 and has proved very popular for hydrogenation, yielding a high quality fat, which is used for soap making as a tallow substitute and, after further refining and deodorizing, for the manufacture of cooking fats and margarine in conjunction with other vegetable oils.

Pilchard oil has an exceptionally high iodine value, often ranging from 190-200. This makes it unsuitable for direct hydrogenation because of the large consumption of hydrogen involved, although certain mixed grades of fish oil are so hardened, but on the other hand it is very suitable for the manufacture of drying oils. Large quantities of pilchard oil are now segregated into different fractions at a Simonstown plant where the Solexol propane fractionation technique is employed.

A drying oil fraction with iodine value range 200/210 is made, which after further processing is widely used in South Africa and Europe as a partial replacement of linseed oil in paint, varnish, and other applications. This marine drying oil can be readily polymerized and a wide range of stand oils is produced, using modern high vacuum kettles fabricated in stainless steel to avoid discoloration at the high temperatures used.

The other main oil fraction is of very pale color and relatively low iodine value so that it has proved to be excellent stock for hydrogenation. Oil hardening is carried out, using hydrogen produced electrolytically.

A further small fraction derived from the crude pilchard oil contains most of the color bodies and is highly unsaturated with iodine values of 225 and over. This product has found certain specialized uses where it has proved to be successful as a tung oil replacement, *e.g.*, in the manufacture of tempered hardboard produced from Natal wattle chips.

Active research is continuing on new and improved marine oil derivatives, and further uses are being developed. For example, fish oils are now used in the manufacture of foundry core oils, printing inks, linoleum, sulphonated oils for tanning, soft soaps, and greases. A fat-splitting plant, recently started up, now produces high grade stearic acid substitutes, which meet the requirements of the rubber compounding industry. By-product glycerine will be recovered and concentrated to add to the diverse range of marine oil products now available.

W. WILLIAMS.

Meetings

The Department of Chemical and Metallurgical Engineering of the University of Michigan College of Engineering will offer an intensive course entitled "The Design of Distillation and Absorption Equipment" on July 12-23, 1954. The course is intended for practicing engineers and will provide a working knowledge of fundamental principles and will cover such subjects as tray layout and hydraulics, azeotropic and extractive distillation, vapor-liquid equilibrium, and tray calculations.

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Two special summer programs in Instrumental Chemical analysis, to enable chemists in industry and government laboratories to study the application of new instrumental techniques and methods in the field of applied analytical chemistry, will be given during the 1954 summer session at the Massachusetts Institute of Technology. The first program, August 16-20, will be devoted to electrical methods of instrumental chemical analysis; the second, which will be held August 23-27, will deal with optical methods of instrumental chemical analysis.

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The annual meeting of the Institute of Food Technologists will be held in Los Angeles, Calif., June 27-July 1, 1954. Over 190 papers will be delivered.

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The Chemical Institute of Canada will hold a chemical exhibition at the Royal York hotel, Toronto, Ont., June 21-23, 1954. This exhibition is the only one of its kind in Canada and will form a significant part of the Institute's 37th annual conference, which will be held at the same time and place.

Fatty Acids Drop

The Association of American Soap and Glycerine Producers Inc. has announced that the production of fatty acids in February 1954 totalled 31.9 million pounds, 9.1% below the January level. It was 17.7% higher than production in February 1953. Total disposition was 34.4 million pounds, 1.4 million above the January figures, and approximately 4.6 million above the February 1953 level. Stocks, including work in process, remained at a level of 51.5 million pounds.

Sets Record Attendance

A new high of 428 meetings of American Society for Testing Materials technical groups was held during ASTM Committee Week in Washington, February 1-5, 1954. New research work was discussed, and many new specifications and tests for materials and numerous revisions were completed. This year the registration total was a record-breaking 1,413, the greatest number of technical men ever to attend ASTM Committee Week.

Describes Central Laboratories

THE Central Laboratories for Scientific and Industrial Research, Hyderabad, Deccan, India, was originally established in 1948 to take up the work of the former Industrial Laboratories of the State of Hyderabad and since then has greatly expanded. With the opening of its own new buildings on January 2, 1954, by Pandit Jawharlal Nehru, prime minister of India, it forms one of the main regional laboratories of India devoted to Scientific and Industrial Research.

The Oil Section constitutes one of the main departments. Fuels and Heavy Chemicals are also well represented, and there are sections for Organic Chemistry, Biochemistry, Physical Chemistry, and X-ray Crystallography. A good workshop, a Chemical Engineering Section, and operational research serve the needs of all of them.

The purpose of the Central Laboratories, in brief, is to investigate the possibilities of utilizing the raw materials of Hyderabad State in particular, help existing industries with technical advice and carry out pilot studies for the starting of new industries, and generally encourage the industrialization of the country.

The importance of the oil section arises from the fact that oil seeds constitute one of the major raw materials of this state. Nearly one-quarter of the world's production of castor seed is produced in Hyderabad State, and about 20% of India's production of peanuts and cotton seed also comes from Hyderabad.

Industrial development, not only in this state but in the whole of India, is very much restricted in the case of castor seed to expression of the oil mainly in expellers and production of refined castor oil by just a couple of factories. The Central Laboratories therefore have been carrying out research work with a view to starting the development of industries new to India, such as the manufacture of dehydrated castor oil, particularly of a monomeric quality, oil-modified alkyds, and organic chemical products based on castor oil. In the case of cotton seed, though India is one of the main producers, hardly any of it is being processed. The Central Laboratories have on its program a complete study of the possibilities of utilizing it. With this purpose in view a modern delinting and decorticating plant has been installed, different varieties of seeds have been analyzed, and work on the refining of cotton seed oil and utilization of cottonseed oil foots has been taken up. The setting up of a modern acetate-rayon factory in the state has quickened the need for work on the linters, and this is also being done. A subsidized scheme on storage of cottonseed has recently been started.

Another line of work which has yielded good results deserves mention, the preservation of vegetable oil by using an antioxidant-aca-catechin isolated from "Katha" or Acacia Catechin, easily available in India, which, from the work done so far, appears to be a much more powerful antioxidant than any yet discovered.

Work is also being carried out on the utilization of the so-called minor oil seeds of India, with particular reference to the seed from *Annona squamosa*, extensively grown in the state, the activation of local earths for bleaching oils, and the use of the urea adducts method and amides for selective separation of fatty acids. The development of a solvent extraction industry, which is in its infancy in the country, is also being planned.

A special feature of the Laboratories is an attempt to investigate problems on a pilot plant prior to adoption by industries in India.

S. H. ZAHEER, director

Frank A. Weil has been appointed southern representative for BLAW-KNOX COMPANY'S CHEMICAL plants and Buflovak equipment divisions, Pittsburgh, Pa. He will be located in the Birmingham office and will serve a five-state area (Alabama, Florida, Georgia, Mississippi, and South Carolina).

A.O.C.S. CALENDAR

1954

Short Course on "Inedible Fats and Fatty Acids," Lehigh University, Aug. 15-20

Fall Meeting: Radisson hotel, Minneapolis, Oct. 11-13

1955

Spring Meeting: New Orleans

Fall Meeting: Philadelphia

New Literature

Publication of a new technical bulletin on direct dyes for resin after-treatment has been announced by the Dyestuff Department of American Cyanamid Company, Bound Brook, N. J. The publication, Dyestuff Technical Bulletin No. 835, is entitled "Effect of Resin Treatments on Viscose and Cotton Dyed with Selected Calcomine and Calcodur Resin-Fast Dyes," by O. W. Clark, Gordon Kenyon, and S. T. Holland of the company's dyestuff technical laboratories.

The bulletin discusses selected direct dyes which possess good fastness to light as self shades and retain good fastness to light when dyed material is finished with resins, such as Aerotex Resin M-3, Aerotex 450, or with combinations of resins and copper compounds. Dyeing and fastness properties of direct dyes are shown in detail by tables and graphs in the bulletin. Working properties described cover behavior in different types of dyeing equipment, temperatures of optimum exhaust, fiber effects, and dyeing rates.

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American Polymer Company, Chemical Division of the Borden Company, Peabody, Mass., has available a new brochure P-56, Polymers for Textiles. It covers the Polyco emulsion polymers available to the textile industry in a wide range of polymer and copolymer compositions possessing varied physical and chemical properties. It also points out the advantages of the Polyco emulsion polymers and copolymers for particular textile applications.

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V. D. Anderson Company, Steam Specialties Division, 1935 West 96th street, Cleveland, O., has published Bulletin 154 on Anderson super-silvertop steam traps. The bulletin is written to help engineers, maintenance men, and plant operating executives select steam traps. It discusses the construction of the steam trap whose working parts are made of heat-treated stainless steel, with the valve and seat fabricated from Anderloy, a hard, tough chrome-nickel alloy. The bulletin follows with complete tables of specifications (capacities, sizes, and pipe connections) as well as pressures, weights, and list prices.

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Central Scientific Company, 1700 West Irving Park road, Chicago 13, Ill., has issued its new 1954 Lab Listing which contains 400 new items of scientific instruments and laboratory apparatus that have been added to the Cenco listing since the publication of the company's general catalogue J-150.

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Fisher Scientific Company, 717 Forbes street, Philadelphia 19, Pa., has available a revised gravity-weight-volume chart "API Gravity-Temperature Correction Tables." It is intended as a convenience to chemists and technicians working in petroleum control and inspection laboratories. The chart has the new ASTM values and is available for $1.

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Two new bulletins are available from Arthur H. Thomas Company, 230 S. Seventh street, Philadelphia 5, Pa. Bulletin 114 describes a line of 68 items of polyethylene laboratory ware, including beakers, cylinders, and funnels. Bulletin 117 describes the densigraph, a new manually-operated recorder for rapid photometric analysis of light-absorbing materials on dry paper strips, such as obtained in electrophoresis and chromatography.

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Uses and characteristics of Koppers styrene-butadiene latices, offered in five different copolymer ratios, are described in an 11-page technical bulletin, C-4-191, published by the Chemical Division of Koppers Company Inc., Koppers Building, Pittsburgh 19, Pa. A detailed description of each of the 15 different styrene-butadiene latices available is given in the bulletin. It discusses characteristics of color, solids content, mechanical stability, shelf life, odor, and dilutibility with water.

❖

Precision Scientific Company, 3737 W. Cortland street, Chicago 47, Ill., has announced a new "Bulletin No. 690" on its senior and junior Ionographs. These new instruments perform electrophoretic separations on wet filter paper, as in fractionation of mixtures of proteins, carbohydrates, amino acids or vitamins, mobility determinations, and reaction-site studies.

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The Foxboro Company, Foxboro, Mass., has published an 8-page bulletin, No. A-303, entitled "Portable Potentiometer Indicators and Resistance Thermometers." These instruments are used by industry for periodic temperature tests to spot impending troubles in equipment, such as heating units and test furnaces, which may not warrant continuous measurement.