

FOUR CORNERS



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Belgium M. Loncin, B. Jacobsberg

Coordination of research in fat chemistry is a new goal within the Common Market. This effort has been initiated by a survey of activities in this field in private and public research laboratories. It is hoped that eventually a common program will be achieved.

The Belgian Ministry of Scientific Research has decided to sponsor private research that may be of public interest. Pollution control is one of the subjects for which funds have been granted and, more specially, the degradation of lipids by microbiological agents.

Fats and oils research in Belgium is represented by international bodies such as IUPAC, ISO and the European Club of Centers for Lipid Research. The following projects are underway.

Quality of and resistance to oxidative degradation: By multiple curvilinear regression, a highly significant correlation could be established for crude palm oil, as well as olive oils from the Mediterranean area, between the levels of pro- and antioxidants, free fatty acid content and age, and amounts of primary and secondary oxidation products (Institut des Industries de Fermentation—Institut Meurice Chimie, CERIA, Brussels). Oxidative spoilage is also being examined with regard to metal catalysis and deep frying (University of Louvain).

Monitoring of fat texture: Kinetics of the transesterification with Na-K eutectic on simple triglycerides are being studied by gas liquid chromatography and electron microscopy (Institut des Industries de Fermentation—Institut de Meurice Chimie). The analytical aspect of crystallization behavior (University of Ghent) and kinetics (Institut des Industries de Fermentation—Institut Meurice Chimie), as well as the formulation of industrial margarines by linear programming (Institut des Industries de Fermentation—Institut Meurice Chimie), are other topics of investigation.

Analysis: Butterfat and detection of foreign fats (University of Ghent). The possibility of using hydrocarbons as indicators for irradiation of foods is being examined, since hydrocarbons are the main radiolytic splitting products of fats (University of Louvain).

Brazil R.F. Kohlmann

New soybean crushing plants to open

Two important soybean crushing plants will be opened this year in Ponta Grossa, State of Paraná, where conditions are excellent for soybean growth. Cargill is complementing its 1000 metric tons per day crushing facility with a refinery capable of processing 200 tons of oil per day. SANBRA S/A (of the Bunge & Born group, South America) plans to implement its 2000 metric tons per day plant in the second quarter of 1973.

Balanced feeds plant in planning stage

Balanced feeds production has been expanding continuously in Brazil, using important quantities of soybean meal.

New plants are being located principally in the State of São Paulo, the most important consumption center. To a great extent this business is in the hands of U.S. companies, which have over 65% of the market shares, such as Purina, Anderson Clayton, Cargill and Central Soya. The latter has announced that its management has approved construction of a new balanced feeds plant, with a production capacity of ca. 5000 tons per month, with only one shift, in its initial phase. This new plant will be located in Campinas (60 miles from São Paulo), on an area of ca. 150,000 m², and should begin operating early in 1974. The new factory is part of a program to expand Central Soya's activities in Brazil.

France M. Naudet

Association renamed

Members of the Association Francaise des Techniciens des Corps Gras (formerly Groupement Technique des Corps

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Gras), reunited in general assembly last February 14, changed the name of their organization to "Association Francaise pour l'Etude des Corps Gras." The new name reflects more accurately the concern of the group's members who include, along with specialized technicians of the industry of fatty matter and its branches, several researchers working on problems dealing with fats in the diverse areas of fundamental and applied research in agronomy, chemistry, physicochemistry or physics, biochemistry, physiology and nutrition.

Marcuse, Wolff presented Chevreul Medal

At a study day sponsored by the Association Francaise pour l'Etude des Corps Gras, November 22, at the Institut des Corps Gras in Paris, the Chevreul Medal was presented by President Pouillaude to the two 1972 recipients, J.P. Wolff and Reinhard Marcuse.

French scientist J.P. Wolff is director of the Ecole Superieure d'Application des Corps Gras in Paris. He is noted for his studies of lipid analysis and, following presentation of the award, delivered a lecture on certain aspects of his work.

Reinhard Marcuse, an active AOCS member and *JAOCS* corresponding secretary from Scandinavia, received the Chevreul Medal for non-French lipid scientists, in recognition of his contributions to research on the autoxidation of lipids. At the study day, he reviewed, in French, his research on methods for the determination of autoxidation and studies on parameters of this process, e.g., antioxidants (amino acids), oxygen partial pressure and metal catalysts. A section leader at the Swedish Institute for Food Preservation Research (SIK) in Goteborg, Marcuse is secretary general of the Sandinavian Lipidforum and of the International Society for Fat Research. A noted contributor to international scientific research, he is the initiator of a series of international symposia on metal-catalyzed lipid oxidation and recently, as chairman of the IUPAC Food Contaminants Commission, organized a major international symposium on the control of mycotoxins.

Following the lectures by Wolff and Marcuse, series of communications on related topics were presented. Both the lectures and these communications are scheduled for publication in *Revue francaise des Corps gras*.

Also on February 14, the Association Francaise pour l'Etude des Corps Gras presented, in Paris, a half day of study devoted to the oil and oilcake of soya. A lecture given by M.T. Francois was followed by several communications and discussions.

Study days held in Marseille

In honor of its 50th anniversary, the Laboratoire National des Matieres Grasses joined with the Association Francaise pour l'Etude des Corps Gras, in concurrence with the Ecole Superieure d'Application des Corps Gras, to organize 2 days of study in Marseille, June 7-8, 1973. The general theme of the conference was modifications of structure-contamination and environment, and problems of current interest to the fats industry. In the course of the study sessions, the following specific topics were discussed: (1) modification of structure of fats; (2) pesticides in fats; (3) mycotoxins and oils; (4) solvents in the oil mill; and (5) residual waters. All 12 reports in the program were presented by eminent specialists.

ITERG to celebrate 30th anniversary

The days of information, organized each year by the Paris Institut des Corps Gras will be devoted this year to the celebration of the organization's 30th anniversary. The event is scheduled for September 24-26, 1973. The detailed program can be obtained from the Institut des Corps Gras, 5 Bd. de Latour-Maubourg, 75007 Paris.

The Institut des Corps Gras, the Association Francaise pour l'Etude des Corps Gras and the Ecole Superieure d'Application des Corps Gras will sponsor the Third International Symposium on Metal-Catalyzed Lipid Oxidation, September 27-29, 1973. The symposium will be a sequel to those held in Goteborg in 1967 and in Chicago in 1970. Its essential purpose is to consolidate the advancement of knowledge since the Chicago symposium. Papers will be grouped in three sections: (1) theoretical study of phenomena; (2) analytical aspects; and (3) applications.

The event will be presided over by Desnuelle, who is chairman of the organization committee; Paquot is president of the scientific committee.

Provisional entries and questions about papers should be addressed before April 1 and May 15, respectively, to the Institut des Corps Gras, 5 Bd. de Latour-Maubourg, 75007 Paris.

Germany H.K. Mangold

Construction underway on biological labs

Henkel & Cie. GmbH, the major manufacturer of washing and cleaning agents and the fourth largest chemical group in the Federal Republic of Germany, has started the construction of biological laboratories on its premises in Dusseldorf-Holthausen. The new building, which will cost DM 25 million (ca. \$8.5 million), will offer room to four research departments of the Henkel Company, namely the biochemistry, biosynthesis, toxicology and microbiology sections. Research in these areas has been going on for many years.

The Biochemistry Department deals with the possibilities of testing and evaluating the biological degradability of detergent components. Having worked for many years in this field of research, this study group has established the fundamentals for the German Law on Detergents of 1961. In the meantime, a large number of further important developments, such as correlations between structure and degradability, have been found.

The Department for Biosynthesis is engaged in the production of enzymes and in the development of syntheses by means of enzyme reactions. This area of research includes the controlled cultivation of microorganisms whose metabolic products are used in the form of antibiotics, vitamins and other compounds that are not easily accessible through chemical synthesis.

The Toxicology Department has dealt for a long time with the safety of chemical products. Its work is divided into three fields: one study group investigates the influence of materials on the organism as a whole and tests the compatibility of raw materials; another study group deals with dermatological problems on an experimental basis. Like the first group, it carries through experiments on animals and, in addition, studies the effect on human skin. Various usability tests made within the company and also by outside institutions ensure the dermatological compatibility of products. The third study group of the Toxicology Department works in the field of physiological chemistry, dealing in particular with the effects of an improper intake of chemical products.

Among the responsibilities of the Microbiology Department are the cleaning and disinfection of clinical equipment, problems of stable hygienics that are of special importance to modern stock-farming, technical preservation of chemical products such as adhesives, leather, paper and textile auxiliaries as well as the treatment of technical water circuits.

MCT employed in margarine

In the early 60's the "medium chain fatty acids" gained considerable interest because of their physiological proper-

ties. For the normal and healthy organism, glycerides prepared exclusively from octanoic and decanoic acids, the "medium chain triglycerides" (MCT), are nothing but a source of energy. The special effects of the MCT derive only from the smaller chain lengths of the acids, and from the smaller size of the triglycerides. The MCT are not only more rapidly absorbed than ordinary fat, but are absorbed like water soluble digestion products of starch or proteins.

Deutsche Lebensmittelwerke GmbH, Hamburg, offers a margarine that is spreadable at room temperature. Triglycerides are made from a mixture containing 87% octanoic and 11% decanoic acids, the remaining 2% being hexanoic and dodecanoic acids. "CERES Margarine," a product with good spreadability between 14 and 22 C is prepared from 95% of this fat with the addition of 5% sunflower oil. Since MCT is often given as the only visible source of fat in the diet, the addition of sunflower oil should avoid any possible lack of essential fatty acids. This special margarine is of therapeutic value in cases of pancreatic insufficiency, cystic fibrosis or intestinal resection as well as in biliary tract obstruction and in liver diseases where the concentration of bile acids is decreased.

DGF short course well attended

The Ninth Short Course of the German Society for Fat Science (DGF), conducted at the Federal Center for Lipid Research in Munster, March 29-31, was attended by 120 people from various countries. The course was devoted to new developments in the instrumental analysis of lipids.

Hungary J. Hollo

The Extended Scientific Council of the Hungarian Enterprise for the Vegetable Oil and Detergent Industry met April 24-25, 1972, with the participation of experts and leading personalities of the industry. The general theme of the meeting concerned possibilities for increasing the capacities of oilseed processing factories.

Lectures were delivered on the following topics: technical and economic aims; appropriate pretreatment of various oilseeds for increasing capacity of factories and refineries; improvement of husking; improvement of mealing; improvement of toasting and pressure of various oilseeds; improvement of press-cake-mealing and granulating, as well as increasing dissolution; improvement of dissolution of miscelles; improvement of petrol extraction from oilseed meals; summary of relevant literature; analysis of results of meeting; improvement of future operations of factories and refineries in cooperation with the research institute and central staff of this industry. Participants expressed views on the proposals presented in the lectures. After useful discussions, representatives of the various factories adopted or further developed the methods of other factories.

The meeting contributed to improving the output of vegetable oil factories; since that time capacities have increased ca. 30%, with relatively low investments. Another positive result of this gathering was the elaboration of a project for large investments in industrial developments.

Italy G. Jacini

The Italian Oil Chemists' Society has elected its board of directors for the 1973-74 term. R. Paoletti, professor of pharmacology at Milan University, will serve as chairman, and G. Jacini, director of the Experiment Station for Fats and Oils in Milan, as secretary.

The XIIth International Society for Fat Research (ISF) Congress, to be organized by the Italian Oil Chemists' Society, will be held in September 1974, in Milan; R. Paoletti is in charge of meeting arrangements. Details may

be obtained from: Societa Italiana per lo Studio delle Sostanze Grasse, via del Lauro 3, 20121 Milan, Italy.

A recent ordinance of the Italian Ministry of Health limits the use of rapeseed oil intended for consumption and provides that market seed oils contain no more than 10% erucic acid. Industries have been advised to arrange their supplies accordingly.

The Technical Commission, seated at the Experiment Station for Fats and Oils in Milan, recently passed three resolutions: (1) to change the limit of triglyceride 2 position palmitic acid for olive husk oils from 3 to 2%; (2) to study a method to determine eritrodiol in order to detect the occurrence of husk oils treated with acetone; and (3) to study the characteristics of seed oils.

The 1972-73 Italian olive oil yield is expected to be much lower than that of the previous season (1971-72, 4,244,000 oil q; 1972-73 forecast, 3,650,000 oil q). As a result, the olive oil industry will turn to other Mediterranean countries for imported crude olive oil.

Japan T. Asahara

Chemical societies hold annual meetings

The 25th Annual Meeting of the Chemical Society of Japan was conducted April 1-4, 1973, in Tokyo, and the 18th Annual Meeting of the Japan Oil Chemists' Society, April 3, at the Nihon Kohyo Club, also in Tokyo. At the latter meeting, Y. Ishii of the University of Nagoya was elected president for a 2 year term.



On November 20, 1972, the JOCS 20th Anniversary Celebration was held at the Hotel New Japan, with more than 300 attending. President S. Komori, Vice-President Y. Ishii, T. Asahara (now vice-president) and General Chairman of the Celebration Y. Kawakami greeted members and guests upon their arrival (see photo).

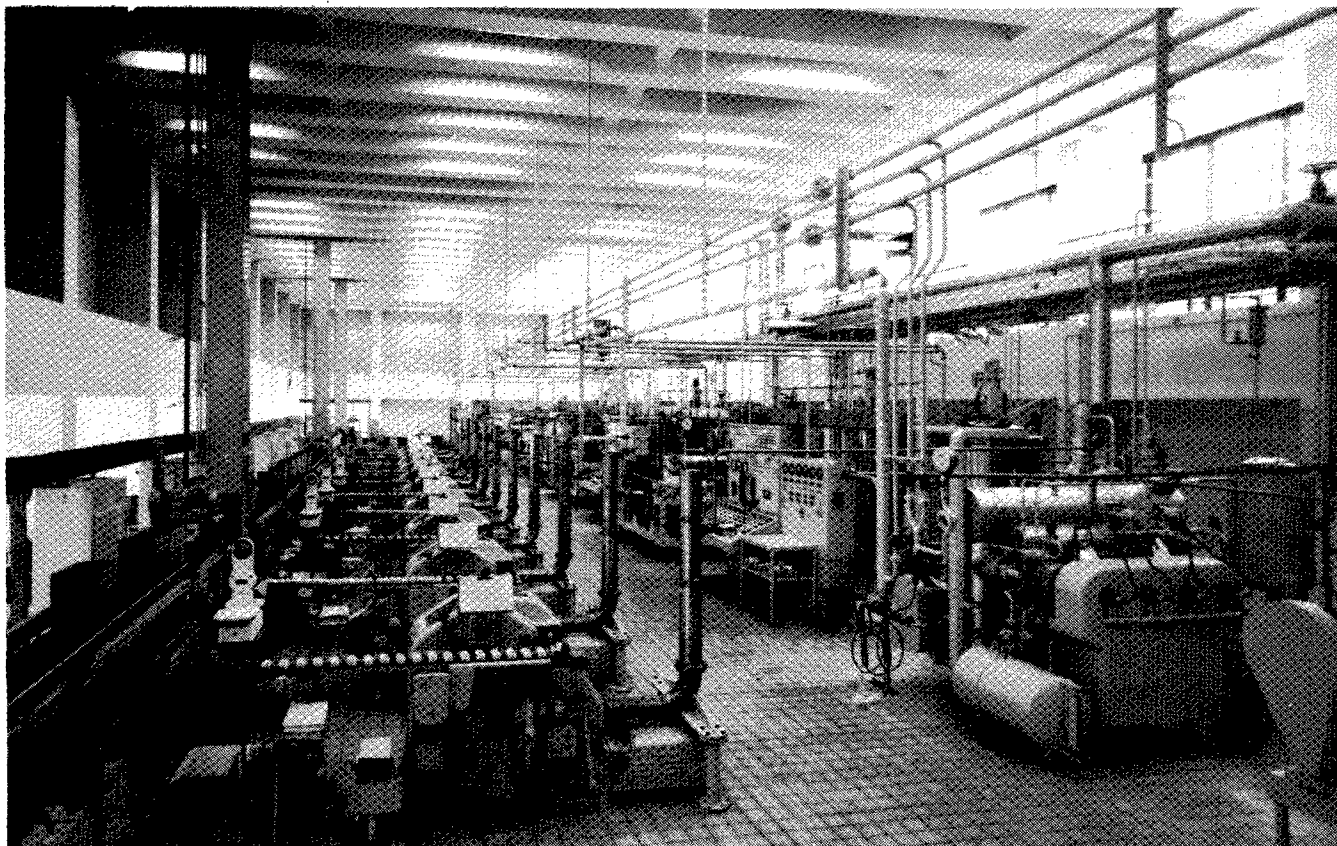
Japanese Industrial Standards related to detergents

The Biodegradation Test Method of Nonionic Detergent is in the final stage of draft work. The shake culture test method is to be used as a standard procedure and cobalto-thiocyanate analysis or foam height will be adopted for biodegradability evaluation.

Japanese Industrial Standards of heavy duty and dish washing detergents were revised in terms of the test methods. These two standards refer not only to quality, but also to safety and biodegradability.

M. Szwarc of Syracuse University in New York lectured on "Chemical Reaction of Metal Complex" before a meeting of the Engineering Faculty, University of Tokyo, April 7.

Two comprehensive books on detergents and edible oils



The new production floor of the Unilever-Is margarine factory in Istanbul supplies the major share of margarine to Turkey's growing market.

are being published by JOCS, for the purpose of consumer education.

Statistics on soap, detergent and oils

1971-72 Production of Soaps and Detergents in Japan (metric tons)

	1971	1972	Ratio, %
Soaps	143,933	144,455	100
Detergents	722,939	784,470	109
Total	866,872	928,925	107

Supply Plan of Fats and Oils in 1973 Fiscal Year
(thousand metric tons)

	Edible	Industrial	Export	Total
Import	1042	351	20	1413
Domestic production	234	64	42	340
Total	1276	415	62	1753

Mexico J. Becerra

Plans underway for 1974 AOCS Spring Meeting

Plans are being made well in advance for the 1974 AOCS Spring Meeting, to be held for the first time outside the U.S. Mexico City will be the host city, and under the chairmanship of F.P. Khym a well rounded technical and social program is being developed. During the recent meeting in New Orleans, the first pamphlets describing plans for this convention were delivered to the AOCS membership. The local committee expects a record number of members to sample traditional Mexican hospitality next spring.

During 1972 the AOCS Monterrey Section experienced the loss of valuable and distinguished members: E. Chavez left the Society to become involved in new activities, and

resigned the presidency of this Section; Angel Abrego moved to Morelia, Michoacán, to become plant manager of Química Michoacana, which produces fatty acids. Temporarily F.P. Khym has become acting president and J. Becerra, acting secretary.

In October 1972 the Mexican Institute of Chemical Engineers (Instituto Mexicano de Ingenieros Químicos, A.C.) held its annual convention at Monterrey; one session was dedicated to oils and fats. During this session a paper on "Quality Control in the Mexican Oil and Fat Industry" was delivered by J. Becerra. The session in general was very interesting, with topics covering agricultural aspects of oilseeds, processing, quality control and sanitary rules in Mexico for the marketing of oil and fat products.

Turkey E. Sever

Margarine production reaches peak in industry's 20th year

Total edible oil and fat production in Turkey reached a maximum level in 1972. For the first time in its 20 years, a total of 155,000 tons of margarine, vanaspati and bakery fats was produced. A fertile crop year added an amount of 180,000 tons liquid oil comprising olive, sunflower and cottonseed. With the contribution of a third component in this field, 81,000 tons of butter and butterfats, edible fats and oils production reached 415,000 tons.

Margarine, ghee and bakery fats production in Turkey started in 1953. A small suburban factory built by Unilever-Is (a corporation of Unilever N.V. Rotterdam and Türkiye Is Bankasi, the biggest national bank of Turkey) produced 6300 tons that year. The rapidly growing margarine industry in Turkey, 15 years after its commencement, reached the first peak year in 1968 with 129,000 tons of ghee, margarine and bakery fats. Last year, the addition of a new plant to this oldest factory in Istanbul increased its contribution to 105,000 tons of the 155,000

(Continued on page 242A)

New Books

J. F. Gerecht, Book Review Editor

Handbook of Chromatography, Vol. I and II, Edited by Gunter Zweig and Joseph Sherma, (CRC Press, 1972, Vol. I, 784 p., \$35.00; Vol. II, 343 p., \$19.95).

Handbook of Chromatography is the first attempt to place information from four branches of chromatography in a single work. The editors have carried out this immense task commendably and have provided references where appropriate. In these days of microfilmed journals which make extraction of data difficult, analysts will reach for this work with gratitude, despite the availability of the data from the original sources.

Volume I consists of an index containing "over 12,000 compounds" and 546 tables containing retention data obtained by gas (GC), liquid (LC), paper (PC) and thin layer (TLC) chromatographies. Electrophoresis and high pressure liquid chromatography are not covered, the latter probably because it is too recent. The GC and LC tables compare separations on different packings and give column dimensions, temperatures, flow rates and detectors used for each. For PC and TLC the type of paper or adsorbent, solvent system and visualization technique are listed.

The first 100 pages of Volume II comprise a working description of all four chromatographic methods which is useful for review, but not a substitute for comprehensive texts. Detecting agents, critical for PC and TLC, occupy 86 pages (453 sprays). The preparation, color of spot, general applicability and, in some instances, detection limits are given. Sixty pages are devoted to sample isolation and derivative formation under 24 class headings. GC liquid phases are listed alphabetically with applications and polarities, and are followed by a tabulation of McReynolds Constants. Adsorbents, supports, PC papers, TLC plates and ion exchangers from many suppliers are described. An extensive book directory containing both English and foreign texts concludes the second volume.

The researcher using the tables of Volume I will undoubtedly find the data to be the most useful and up to date compilation (to 1970) of this type available. Because of the multitude of sources, the retention values have not been standardized; for example, GC data is encountered in seven different forms. Use of the list of tables or the compound index is mandatory because of the nonconsecutive placement of some tables. For instance alcohols by LC are found in Tables 5, 11, 37, 54, 69 and 71. A binding error in the list of tables makes it appear that many TLC tables are omitted, though they are found among those of PC.

It would be unrealistic to expect the first edition of a publication of this magnitude to be free of error. Among the serious ones in Volume II are the incorrect definition of R_f value (p. 4) and advice to use a magnetic stirrer for hydrating Biogel P (p. 291). One can dispute that packed and capillary GC columns give resolutions that are "not too different" (p. 11), or that peak height measurement is satisfactory for quantitation with temperature programming (p. 19). In Volume I other errors require a watchful eye to avoid difficulties: Table GC 2 is headed "Acids, Aliphatic; Methyl Esters," while in fact it contains esters of alcohols to octyl; inconsistent labeling in several tables causes some derivatives to be headed "compound" (p. 5, p. 52). Omissions such as the absence of an explanation for subscripts in Table GC 52 (p. 65) create particular annoyances.

It would be beneficial in future editions to present more complete coverage of the abbreviations on the end papers and to tabulate them under the various chromatographic headings, since there is little standardization in abbreviations between these methods as currently used. Expansion of the GC solid support section to include additional foreign supports should also be considered.

In spite of its minor deficiencies this handbook can justify its high initial cost each time a new method of separation is to be devised. Without question, the wealth of data and information that it puts into the hands of the chromatographer for easy reference make both volumes a worthwhile addition to his or her reference collection.

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Molecular Mechanisms of Antibiotic Action on Protein Biosynthesis and Membranes, Proceedings of a Symposium, Granada, June 1-4, 1971, Edited by E. Munoz, F. Garcia-Ferrandiz and D. Vaquez (Elsevier Scientific Publishing Co., New York, 1973, 804 p., \$27.50)

This book has three sections: I. "Molecular Mechanisms of Antibiotic Action on Protein Biosynthesis"; II. "Molecular Mechanisms of Antibiotic Action on Synthesis of Peptidoglycans"; and III. "Molecular Mechanisms of Antibiotic Action on Membranes."

Section I includes on 336 pages of 22 research papers on the effects of antibiotics on protein biosynthesis. The majority deal with the ribosome cycle, initiation, elongation and termination of peptide bond formation in bacterial cells. Contrary to what is stated in the preface of the book, eucaryots are barely mentioned; there are only two papers on the inhibition of protein synthesis in yeast and one on the inhibition of protein synthesis by diphtheria toxin. Section I deals extensively with the effects of streptomycin and related drugs on the translational process. Furthermore it reports experiments exploiting mutant methodology to elucidate the mechanisms of action of the antibiotics. One paper summarizes all known mutations leading to the alteration of ribosomal protein. In addition one paper describes the effects of colicins, which are not antibiotics in the classical sense but sometimes exert functions quite like them.

Section II contains on 116 pages of seven articles describing the action of antibiotics on cell wall biosynthesis in bacteria and yeast. This section contains some excellent contributions describing the mechanism of action of cycloserine, cycloheximide and penicillin, with a special emphasis on the latter.

Section II includes 305 pages of 13 papers on the action of ionophore antibiotics. This section covers a wide variety of aspects of ionophore antibiotics, from chemistry to effects on permeability of biological membranes. Furthermore the role of lipids in the mechanism of action of a number of antibiotics is discussed in some detail.

The book quite clearly comprises two parts, one describing the effects of antibiotics on protein biosynthesis and the other their interaction with cell walls and membranes. These two fields of biochemical research seem