

# THE FOUR CORNERS...



By EUGENE MARSHACK, Chairman,  
International Relations Committee;

M. LONCIN, A. SEHER, BERTRAM HUDSON,  
JAMES HOLLO, K.S. KRISHNAN, EDUARDO  
VIOQUE, STIG FRIBERG

Corresponding Secretaries

## Belgium . . . . . M. Loncin

### Industry

Margarine manufacturers in Belgium now use linear programming for the formulation of margarines. Valid computation pre-supposes the judicious choice of some characteristics of the fat ingredients with additive properties. This allows to establish linear correlations with the solid fat index and the preservation of the manufactured product.

The general trend for an increased use of polyunsaturated fats existing in the United States is presently also felt in Belgium, mainly for margarines. World palm oil production has increased steadily and presently reaches 1 million tons per annum. New production centers base their facilities mainly on the experience gained in the Congo. A member of the Institut des Industries de Fermentation-Institut Meurice Chimie delivered a paper on "Palm Oil, A Major Tropical Product" last fall at the ISF-AOCS World Congress in Chicago.

### Research

Consumers are becoming increasingly quality conscious from a dietetic viewpoint, and Belgium is somewhat ahead of other European countries in this respect. I.B.A.N. (Belgium Institute for Food and Nutrition), which is a Ministry of Health sponsored association of university or private research laboratories, has initiated a number of research programs aiming towards a better understanding of the biochemistry and physiopathology of human and animal nutrition. It is concerned more specifically with the influence of the composition and the manufacturing processes on the quality of the end product. This year, three research centers initiated studies of fat metabolism in relation with diet optimization, social illnesses, etc. Some aspects of this research, concerning the *cis* and *trans* fatty acid metabolism have been published by JAOCS in September 1970. Other studies pertaining to fats and fat ingredients in animal and human food are the determination of pesticide residues, oxidability of fats in biscuits, a survey of the intake of food additives (stabilizers, coloring agents etc.). The latter item arose from the impending legislation which will evaluate threshold limits as A.D.I. (acceptable daily intake).

### Legislation

Present legislation is limited to a positive list of additives. Neither pesticides, nor aflatoxins or other residue limits in food have been stipulated so far (propositions have been submitted to the Common Market). However, a codification of wrapping material is about to be issued.

## Germany . . . . . A. Seher

### Eight Short Course in Münster

In March of this year, the German Society for Fat Research (D.G.F.) conducted a short course at the Federal

Center for Lipid Research, in Münster. The correspondent, Head of the Center's Institute for General and Analytical Chemistry, and H.K. Mangold, Head of the Institute of Technology and Biochemistry, organized an intensive two days program. Various techniques for the analysis of plant, animal and human tissue lipids, including sterols, methods for the isolation of lipids from natural sources, and procedures for the synthesis of pure compounds were demonstrated in the laboratories of the Federal Center.

Lecturers and demonstrators included L. Hof, Ruhr-University Bochum, H. Greten, University of Heidelberg, R. Habendorff, R. Kupfer, R. Wickbold and G. Schwarz, who are associated with industrial laboratories, and E. Homberg, Y. Hamza, J. Janssen, K.D. Mukherjee, H. Schiller, H. Vogel and H. Wessels of the Federal Center.

The course was attended by scientists from Belgium, Denmark, France, Holland, Sweden, Switzerland and Yugoslavia, and well over 100 people from the Federal Republic of Germany. The participants of the Eight Short Course were welcomed by the President of the D.G.F., J. Baltes, Hamburg, who three decades ago took part in the First Short Course held in Münster under the guidance of H.P. Kaufmann, founder of the D.G.F.

### Munich 1971

This year's meeting of the German Society for Fat Research will be held in October in Munich. During this meeting, symposia will be conducted on the following topics: Methods of Clinical Analysis; Skin Surface Lipids; Mechanical Means of Separation; Testing of Paints and Varnishes.

It is hoped that the outstanding scientific program and the exceptionally attractive site of this meeting will motivate a good many foreign scientists to come to Munich.

## Great Britain . . . . . Bertram Hudson

### Scientific Activities in Oils and Fats

The 1970-71 Program of the Oils and Fats Group of the Society of Chemical Industry continues under the Chairmanship of F.D. Gunstone of the University of St. Andrews.

This year the meeting devoted to original papers covered two particularly interesting items. In the first J.H. Wray (J. Lyons and Co. Ltd.) spoke on Thermo-reflectometric Analysis of Fats and Couvertures. This new technique records the progress of the setting and hardening of fats by measurement of surface reflectance by a photocell. Correlation of surface reflectance with temperature is an important aid in assessing the setting properties of experimental formulations of both fats and coatings. The possibility of developing the technique to relate surface reflectance to bloom formation on the one hand and solids content on the other was raised in discussion.

In the second paper Dr. Christie (Hannah Dairy Research Institute) described his investigations aimed at finding out why pigs fed high-copper diets produce soft lard. He carried out stereo-specific analyses on adipose tissue in comparisons with controls, and also made

## • *Four Corners* . . .

analyses based on argentation thin layer chromatography. Much information has thus been obtained on the mechanism of the biosynthesis of triglycerides in the pig.

## Hungary . . . . . James Hollo

### Composition of Fat Consumed in Hungary

Consumption of hog's fat is traditional in the nutrition of the Hungarian population.

Total consumption in 1969, considering only the "apparent consumption," amounted to 26 kg per person. Of that, 22.6 kg were hog's fat, 1.3 kg butter, 1.3 kg edible oil, and 0.8 kg margarine.

It is remarkable that city dwellers, especially in the capital, consume 2.6 kg butter above the average, as well as 2.8 kg edible oil and 1.3 kg margarine. Hog's fat is mostly consumed by country people.

In recent years, however, consumption of edible oil, mainly sunflower oil, increased considerably; in 1968 it amounted to 0.8 kg and in 1970 to 1.3 kg per person.

The Hungarian vegetable oil industry started producing PVC-bottle packing in 1970; the bottles are produced by the factories themselves. It is surprising that Hungarian housewives are not keen on having traditional glass bottles since PVC-bottled oil is on sale.

### Detergent Production

In the course of the last decade, household demand showed a trend towards synthetic detergents, paralleling the improvement of washing machine supplies.

In view of this, the consumption per person in 1970, was: washing soap, 0.6 kg; toilet soap, 0.9 kg; pre-washing, washing and dishwashing on synthetic surfactants' basis, 5.0 kg.

About 67% of households possess a washing machine; the rest avail themselves of very cheap laundry service.

Soaking agents, detergents, with enzyme content, introduced in 1969, became popular in a short time; in 1970 their consumption amounted to 1.3 kg per person.

The entire detergent demand is being met by domestic industry; import amounts to as little as 1-2%.

### Intensive Agricultural Research to Improve Oil Plants

In the course of the last decade three research institutes have been engaged in research work to improve sunflower, oil flax, soy bean and rape by breeding. Their aim has been mainly to produce species which meet the requirements of agricultural mechanization and which have better productivity. The extremes of climate in Hungary render this objective difficult—gentle winters without snow occur just as well as very cold ones without snow, or with much snow. Spring and summer weather is just as unpredictable. Consequently, average yields show great fluctuations.

Investigations are supported financially by the Hungarian industry, to ensure its demand for sunflower seed with high oil content, oil flax seed and erucic acid-poor rapeseed in the distant future.

## India . . . . . K.S. Krishnan

### Oil Technologists' Association of India

The Annual General Meeting of the Oil Technologists' Association of India was held in Delhi on January 16, 1971. J.G. Kane was elected President of the Association.

T.R. Seshadri, outgoing President, paid warm tributes to Dr. Kane and expressed the hope that the Association would grow further in strength and activities under the guidance of Dr. Kane. At the same time, the members expressed their gratitude to Dr. Seshadri for having led the Association to its present stature, with five Zonal bodies spread over this vast sub-continent.

### Central Zone

A seminar on Fatty Oil Industries was held in Kanpur on November 21 and 22, 1970. It was divided into four sessions with the following subjects and chairmen: Solvent Extraction, H.V. Parekh; Fatty Acids I, Jag Mohan Saran; Fatty Acids II, K.T. Achaya; Detergents, K.S. Krishnan.

A paper on castor-based derivatives by K.T. Achaya was of special interest.

The convener of the Symposium was: N.S. Rajagopal, H.B.T. Institute, Kanpur-2.

### Northern Zone

The 26th Annual Convention and Symposium on Oils, Fats and Derivatives was held in Vigyan Bhaven, New Delhi, on January 16 and 17, 1971. Seven sessions were held with following subjects and chairmen: Resources: Agronomy, S.S. Rajan; Resources: Minor Oils, M.M. Chakravarty; Resources: Synthetic Oleaginous Products, M.S. Subbaram; Processing of Oils, D.R. Dhingar; Processing of Seed, J.G. Kane; Equipments, N.R. Bhow; Products, F.G.T. Menezes.

A special paper on margarine manufacture was presented by R.R. Allen, of Anderson Clayton & Co.

J.W. Moore, President of the National Soybean Processors' Association, U.S., and Vice-President of Agro Product Division of A.E. Staley Co., attended the Symposium.

Convener of the Symposium was S.S. Ramaswamy, M/s D.C.M. Chemical Works, P.B. No. 1211, New Delhi-15.

### Southern Zone

A Lecture-Demonstration Course on Aflatoxins was held at the Central Leather Research Institute, Madras, on December 12 and 13, 1970, with 50 participants from oil mills, analytical laboratories and agricultural departments. Inaugurating the course, C.V. Subramanian described how the *Aspergillus* group of molds easily grew and rapidly flourished on stored agricultural products especially in warm and humid conditions. The conditions under which the molds developed and produced toxic compounds in stored foods were further detailed by S. Raghavender Rao. V. Sreenivasamurthy explained the various techniques developed to destroy the toxins found in foods, especially in oil cakes. E.R.B. Shanmuga Sundaram described the toxic effects of aflatoxins and other mold-toxins in animals, the work done by him and his colleagues indicated that mold-infection and mold-toxins could be widespread in many foods in this country and might constitute a health-hazard affecting especially the liver and kidneys. The lectures were later followed by demonstrations covering various steps of analysis of aflatoxins. The delegates further participated in a "do-it-yourself" analysis. The organizing committee consisted of S. Venkob Rao (Convener), S. Raghavender Rao, V.V.S. Mani and T.N.B. Kaimal.

#### —Lecture Meetings:

"Conjugational Isomerization in Safflower Oil With Active Nickel Catalyst," by B. Sivaramaiah, November 20, 1970.

"The Use of Computer in Lipid Chemistry," by P. Jagan Mohan Reddy, January 8, 1971.

"Changes in the Lipids of Maturing Oilseeds," by S. Venkob Rao, March 26, 1971.

—The following films were shown on March 19, 1971: "Chemistry of Soapless Detergents"; "Atomic Energy Explained"; "Electron Microscopy"; "Speed the Plough."

Visits to the local factories Bakelite-Hylam, Prakash Paints, and Card-Chem Industries were also arranged.

—A seminar on Castor Seed, Oil and Cake will be held in Hyderabad on October 9 and 10, 1971, to review the

(Continued on page 270A)

(Continued from page 264A)

pattern of export of oil and cake, the possibilities of greater utilization within the country, and research and development activities now in progress. The Convener of the Seminar is V.V.S. Mani, Regional Research Laboratory, Hyderabad-9.

**Western Zone**

—Annual Meeting: The Eighth Annual Meeting of this Zone was held on December 19, 1970, under the chairmanship of D. Rebello, with M. Mathias as Chief Guest. J.G. Kane was elected President of the Zone and S.M. Patel, Secretary.

Mr. Mathias then presented an interesting talk on "Oils, Fats and the Consumers." He drew the attention of technologists to apply their knowledge in providing new products to consumers keeping their needs and preferences in mind.

—Short Course in Perfumery: A residential two-weeks' course on Perfumery was organized at the Indian Institute of Technology in Powai starting December 7, with 11 participants from related industries. The course included 22 lectures on topics including Natural and Synthetic Raw Materials, Theory of Olfaction, Analytical Methods, Selection of Perfumes for Various Consumer Products, Economics, Chemistry of Perfumery Materials, etc. It also included a group discussion with reference to Indian conditions. Among the lecturers were: G.D. Kelkar, N.A. Nimbalkar, R.M. Wagh, B.C. Subba Rao and S. Varadarajan. Factory visits were arranged to: Sohrabji Naoraji Sandalwood-oil-unit, S.H. Kelkar & Co., Hindustan Lever Perfumery, Industrial Perfumes and Lakme Ltd.

—Lecture Meetings:

- "Modern Developments in Perfumery," by G.D. Kelkar, September 8, 1970.
- "Recent Advance in Prostaglandins," by M.R. Subbaram, September 10, 1970.
- "Modern Spectroscopic Methods in Lipid Chemistry," by R. Keuning, December 15, 1970.
- "Mechanism of Biosynthesis of Lipids," by D. Rebello, December 17, 1970.

—A seminar on "Measures to Increase Supplies of Oils and Fats" was inaugurated at Taj Mahal Hotel, Bombay, April 17 and 18, 1971, by P.L. Tandon, Chairman of the State Trading Corporation of India. This was divided into three sessions with following subjects and chairmen:

- |                         |                  |
|-------------------------|------------------|
| Agriculture             | M.S. Swaminathan |
| Technology              | T. Thomas        |
| Economics and Marketing | F.A. Mehta       |

Two popular lectures were delivered, one by R.K. Hazari, Dy. Governor of the Reserve Bank of India, and the other by F.A. Mehta, Director, Tata Industries Pvt. Ltd.

Convener of the Seminar was N.R. Bhow, General Manager (Projects) Tata Oil Mills Co. Ltd., Bombay House, Bruce Street, Bombay-1.

**Soaps, Detergents and Toiletries Review**

A new bimonthly journal devoted to the development and progress of soaps, detergents, toiletries and household products, has been published in January-February 1971 by Wadhwa Publications, 232, D.N. Road, Bombay-1. Jagdish Chopra explains 'Why-We' in his editorial and highlights that: "In a world where science and technology

are moving rapidly, there can be no question that research work, new processes and techniques developed for using indigenous raw materials are of considerable interest to the industries which this journal hopes to serve."

**Spain . . . . . Eduardo Vioque**

**Second Meeting of the Spanish Committee on Detergents**

The most important Spanish manufactures of detergents, tensioactives and similar products, some 250 people all together, including industrial and technical persons, attended a meeting held in Barcelona on March 3-5, 1970.

Foreign representatives came from Germany, Belgium, Denmark, United States, France, United Kingdom, Netherlands, Italy, Portugal and Switzerland.

The opening was presided by Jose Lladó, Spanish General Director of Chemical Industries. The President of the Spanish Committee on Detergents welcomed the participants and expressed his gratitude to all those who made possible the creation of the Tensioactive Section of the Center for Research and Development in Barcelona.

Mr. Lladó emphasized the significant progress accomplished by the Spanish Tensioactives and Detergents industry during the last year. Mr. Lladó presented the Jorge Camp Award to V. Flores, Professor of Technical Chemistry of the University of Sevilla, in acknowledgment of his work on the application of tensioactives in the extraction of the oil present in the wet cakes of olives.

There were two plenary lectures, one by Dr. Cruickshank on "Tensioactive Substances in Industry: A Review and Some Benefits and Developments" and one by Dr. Donekerwolche on "Soap and Detergent Industries: Situation in the Last Decade." During the working sessions, papers were presented on the following subjects: tensioactive compounds, enzymes, bactericides, and tripolyphosphates and substitutes.

The titles of the papers were:

- Determination of polyglycol content in non-ionic tensioactives.
- Citrex: Some properties and applications.
- Tensioactives: Present and possible future in food elaboration in Europe.
- Variation of the properties of ethylene and propylene oxides as a function of their molecular structure.
- Tensioactive character and foam behavior.
- Project and starting up of a plant for the preparation of proteolytic enzymes.
- Concentration and drying of enzymes with "prilling" of the powder.
- Enzyme handling in the detergent industry.
- The activity of enzymes and influence on the washing process and on the components of washing products.
- Recent progress in the field of enzymes used in detergents.
- Hexachlorophene in the detergent industry.
- Microbiological alterations in tensioactive agents.
- The use of 2,4,4'-trichlor-2'-hydroxyphenyl ether in the washing process.
- Nitryletriactic acid as an aid in detergents.
- The role of polyphosphates in washing products.
- The influence of phosphates and other products on the elements and material of washing machines.
- Behavior of nitryletriactic acid in the depuration process and drainage.
- Detergents based in phosphates and their relation to the environment.

The next Meeting has been scheduled for March 1972.

**Instituto de la Grasa Participates in the 1970-71 Course of the Center for Improvement of Oil Techniques**

A course devoted to the formation of technicians of different countries of the Mediterranean area and the Middle East, is under the patronage of FAO (Food and

**Clayton** INTERNATIONAL ENVIRONMENTAL CONSULTANTS  
Est. 1954

Qualified engineers and scientists with expertise in air, water, noise and solid wastes up to and including turn-key installations. Complete in-house chemical and physical laboratories.

**GEORGE D. CLAYTON & ASSOC., INC.**  
25711 Southfield Rd., Southfield, Michigan 48075  
A subsidiary of Sitkin Smelting & Refining, Inc.

## • Four Corners . . . .

Agriculture Organization), and financially helped by the United Nations and the Spanish Government Program for Development.

During the first part of the course, October 1970, members of the Instituto de la Grasa gave lectures concerning several aspects of olives and olive oil:

- Chemical components of olives and olive oil formation during ripening, by A. Vazquez.
- Table olives of the Sevillian type, by F. Gonzalez-Pelliso, J. Cordon, M. Fernandez-Diez, J.M. Rodriguez.
- Black table olives by M. Fernandez-Diez, A. Garrido
- Microbiology of table olives, F. Fernandez Cancho
- Olive oil extraction by J.M. Martinez, E. Munoz
- Depuration and use of olive waste water, by J.A. Fiestas
- Composition, commercial classification and analysis of olive oil, by J. Gracian
- Oxidative alterations of olive oil and sensory analysis, by R. Gutierrez
- Sulfur olive oil extraction, F. Ramos
- Oil refination, by F. Ramos.

### 23rd Meeting of the International Council of Olive Oil

The 23rd Meeting of the International Council of Olive Oil took place in Madrid from December 14 to 19, 1970.

The closing session, concurring with the end of the World Olive Oil Year 1969-70, was presided over by the Spanish Minister of Agriculture, D. Tomás Allende; also present were the Sub-Secretary of that Department, the Secretary of the Spanish Syndicate and delegates of the different members of the COI and representatives of special organizations of the United Nations. In that session Mr. Jimenez-Millas, Head of the Spanish National Syndicate of Olive Tree was appointed new President of the COI, and D. De Leonardi, Deputy of the Italian Parliament, Vice-President.

The main problems studied during the Meeting were:

1. Improvement of olive oil production in the world: The Council was pleased with the steps taken by FAO to attain the scientific training of specialists from many countries, in the Center of Improvement and Demonstration of Oil Techniques.

2. Economical problem: Studies of the oil balances allowed the COI to carry out an examination of the international market of the olive oil and the advantages of a coordination of commercial policies.

As the development of olive oil consumption in the world as well as its international exchange depend mainly upon advertising, the COI decided to act not only in the producer countries (Spain, Greece, Turkey) but also in importer countries (USA, France, Italy).

Two lectures were given by eminent scientists on the biological value of olive oil in human nutrition:

—Edible oils: Their effect upon longevity, by Prof. Harman, University of Nebraska, U.S.A.

—Fats in human nutrition: Diet and atherosclerosis, by Prof. F. Grande, University of Minnesota, U.S.A.

The next meeting of the COI was scheduled to be held in Madrid from March 30 to April 3, 1971.

## Sweden . . . . . Stig Friberg Research on Emulsion Stability at the Swedish Institute for Surface Chemistry

The "multilayer" theory concerning emulsion stability which was introduced by the Swedish Institute for Surface Chemistry in 1969 has now been verified for several lipid systems. Connection to the polymorphic behavior of mono- and triglycerides has been made and rules for efficient emulsification have been worked out.

Research on the dependence of the rheological properties of monoglyceride-water liquid crystalline phases containing triglycerides has shown that high content of triglycerides reduces the thixotropic part of the shear stress, and that extreme high or low content of water increases the thixotropy and the final shear stress.

**BLUE HEAT TREATED  
SEPTUMS**


An independent study<sup>1</sup> proves  
that Applied Science's  
**BLUE SEPTUMS** made of  
silicone rubber

**are  
SUPERIOR  
for  
GC**

The BLUE septums gave 5 to 10 times better results in a quantitative comparison of gas chromatograph septum bleed using seven commercial GC septums.

<sup>1</sup> Smith and Sorrells, J. Chromatographic Science **9**, 15, January (1971).

*Write for further information.*



**Applied Science  
Laboratories Inc.**

P.O. Box 440 / State College, Penna. 16801 / 814-238-2406

## Odor Characterization and Measurement

For the past three years, IIT Research Institute has been conducting a program on "Odor Characterization and Measurement" funded jointly by eleven organizations, representing a diversity of industrial interests. The project is under the technical guidance of Andrew Dravnieks and is conducted within the Odor Sciences Center which provides the multidisciplinary coordination required on the program.

In the pursuit of the program IITRI has investigated selected panel techniques for sensory measurements, evolved olfactometric devices and procedures, accumulated data on odor thresholds, intensities, intensity concentration relationships, similarities, and pleasantness-unpleasantness properties of many odorants. Significant success has been achieved in correlating some of these properties with physicochemical and gas chromatographic characteristics of the odorants. Thus, the sponsors were guided in utilizing these advanced methods in their own laboratories and market research for odor studies of food, beverages, industrial products, air pollution, and odors of human origin.

IITRI now proposes to continue this successful program for two more years and is soliciting the participation of additional industrial organizations who have an interest in odors, aromas, and flavors, as well as odor control. The program will provide sponsors with precision techniques of headspace analysis, panel techniques, olfactometric devices, application of computerized statistics to sensory data, and subjective-objective correlations to relate sensory qualities of products to their headspace analytical compositions.

Regular seminars will be held with the participants to facilitate a transfer of technology and to aid in the solutions of problems.

Further details may be obtained from Allan J. Gaynor, IIT Research Institute, 10 West 35 Street, Chicago, Illinois 60616.