THE FOUR CORNERS...

By RAYMOND REISER, Chairman,
International Relations Committee; and
J. E. EVANGELISTA, HAROLD JASPERSON,
HELMUT KORP, and R. P. A. SIMS,
Corresponding Secretaries

Chairman's Comment . . . Raymond Reiser

The International Relations Committee met at the Cincinnati meeting to discuss ways and means of letting the left hand know what the right hand is doing. It was agreed that the best potential way is the activation of Corresponding Secretaries from all the countries in the world where there are members and where there is activity in the fat and oil industry and in lipid research. Such Corresponding Secretaries have been developed in a number of countries, and their communications have begun to appear in the *Journal*.

It was decided, however, that a special section of the *Journal* be set aside for news from around the world, that the Chairman of the International Relations Committee act as Editor of the corner, and that he make a few comments in each issue. The success of this corner depends upon receipt of communications from Corresponding Secretaries, and it is hoped that the Corner will stimulate such communications.

The Board of Governors, at the Cincinnati meeting, agreed that they would be receptive to an invitation from both the Mexican and Canadian members for meetings in their countries in 1971 and 1972. I took the message to Ottawa where I participated in a symposium on polyunsaturated fatty acid metabolism. The Canadians agreed to discuss the matter at the annual meeting of their Fats and Oils Committee.

I expect to address the Monterrey, Mexico Section of the Society late in November and will carry the message of the Board of Governors to them at that time.

Both the Mexican and Canadian members of the Society are planning Short Courses, the former in Monterrey and the latter in Ottawa. More will be reported about them when plans have crystallized.

Canada . . . . . R. P. A. Sims

1965 Meeting of the Canadian Committee on Fats and Oils

This year, the annual meeting at which research reports are presented and the research needs of industry discussed was preceded by a symposium entitled "Polyunsaturated Fatty Acids in Nutrition." Hans Brockeroff of the Halifax Laboratory of the Fisheries Research Board of Canada was the opening speaker. In his research on the positional distribution of fatty acids in triglycerides, Dr. Brockerhoff employs pancreatic lipolysis and stereospecific analysis to differentiate between positions 1 and 3 in the triglyceride. Chain length as well as degree of unsaturation were shown to affect location in the triglycerides of a variety of species. Fred Mattson of the Procter & Gamble Company, Cincinnati, Ohio, then described how synthetic triglycerides of known fatty acid distribution can be used to study the mechanism of hydrolysis absorption and resynthesis of triglycerides. He showed how resynthesis from a 2-monoglyceride differed from that required when glycerol was the final hydrolysis product. The distribution of polyunsaturated acids on vegetable oil triglycerides was considered to be a major influence on their digestion and absorption. Ralph Holman of the Hormel Institute, University of Minnesota, next demonstrated how he used dose-response curves to determine precursor-product relations for polyunsaturated fatty acids as well as competitive inhibition between the metabolisms of several families of polyunsaturated acids. Dr. Holman also showed how dietary carbohydrate and EFA deprivation and supplementation affect tissue fat. He indicated the roles of chain-lengthening and dehydrogenation in the formation of polyunsaturated acids in the tissue. Raymond Reiser of the Department of Biochemistry, Texas A&M University, reviewed hypotheses on the role of polyunsaturated fatty acids in reducing serum cholesterol levels and followed this with recent results from his laboratory. Dr. Reiser emphasized the impact of dietary fat, and dietary cholesterol in particular, on serum cholesterol levels and cholesterogenesis. The effect of polyunsaturated fatty acids on cholesterol absorption was also indicated. In the concluding paper, B. B. Migicovsky of the Research Branch, Canada Department of Agriculture, described the isolation of a cholesterol synthesis inhibitor from the mitochondria and surrounding cytoplasm of the liver cell. He showed that his inhibitor was active both in vivo and in vitro between the acetate and mevalonate steps in the synthetic sequence. Dr. Migicovsky suggested that this compound, present in the liver of all species of animals tested, rat, rabbit, guinea pig, pig, sheep and cow, constitutes a means by which cholesterol synthesis is controlled. The symposium was organized and chaired by R. P. A. Sims of the Food Research Institute who gratefully acknowledges the help of Mrs. Joyce Beare-Rogers of the Food and Drug Directorate and F. H. Lehberg of the Department of Industry.

Canadian Specifications for Rapeseed and Rapeseed Oil Drawn Up

Active commercial interest in rapeseed oil in Canada prompted the formation of a Government-Industry committee to draft specifications for crude and degummed rapeseed oil. The specifications have met with the approval of crushers and processors and have been published by the Canadian Government Specifications Board as 32-G.P.-300. The grading of rapeseed has also been reviewed by the Canada Board of Grain Commissioners. Steps have been taken to ensure that grading is based on the more recent information on this relatively new but important crop.

News Report on Fats and Oils Research in Ottawa

Neil Tattrie of the Division of Biosciences, National Research Council, has studied the fatty acid composition of naturally occurring lysolecithins, and found that the composition was of a nature to be expected from the action of phospholipase A on lecithin. Dr. Tattrie also presented a paper on phospholipids to the phospholipid symposium held in Nordwijk-aan-Zee, Holland, this summer.

Franz Vandenheuvel of the Animal Research Institute, Canada Department of Agriculture, continued his investigation of the structural membranes of lipoprotein systems, and of their physiological function. He proposed a theory concerning the role of water in lipoprotein systems.

In another area Dr. Vandenheuvel developed a method for the determination of steroid hormones from natural sources, which is applicable to all farm and small laboratory animals. The method is based on a combination of TLC and GLC, and can present a complete picture of all hormones present in a system. The method is quantitative. A laboratory using this method has been set up by the Canadian Defense Research Board, and Dr. Vandenheuvel spent part of the summer of 1965 in Milan, Italy, organizing a similar laboratory at the Institute of Pharmacology at the University of Milan.

Dr. Vandenheuvel also demonstrated his method at the Symposium on Methodology in Milan and at the Pomona College Short Course.

Madhu Sahasrabudhe of the Food and Drug Directorate, has separated the triglycerides of liver, pork, beef and calf by TLC as part of a study of the effect of pesticides on esterase inhibition in the synthesis of triglycerides in liver.

Dr. Sahasrabudhe also worked out a procedure consisting of column chromatography, GLC and chemical analysis, which simultaneously gives a quantitative analysis of a mixture of emulsifiers present in a fat.

An extensive study of the fatty acid composition of morning glory seed oils is underway at his laboratory.

Morris Kates of the Division of Biosciences, National Research Council, has won a valuable award from the Canadian Broadcasting Corporation for an original musical composition, written for a chamber orchestra string quartet.

In his laboratory he discovered a new class of lipids, glycerol diethers, containing C_{20}-branched chain dihydrophytyl groups, in extremely halophilic bacteria. They occur in the cytoplasmic membrane. In his biosynthetic work, Dr. Kates continued investigating the lipids of leaves, and found an enzyme system capable of acylating glycerol phosphate to yield phosphatidic acids. Dr. Kates described his lipid biosynthesis and lipid hydrolysis research and demonstrated isotopic labelling techniques at the Pomona Short Course.

Mary McKillican of the Food Research Institute, Canada Department of Agriculture, has just completed her final investigation of changes in the lipid classes of maturing oilseeds. Golden and Zero-Erucic rapeseed and Crambe seed were compared and important differences shown. Dr. McKillican is now concentrating on studies of poultry muscle lipids and storage lipids; her research on the fatty acid composition of the naturally occurring lysophosphatides in wheat is also completed.

Marius Lepage of the Food Research Institute, Canada Department of Agriculture, whose development of two-dimensional thin-layer chromatography permitted the identification of the new lipid class, the esterified sterol glucosides (ESG), is continuing his studies of the glycolipids. The structure of ESG has been determined and its ubiquity in the plant world established. Dr. Lepage is currently studying oil-soluble natural antioxidants and the polar lipids of potatoes and turnips.

Mrs. Joyce Beare-Rogers of the Food and Drug Directorate, is completing her doctorate thesis while continuing her regular position at the Food and Drug Directorate. Her Thesis deals with problems of phospholipase B, and also with the deposition of linoleic acid in the rat body.

With Dr. Craig of Saskatoon, Mrs. Rogers is studying intermediate degradation products of erucic acid, and could verify that this follows a beta-oxidation path from C_{22}- to C_{20}- and to C_{18}-acids.

C. Y. Hopkins of the Chemistry Division, National Research Council, found for the first time sterulic acid in nature. It occurs in the seed oil of a shrub, pyrularis, growing in the USA.

Previously, Dr. Hopkins had described the fatty acid composition of the oil of the Chufa nut, and drawn this tuber to the attention of industry. Chufa oil contains about 65% oleic acid, approximately 15% linoleic acid and no linolenic acid, and should make a most stable salad oil. Work is underway to examine its industrial usefulness as a new edible oil, the value of the meal, and the possibility of growing Chufa, also called Tiger Nut, under Canadian conditions.

Dr. Hopkins is continuing his application of NMR structural studies in fat chemistry, and will contribute a chapter on this subject to the next volume of Progress in the Chemistry of Fats and other Lipids.

Men on the Move

After 17 years as Director of Research for Lever Brothers Limited, Toronto, Canada, F. H. Lehberg resigned that position to join the Federal Civil Service. He is now a member of the Program Advisory Group of the Department of Industry.

Walter David, formerly of Canada Packers Limited, Montreal, is now with Kraft Foods Limited in the same city.

Jean Moreau has joined the Department of Food Science at Laval University, Ste Foye, Quebec, from Canada Packers Limited, Toronto.

Louis Emard has also left industry to join the academic world. Mr. Emard is now on the staff of the Institute of Agricultural Technology, St-Hyacinthe, Quebec.

Philippines . . . . . J. E. Evangelista

Since so many people are employed in the coconut oil industry, and since coconut, together with sugar, form the bulk of the country's dollar source, it is surprising that the oil technologist have not yet got together to form an organization for the general advancement of the oil industry.

The sugar technologists here, on the other hand, have been very active in this respect. Their organization has been affiliated with worldwide sugar associations. Regular