THE CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

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THE EDITOR NOTES

With the 37th Remsen Memorial Lecture another season of lecture meetings comes to an end. We thank Merle Eiss for an excellent series. We also thank some recent sponsors of our social hour bar: W. R. Grace, Fisher Scientific and American Scientific Products.

We are looking forward to Chuck Rowell's program for next season. The September meeting (speaker not yet confirmed) will be held at the W. R. Grace Research Center. The folks at Grace have been most gracious hosts, and the meeting at Grace has become one of our most popular. The October speaker will be Dr. Fred Basolo, President-elect of the ACS, and he has agreed to discuss Society affairs following his formal talk.

We wish everyone a pleasant summer, and we'll meet again in September.

THE REMSEN AWARD

The annual Remsen Memorial Lectures were inaugurated in May, 1946 by the Maryland Section of the ACS to honor Ira Remsen, first Professor of Chemistry and second President of The Johns Hopkins University. The Remsen Memorial Lecturers are chemists of outstanding achievement, in keeping with Ira Remsen's long and devoted career as an exponent of the highest standards in teaching and research in chemistry. Great honor and esteem have become associated with the Remsen Award, and the Remsen Lecture has become the highlight of the year's activities for the Maryland Section.

1981 Koji Nakanishi
1980 Roald Hoffmann
1979 Harry B. Gray
1978 John Charles Polanyi
1977 Ronald Breslow
1976 William N. Lipscomb, Jr.
1975 Henry Taube
1974 Elias J. Corey
1973 Frank H. Westheimer
1972 Charles H. Townes
1971 George C. Pimentel
1970 George S. Hammond
1969 Albert L. Lehninger
1968 Har G. Khorana
1967 Marshall W. Nirenberg
1966 Paul H. Emmett
1965 James R. Arnold
1964 Paul D. Bartlett
1963 Harold C. Urey
1962 George Porter
1961 Herbert C. Brown
1960 Henry Eyring
1959 Edward Teller
1958 Robert B. Woodward
1957 Melvin Calvin
1956 Farrington Daniels
1955 Willard F. Libby
1954 Vincent du Vigneaud
1953 Edward L. Tatum
1952 W. Mansfield Clark
1951 Hugh S. Taylor
1950 Edward C. Kendall
1949 Joel H. Hildebrand
1948 Elmer V. McCollum
1947 Samuel C. Lind
1946 Roger Adams

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THE 37th REMSEN LECTURER

HARDEN M. McCONNELL

Professor Harden M. McConnell, who was born in Richmond, Virginia, received his B.S. degree from George Washington University in 1947 and his Ph.D. from California Institute of Technology in 1951. He was a National Research Fellow at the University of Chicago. Following this he served as a Research Chemist at Shell Development Company from 1952-56. Subsequently, he joined the Chemistry Faculty at California Institute of Technology. In 1964 he was appointed Professor of Chemistry at Stanford University and in 1979, was named Robert Eckles Swain Professor of Chemistry at that institution.

Dr. McConnell is a member of several scientific societies, including ACS, and has been elected a member of the National Academy of Sciences and a Fellow of the American Association for the Advancement of Science. He has served on the editorial boards of several journals, including *Bio-Organic Chemistry*, *Journal of Membrane Biology* and *Journal of Supramolecular Structure*.

Dr. McConnell's prior awards include the ACS California Section Award (1961), the ACS Award in Pure Chemistry (1962), the Harrison Howe Award (1968), the Irving Langmuir Award in Chemical Physics (1971) and the Dickson Award for Science (1982).

Over the past three decades Professor McConnell's research efforts have evolved from the theoretical study of electron paramagnetic resonance spectroscopy (epr) to the application of the techniques of epr spectroscopy to problems in the structure and function of biological molecules. In the early 1970's his research made significant contributions to our understanding of the structure and properties of biological membranes. Professor McConnell was the first to show, by using "spin labels", that phospholipids do not "flip-flop" across the plane of lipid bilayers in biological membranes.

More recent work has been aimed at elucidating the interactions of proteins with model membranes. These model systems are being studied in an effort to understand certain aspects of the immune system. Most recently, Professor McConnell's research has centered around a combination of chemical physics and cell surface immunology, in an effort to discover and quantitate the elementary molecular events involved in immune recognition and triggering.

MEMBRANE IMMUNOLOGY, VIEWED BY A PHYSICAL CHEMIST

A number of critical events in the immune response of an animal to a foreign or abnormal cell involve "cell-cell recognition" at the level of membrane-membrane contact. In recent years there has been dramatic progress in defining the different cells involved in the immune response, in the understanding of the genetics of the immune response, and in the isolation of specific molecules involved in cell surface recognition. It is now possible to study a number of membrane-associated immune responses using physical chemical techniques. This lecture will emphasize the use of lipid monolayer membranes on solid substrates as targets for cellular recognition and attack. The structure of the monolayer membrane will be discussed in terms of chemical composition, and experimental and theoretical descriptions of two-dimensional systems. Then the use of these membranes as targets for attack by macrophages, neutrophils, basophils and cytotoxic T-cells will be described. It will be emphasized that only when specific recognition molecules are present in the target monolayers do these various cellular components of the immune system exhibit a programmed response, and the response can be studied by a variety of novel spectroscopic techniques.

THE 37th REMSEN LECTURE

DATE & TIME:

Wednesday, June 2, 1982
8:30 pm

PLACE:

Remsen Hall, Room 101
Homewood Campus of
The Johns Hopkins University

SPEAKER:

Dr. Harden M. McConnell
Stanford University

SUBJECT:

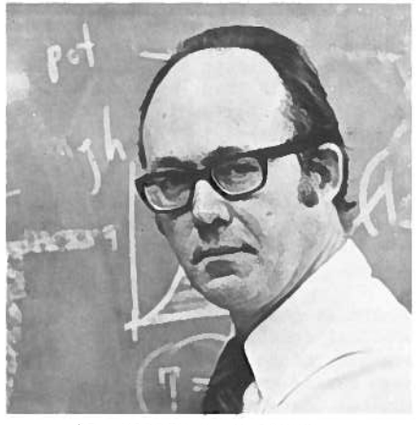
"Membrane Immunology, Viewed by a Physical Chemist"

COCKTAILS & DINNER:

The Johns Hopkins University
Faculty Club

Cocktails: 5:30 pm
Dinner: 6:45 pm

Dinner $11.00 per person, except retired chemists and students may attend the dinner for $8.00



DR. HARDEN M. McCONNELL

Dinner reservations are necessary and should be made by mailing checks to

Merle Eiss
McCormick & Co., Inc.
Hunt Valley, MD 21031

by May 26. Checks should be payable to Maryland Section of ACS. Late reservations may be made by calling

667-7485

before May 28.

It is not necessary to be a member of the American Chemical Society to attend. You may attend the lecture without attending the dinner.

ACS BOARD AND CREATION SCIENCE

Back in 1972 there was a movement in California to have "creation science" described in science textbooks and taught in science classes in the public schools of that state. The ACS Board of Directors sent a letter to Newton L. Steward, President of the California State Board of Education, reading, in part:

"Courses in science should be concerned only with scientific data and theories, not with theories from other areas of human thought.....We respectfully suggest that California textbooks should not be distorted by inclusion of non-scientific material by legislative fiat."

The "creation science" drive failed in California, but more recently the legislatures of Arkansas and Louisiana passed laws supporting the teaching of that theory. The American Civil Liberties Union filed suit against the Arkansas law and the 1981 ACS Board adopted the following statement of position:

"There is increased pressure on boards of education to mandate the teaching of biblical creationism in the nation's public school science classes. As recent examples of this pressure, the state legislatures of Arkansas and Louisiana have passed measures requiring that such creationism be taught whenever biological (Darwinian) evolution is taught.

"The Board of Directors of the American Chemical Society reaffirms its statement of December 2, 1972, that creationism theories, often mis-termed 'scientific creationism', should not be taught as science in the nation's science classes. These theories were not derived from scientific data and are not amenable to scientific test. Any implication that such theories are within the framework of science would confuse students about the nature of both religion and science."

The Arkansas court ruled that the "creation science" law violated the First Amendment of the Constitution.

MARYLAND SECTION FIFTY-YEAR MEMBERS

At the March meeting it was announced that two members of the Maryland Section, C. F. Atkins and Louis S. Miller have been recognized with certificates from the ACS for fifty years of membership in the society.

BENDIX ADVANCED TECHNOLOGY CENTER

The Bendix Advanced Technology Center (ATC) was established in December 1979, as part of The Bendix Corporation's commitment to R&D and high technology. Prior to the information of ATC, an organization called the Bendix Research Laboratories was the focus of the Bendix central development programs. During late 1979 The Bendix Corporation reformed its central research and development function to be responsive to corporate long-term strategic plans, and it took the organizational form of the Advanced Technology Center, now located in Columbia, Maryland. ATC is, in fact, a result of a continuing Bendix emphasis on new high technology going back four decades.

The Bendix Advanced Technology Center was relocated from Southfield, Michigan, to the present site in Columbia, Maryland, in February 1981. Maryland was chosen as the location for this new research facility due to the close proximity of several major universities, as well as to the large scientific community of other high technology firms and to the government. ATC presently has a research staff of nearly 60 graduate scientists and engineers, two-thirds of whom hold doctorate degrees. The research staff has the support of computer programmers, engineering technicians, and others -- a total for ATC of about 130 -- so scientific talents can be leveraged. ATC plans to increase the size of the research staff by approximately 20 percent during the next year. The facility is equipped with the best and newest instruments, devices, and machines for research. The research staff is divided into twelve largely self-governing projects. The projects undergo annual reappraisal by a panel of scientists, including outsiders, to assure quality of work, progress, and continuing relevance. There is frequent contact between ATC and other Bendix divisions to assure the continuing relevance of projects to Bendix interests, and between ATC and government/university laboratories to stay at the leading edge of the high technologies.

The mission of ATC is to support the strategic and long-term technology needs of The Bendix Corporation. This is achieved through a program of basic and applied research and development pointed at Bendix's present business activities, and toward those new technologies which have the potential to become Bendix businesses. The technology thrusts -- the science and engineering foundations -- of Bendix businesses are identified and a research program is instituted at ATC that is in accord with the needs of those thrusts. ATC's present work includes chemistry, physics, the engineering sciences, computers and materials. In chemistry, ATC is advancing the state-of-the-art in new polymer matrix composites and developing a new generation of microsized chemical sensors for both liquids and gases. The composites project team is currently conducting research on polymer alloys, thermoplastic composites, surface thermodynamics of fibers, in addition to mechanics and mechanisms for various properties of composites. The chemical sensor project is examining how electrochemical reactions occur at the molecular level. By understanding and controlling the surface chemistry of electrode and semiconductor materials and novel electrolyte media, it will be possible to generate advanced sensors for the detection of gases, ions and biomaterials.

While certain initial areas of investigation have been established for ATC, concepts with important future implications are investigated -- whether or not related to current Bendix businesses and whether or not years of development are required before a marketable product emerges. These research areas focus on long-range potential breakthroughs in new technology areas, with research conducted beyond the leading technological edge of a number of fields.

Thanks to Dr. Heh-Won Chang