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CHEMIST**

MARYLAND SECTION  
AMERICAN CHEMICAL SOCIETY

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FEBRUARY, 1976

NUMBER 2



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# THE CHESAPEAKE CHEMIST

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# FEBRUARY MEETING

## DATE:

Wednesday, February 18, 1976

## PLACE:

Eudowood Gardens Lecture Room  
Eudowood Plaza, Joppa Road near  
Goucher Boulevard.

## SPEAKERS AND TOPICS:

5:30 PM

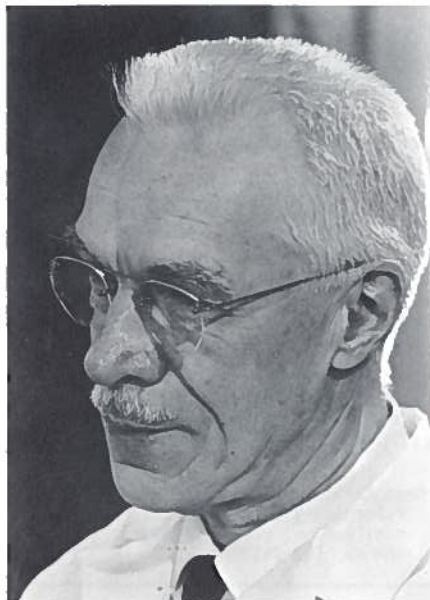
Dr. Alsoph H. Corwin, Professor of  
Chemistry Emeritus  
The Johns Hopkins University  
"Chemistry and Metabolic Disease"

8:30 PM

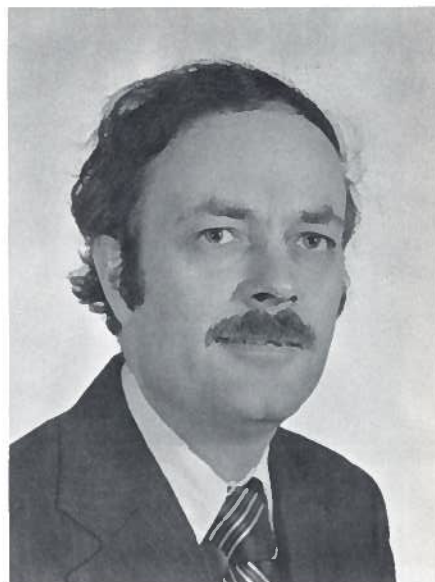
Dr. Carl Alving, Staff, Walter  
Reed Army Institute of Research  
"Cholesterol-Dependent Non-Immune  
Complement Actuation Resulting  
in Membrane Damage"

## SOCIAL HOUR:

There will be a social hour after  
the meeting. Refreshments will  
be served.



DR. ALSOPH H. CORWIN



DR. CARL R. ALVING

## COCKTAILS AND DINNER:

Eudowood Gardens Dining Room  
Cocktails 6:30-7:15  
Cash Bar  
Hot buffet dinner (7:15) \$5.50  
per person. Retired chemists,  
students and their spouses may  
attend the dinner at \$3.50 each.  
Reservations are necessary for  
the dinner and should be made  
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It is not necessary to be a member  
of the American Chemical Society  
to attend the dinner or the talks,  
and the talks may be attended with-  
out attending the dinner. You are  
invited to bring your wife and  
friends to both the dinner and the  
meeting.

ALSOPH H. CORWIN, PH.D., D.SC.

Dr. Corwin was born in Marietta, Ohio in 1908. He received his A.B. from Marietta College in 1928 and his Ph.D. from Harvard University in 1932; he also received a D.Sc. from Marietta College in 1953. He joined the faculty of The Johns Hopkins University in 1932; between then and 1973, when he was appointed Professor Emeritus, he was active in various roles, including Chairman of the Chemistry Department, Chairman of the Physical Sciences Group, and member of the Academic Council. He has been lecturer and consultant to a wide variety of industrial and governmental laboratories such as GE, duPont, Standard Oil, NCR, ONR, NBS, and various Defense agencies. He has been active in the ASTM and the ACS; he served as Vice-Chairman of the Maryland Section in 1948-49 and Chairman in 1950 and has been a Councillor and committee member. He was the recipient of the Maryland Chemist Award in 1963. He is co-author of the text "Principles of Organic Chemistry" (Addison-Wesley, 1966) and has published in many different journals. His research interests include organic synthesis and mechanisms, kinetics, pyrroles, porphyrins, chlorophyll, hemoglobin, heavy metal poisoning, allergens, and high precision weighing.

## CHEMISTRY AND METABOLIC DISEASE

Unlike the situation in primitive societies, the major causes of death in modern civilized nations are metabolic diseases. These diseases are of particular interest to chemists because of their identification with certain chemical substances. Many of them are caused by dietary deficiencies due to the removal of necessary nutritional factors in modern food processing. Others are triggered by contaminants which are introduced into the nutritional chain. Some of these contaminants are produced unwittingly by housewives even in home processing of otherwise uncontaminated food. Our knowledge of the mechanisms by which deficiencies and contaminants act to produce metabolic disease has increased remarkably in the past decade. Details of the nature of certain of these effects and their causes will be presented.

CARL R. ALVING, M.D.

Dr. Alving was born in Chicago, Illinois in 1939 and was educated there through high school. He attended Haverford College, Haverford, Pennsylvania, and graduated with a B.S. in Biology. He received an M.D. from the University of Miami School of Medicine, Miami, Florida, and took postgraduate internship and one year of residency training in internal medicine at Barnes Hospital at Washington University School of Medicine in St. Louis, Missouri. Postdoctoral research training was obtained from 1968-1970 in the Pharmacology Department at Washington University. It was at that time that his present interests in the immunology and chemistry of membranes, lipids and liposomes were initiated. He was commissioned in the U. S. Army Medical Corps (present rank is Lieutenant Colonel) and he has been on active duty in the Immunology Department at the Walter Reed Army Institute of Research in Washington, D. C. since 1970. His research interests have been predominantly associated with the chemistry of immune and nonimmune reactions involving lipids at membrane surfaces. The chemistry and immune reactivity of lipids from parasitic organisms (schistosomes, trypanosomes, malaria) and receptor functions of lipids are additional major areas of current interest.

CHOLESTEROL-DEPENDENT NONIMMUNE COMPLEMENT ACTIVATION  
RESULTING IN MEMBRANE DAMAGE

Extensive investigations have been performed utilizing the liposome as a membrane model for immune cytotoxicity. The liposomes consist of closed concentric shells of lipid bilayers separated by aqueous interspaces. They contain phospholipids, and may contain other lipids such as cholesterol and glycolipid haptens. In the presence of anti-hapten antibodies and complement, membrane damage occurs, and this results in release of trapped marker (e.g., glucose) from the aqueous interspaces. It has been discovered, as discussed below, that, with high concentrations of liposomal cholesterol (> 60 mole %), activation of human complement and resultant membrane damage occurred in the absence of antibodies or antigen. This phenomenon was observed to some extent with all human sera tested, but not with guinea pig serum. The activity was much higher, or lower, with certain individual human sera, and was eliminated by inactivating the complement (56° C, 30 min.; Mg<sub>2</sub>EDTA; absorption with insoluble immune complexes). It could be transferred by adding heated human serum to fresh guinea pig serum (complement), but C<sub>4</sub>-deficient guinea pig complement was not effective. This implied that the classical complement pathway was involved. Investigation of membrane influences demonstrated that galactocerebroside (galactosyl ceramide), or ceramide itself, greatly enhanced the liposomal response.

These results suggest that above a critical threshold concentration of cholesterol, nonimmune human complement activation and membrane damage may occur spontaneously.

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TOWSON STATE COLLEGE  
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SEMINAR PROGRAM  
SPRING 1976

"Centrifugal Fast Analyzers"  
Dr. Robert C. Rock  
Director of Clinical Chemistry  
Johns Hopkins Hospital  
Thursday - February 19th  
12:45 p.m. - Smith Hall 554

"Ion Transport Through Lipid Membrane"  
Dr. Robert deLevie  
Professor of Chemistry  
Georgetown University  
Thursday - March 11th  
12:45 p.m. - Smith Hall 554

"Detection and Measurement of  
Chirality by NMR"  
Dr. Linda M. Sweeting  
Department of Chemistry  
Towson State College  
Thursday - March 25th  
12:45 p.m. - Smith Hall 554

"Thioallylic Rearrangements"  
Dr. Harold Kwart  
Professor of Chemistry  
University of Delaware  
Thursday - April 22nd  
12:45 p.m. - Smith Hall 554

"Fourier Transform NMR Spectroscopy"  
Dr. Bruce Coxon  
Research Chemist  
National Bureau of Standards  
Thursday - May 6th  
12:45 p.m. - Smith Hall 554

GRADUATE STUDIES  
IN MEDICINAL CHEMISTRY

The Department of Medicinal Chemistry of the University of Maryland at Baltimore invites applications for graduate study toward the M.S. and Ph.D. degrees. Teaching assistantships are available in September, 1976, for qualified applicants.

Research in the Department is centered around the relationships between biological activity and chemical structure, and in particular, the application of mass spectrometry to drug metabolism.

Anyone interested should contact

Dr. Nicolas Zenker  
Department of Medicinal Chemistry  
School of Pharmacy  
University of Maryland at  
Baltimore  
636 W. Lombard Street  
Baltimore, MD 21201

Phone: 528-7440

\*\*\*\*

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\*\*Return by Friday preceding next meeting.

## PRF AID TO SMALL COLLEGES

In June 1972, the Board of Directors of the American Chemical Society established within the ACS-PRF program a class of Special Educational Opportunities (SEO) Grants to assist with the organizational needs of conferences, symposia, and other activities representing, in the opinion of the Petroleum Research Fund Advisory Board, significant contributions to "advanced scientific education and fundamental research in the petroleum field." It was stipulated that the total amount of these grants would be limited to 1% of the yearly total authorization of PRF funds.

Subsequently, the Board Committee on Grants and Awards established an ad hoc Committee on Small College Aids to look into the possibility of extending PRF assistance to institutions which had not yet benefited from the PRF program. The ad hoc Committee reported a need for support of exploratory projects comprising such activities as tutorial instruction for students with inadequate educational backgrounds, summer workshops for students or faculty, pooling of resources to broaden the course offerings of smaller colleges, and inclusion of some engineering courses as supplements to chemistry training to increase career opportunities.

At Chicago, the Committee on Grants and Awards recommended expansion of the SEO program as a means of attacking the problems described by the ad hoc Committee, and the Board accepted the recommendation.

It is the intent of the Committee to increase the sum available for SEO grants in 1976 to 3%--about \$120,000--of the year's total authorization of PRF funds.

\* \* \* \* \*

### TO OUR READERS:

If you are aware of any seminars, colloquia, etc. that our readers might be interested in, let us know. We will be glad to publish seminar schedules. To ensure that your announcement appears in a given issue, typed copy must be received by the editor six weeks prior to publication.

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## NICK NACKS

by ALAN C. NIXON

### HANG IN THERE

According to a study by University of California Berkeley's Florine Livson, of the Institute of Human Development, "Improver" type persons who however generally conform to their traditional sex roles are apt to experience mental problems at the age of around forty. Improvers are women who value intelligence and achievement but play a housewife role and men who are "productive" with an analytical skeptical attitude and display self-control and lack of spontaneity. The decade of the forty's tended to be a period of considerable stress, mental conflict, and depression. However, at age fifty they seem to settle down, display "opposite sex traits", and live a "happier and freer life".

These conclusions were based on part of a forty-year-long observation project called "The Oakland Growth Study" and resulted from the evaluation of 45 white upper middle class subjects.

So, rejoice -- even if life is fouled up at forty it can be freer at fifty.

...continued on next page



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If you are interested in getting into meditation, the following technique reprinted from The Medical Tribune, Nov. 1975, will save you hundreds of dollars.

"The Technique"

- (1) Sit quietly in a comfortable position.
- (2) Close your eyes.
- (3) Deeply relax all your muscles, beginning at your feet and progressing up to your face. Keep them deeply relaxed.
- (4) Breathe through your nose. Become aware of your breathing. As you breathe out, say the word 'one' silently to yourself. For example, breathe in ... out, 'one'; in ... out, 'one'; etc.
- (5) Continue for 20 minutes. You may open your eyes to check the time, but do not use an alarm. When you finish, sit quietly for several minutes at first with closed eyes and later with opened eyes.
- (6) Do not worry about whether you are successful in achieving a deep level of relaxation. Maintain a passive attitude and permit relaxation to occur at its own pace. When distracting thoughts occur, ignore them and continue repeating 'one'. With practice, the response should come with little effort. Practice the technique twice daily, but not within 2 hours after any meal since the digestive processes seem to interfere with the elicitation of anticipated changes.

FIFTY-FOUR WHO DIED

This is a heading in the magazine section "Today" of the Philadelphia Inquirer of October 26, 1975. The title referred to 54 employees of Rohm and Haas who have died or will die as a result of exposure to BCME (bis-chloromethyl ether) at the Rohm and Haas plant at Bridesburg, Pennsylvania. The authors are Willard S. Randall and Stephen Solomon, both well known writers, who apparently researched the situation thoroughly before they wrote the article. Although it is impossible to know whether all the facts recited by the authors are true or not (I understand that Rohm and Haas deny it and are going to reply in extenso) it is remarkable as being a very frank and direct accusation of company complicity which undoubtedly will have many repercussions before the matter dies down. Regardless of that, it is encouraging that these matters are being brought to the attention of the public although it is unfortunate that the Philadelphia Inquirer did not choose to print Rohm and Haas' reply to the story at the same time.

One moral that it certainly does point out is that the American Chemical Society in its capacity of the society of chemists should be doing more studying and investigating and concluding what should be done in the area of safety from chemicals. This is one of the reasons that I am pushing the idea of an ACS Research Foundation which would be able to conduct independent studies on such matters.

...continued on next page

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WHAT'S YOUR MACH NUMBER?

This question is suggested by a recent article in *Psychiatric Annals*, October 1975, by Milton Greenblatt, M.D. The "Mach number" derives from a person's "Machiavellianism," Machiavelli, of course, was a 16th Century master of the use of guile, deceit, and opportunism in the pursuit and maintenance of power. He stated, "...Men in general...are ungrateful, voluble, dissemblers, anxious to avoid danger, and covetous of gain; as long as you benefit them, they are entirely yours; they offer you their blood, their goods, their life, and their children...when the necessity is remote; but when it approaches, they revolt."

The "high Mach" individual tends to remain cool and collected in the face of a highly emotional situation whereas the "low Mach" becomes too involved and is carried away by his feelings. The "high Mach" seems to be at his best when the rules of the game are not highly structured. Because of his clinical detachment he is successful in manipulating people, gaining control, and utilizing others for his own ends. "The 'low Machs' permit themselves to be run over and outmaneuvered by the intransigent highs while clinging to their idealistic interpretation of how people should behave..."

As a factor in career guidance, it is useful for people to try to determine their own Mach number. A "high Mach" individual will do best in a rapidly expanding organization where he could spend his time aggressively bargaining for funds or making arrangements for the organization's welfare with outside authorities. In a tightly structured system, where role relationships and procedures are clearly defined, a "high Mach" individual would feel stifled and might cause disaffection and problems of morale. The "high Machs" generally are very ready to share their unhappiness with others, particularly their subordinates. "Low Mach", on the other hand, who are generally happy with a well-defined set of rules for operating and display greater concern for the rights and welfare of others, will do better in a more stable organization that recognizes the worth of the less spectacular but probably more reliable lows.

*THE ENERGY BALLOON*

This is the title of a book by Stewart Udall, Charles Conconi, and David Osterhaut which, according to a quote from Jack Anderson on its dust cover, "Cuts through the morass of the oil crisis as surely as a diamond headed bit." Maybe he was thinking of a diamond back rattler. It is published by McGraw Hill and is intended for the layman. Nevertheless, it is an interesting book even for people who consider themselves "experts." The chief message of the book can be illustrated by the names of some of the chapters: "The American Pageant of Waste"; "Energy Illusions and Energy Alternatives"; "New Attitudes and Leaner Life Styles"; "Shaping the Human Environment"; and "The Fateful Dilemma: Domestic Consumption and Global Scarcities." The core message of the book can be summed up in 26 words: "It is the policy of the United States to use energy resources with the highest degree of

efficiency and to conserve energy whenever and wherever possible."

They feel that the U.S. can put its energy house in order but that it will take some tough thinking and tough acting by the Congress, the Administration, and the people. It is an interesting book and is worth reading.

ALBERT EINSTEIN ON  
THE OBLIGATIONS OF ACADEMIES

"A prime responsibility of every Academy is to encourage and defend the scientific life of the country. Despite this fact, scientists of German society, as far as I know, have become silent witnesses to the fact that a considerable part of German scientists, students and teachers have been stripped of the possibility to work and obtain for themselves the means for subsistence. I haven't the slightest desire to belong to any scientific society capable, even under outside pressure, of conducting itself in such a fashion".

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