



THE

# CHESAPEAKE CHEMIST

MARYLAND SECTION  
AMERICAN CHEMICAL SOCIETY

VOL. XXVI

SEPTEMBER, 1970

NUMBER 6



DR. PAUL H. EMMETT

**6th MARM** — DEADLINE FOR PAPERS—OCT. 31, 1970

DETAILS INSIDE

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# THE CHESAPEAKE CHEMIST

VOL. XXVI

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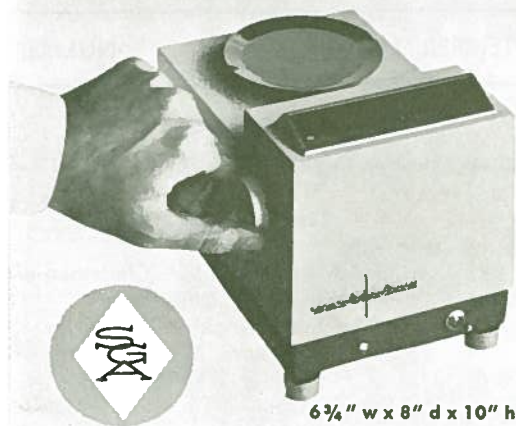
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## SEPTEMBER MEETING

### 1970 MARYLAND CHEMIST AWARD

#### DATE AND TIME:

Wednesday, September 16, 1970  
at 8:30 P. M.

#### PLACE:

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

#### SPEAKER:

Dr. Paul H. Emmett  
The Johns Hopkins University.

#### TOPIC:

"Mechanism Studies on the Syn-  
thesis of Hydrocarbons Over Iron  
Catalysts—and Reminiscences".

#### COCKTAILS AND DINNER:

Eudowood Gardens Dining Room.  
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cocktails (6:30-7:15, unlimited  
quantity) and hot buffet dinner  
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#### SOCIAL HOUR:

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



DR. PAUL H. EMMETT

Dr. Emmett is the ninth recipient of the Maryland Chemist Award which was established in 1962 to recognize and honour each year a member of the Maryland Section of the American Chemical Society for outstanding achievement in the field of chemistry. Dr. Emmett, who has been W. R. Grace Professor of Chemistry at Johns Hopkins University since 1955, recently retired from that position.

### 6th MARM

The 6th Middle Atlantic Regional Meeting will be held in Baltimore on February 3, 4, 5, 1970. Papers are now being solicited for this meeting. Contact Howard Cohen or Leon Weber at 633-6400 for information and details.

Students (and their spouses) may attend the dinner at a charge of \$3.00 each. Prior reservations are necessary.

## OCTOBER MEETING "CHEMICAL EDUCATION NIGHT"

See *Chesapeake Chemist* for details

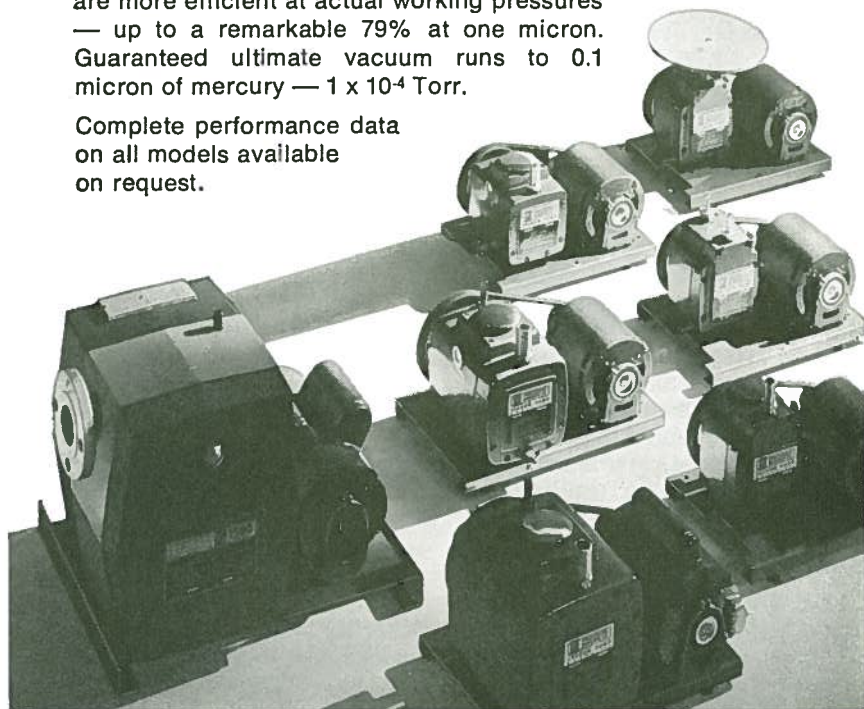
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## EXECUTIVE COMMITTEE MINUTES

Minutes of the Executive Committee Meeting of the Maryland Section of the American Chemical Society held on April 22, 1970 at Loyola College.

The meeting was called to order at 8:15 P.M. by the Chairman, Joseph Cogliano. Present were: T. C. Berenthien, W. G. Galetto, D. E. Jones, J. L. Straughn, E. J. Poziomek, F. T. Parr, T. C. Simmons, E. F. Silversmith, Y. H. Caplan, J. Leslie, A. Bednarczyk, J. Scarlett, J. Goldenson, C. E. Minnier, R. J. Kokes, J. J. Kaufman, J. I. Stevens, and H. S. Aaron.

The minutes of the previous meeting were accepted as published in the May 1970 issue of the *Chesapeake Chemist*.

Dr. Leslie announced that Dr. William G. Galetto will be the new Editor of the *Chesapeake Chemist*. Dr. Leslie stated that he will continue to attend to circulation and production matters for the publication.

Dr. Caplan submitted a 1969 Balance Sheet and Profit and Loss Statement for the *Chesapeake Chemist* (attached as an addendum to these minutes), and announced that the publication operated at a net loss of \$1046.41 for 1969. He also stated that some additional funds would be required for operating expenses during 1970. A general discussion of publication costs was held. Dr. Straughn then moved that \$500 be advanced to the *Chesapeake Chemist*, and that a committee be appointed to evaluate the situation and make some policy recommendations with respect to the future publication of the magazine.

Dr. Stevens gave a Treasurer's Report for the period January 1-April 22, 1970, which is attached as an addendum to these minutes. He pointed out that the net cash on hand includes approximately \$4000 that is earmarked for the Scholarship Fund.

Dr. Kokes announced a tentative program schedule for the monthly Section Meetings for 1970-1971. He expects to hold seven dinner meetings at Eudowood Gardens, pending negotiation of a new contract with the caterer.

Dr. Silversmith reported on the

Scholarship Program. Fourteen applications were received out of twenty nominations submitted from the eight high schools that were contacted. A statement on why they wanted to be a chemical technician plus two references were requested of each applicant. The committee selected Wilbur T. Branham and David S. Dixon as recipients of a two year scholarship. Four alternates were also selected, in the event either should decline. Mr. Dixon has already accepted the award. The funds will be disbursed as follows: The Catonsville Community College will bill the Section directly for the tuition (\$250 per student per semester), and the remainder (\$500 each) will be furnished at the rate of \$40/month over a ten month period, plus an extra \$60 and \$40 in September and January, respectively, to defray costs of books and supplies. Payments will be made as long as the students continue to remain in school.

Dr. Scarlett reported on the financial assistance programs that are available at the College. It was suggested that the twelve other finalists be apprised of the fact that such programs might be available to them at the College.

Tim Parr reported that the MARM locations for 1974 and 1977 were still open, and that the MARM Steering Committee was looking to the Maryland Section, as one of the largest sections

(Continued on Page 14)

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## 6th MARM — CALL FOR PAPERS

General papers in all Divisions are invited for the 6th Middle Atlantic Regional Meeting of the American Chemical Society to be held in the Civic Center, Baltimore, February 3-5, 1971. All papers should be submitted by October 31, 1970 to the Division Chairmen listed below. Information regarding the program may be obtained from Mr. Howard Cohen or Dr. Leon Weber at SCM Corp., 3901 Hawkins Point Road, Baltimore, Maryland 21226. General Chairman for the meeting is Dr. Donald Jones, Western Maryland College, Westminster, Maryland.

### ANALYTICAL

Dr. Henry C. Freimuth  
State of Maryland  
111 Penn Street  
Baltimore, Maryland 21201

### DOCUMENTATION

Dr. Herman Skolnik  
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Gettysburg, Pennsylvania 17325

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Wilmington, Delaware 19898

### UNDERGRADUATE RESEARCH

Dr. Carl Lockwood  
Lebanon Valley College  
Annville, Pennsylvania 17003

In addition to the general papers in each Division many symposia have been planned. These symposia include "Forensic Chemistry and Techniques", "Novel Uses of Waste Material", "High Temperature Inorganic Chemistry", "Inorganic Reactions Involved in Air Pollution", "The Market Segments of the Chemical Industry — Present and Future Prospects", "Recent Progress in the Regulation of Glycogen Metabolism", "Chemical Engineering Kinetics", "Quantum or Theoretical Chemistry", "Applications of Mass Spectrometry to some Biochemical and Medicinal

(Continued on Page 9)

## MECHANISM STUDIES ON THE SYNTHESIS OF HYDROCARBONS OVER IRON CATALYSTS

During the period 1945 to about 1965 my colleagues and I devoted a great deal of time to studying the mechanism by which iron catalysts are able to cause carbon monoxide and hydrogen to combine to form a variety of hydrocarbons. The studies include measurements on adsorption, carbide equilibria, gas-solid reaction rates and, finally, detailed mechanism studies with radioactive carbon. These latter were among the first carbon-14 tracer experiments since the carbon-14 became available only after the war in 1945.

Iron is known to react with carbon monoxide to form two carbides, Fe<sub>3</sub>C and Fe<sub>5</sub>C<sub>6</sub>. The study of the thermodynamics of the formation of these carbides dem-

onstrated that they could not be intermediates if considered as bulk phases. For example, the observed formation of ethylene during synthesis is far in excess of that which would be allowed by the reduction of the carbides. Tracer studies confirmed the conclusion that the carbides were not intermediates in the synthesis of hydrocarbons over iron.

The other mechanism that was proposed by early workers suggested the formation of oxygenated compounds as intermediates. Tracer studies using radioactive alcohols, aldehydes, ketones and olefins combined to confirm the importance of and give indications as to the nature of these intermediates.

### 6th MARM (Continued from Page 8)

Problems", "Advances in Heat-Resistant Polymers", "New Types of Polymerization Reactions", "Polymer Flammability", "Advances in Biopolymers", "Polymer Weatherability", "Inorganic Polymers" in addition to other symposia in the Chemical Documentation, Chemical Education, Technician Affiliate, Organic, and Undergraduate Research Divisions and a tutorial-type program in Spectroscopy conducted by Dr. Leopold May.

An added feature of the meeting will be a Chemical Exposition featuring laboratory instruments, equipment, supplies, and books which will run concurrently with the regional meeting. An announcement of arrangements for a banquet featuring a prominent speaker is expected shortly.

This looks like it is going to be an interesting meeting so participate by submitting you paper now.

### ..... Tear-Out Dinner Reservation Form .....

There is enclosed \$..... (\$4.75 per person)\* for cocktails and dinner at Eudowood Caterers, Eudowood Plaza, on Wednesday, September 16, 1970 for the following persons.\*\*

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### 1970-1971 PROGRAM

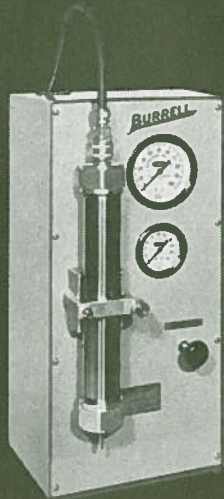
#### MARYLAND SECTION — AMERICAN CHEMICAL SOCIETY

<u>Date</u>	<u>Subject and Speaker</u>	<u>Time P.M.</u>
September 16	MARYLAND CHEMIST AWARD "Mechanism Studies on the Synthesis of Hydrocarbons over Iron Catalysts—and Reminiscences" Dr. Paul H. Emmett, The Johns Hopkins University	8:30
October 21	CHEMICAL EDUCATION NIGHT Panel Discussion: "Chemistry in High Schools" Mr. C. W. Woodfield, Miss Barbara J. Beshel, Miss Patrice Runkel, Mr. William J. Vanko, Baltimore County School System	5:30
	"Where are We in Teaching of High School Chemistry?" E. L. Haenisch, Wabash College	8:30
November 18	LADIES NIGHT "Chemists—Who Needs Them?" Betty M. Vetter, Scientific Manpower Commission	8:30
December 16	NEW ASPECTS OF CHEMISTRY "Effects of Nuclear Spin on Chemical Reactivity" Ronald G. Lawler, Brown University	5:30
	"Adamantanes" P. von Rague Schleyer, Princeton University	8:30
January	CANCELLED FOR MARM	
February 17	DRUGS AND BIOCHEMISTRY "Molecular Modification in Drug Research" Raymond M. Burgison, University of Maryland	5:30
	"Biocatalysis, a Challenge for Chemistry" Klaus Hofmann, University of Pittsburgh	8:30
March 17	INORGANIC CHEMISTRY "Mixed Valence Chemistry in the Solid State" J. H. Perlstein, The Johns Hopkins University	5:30
	"Ambidentate Ligands—The Schizophrenics of Coordination Chemistry" J. L. Burmeister, University of Delaware	8:30
April 21	NEW ASPECTS OF CHEMISTRY "Some Perspectives on Zeolite Catalysis" P. B. Venuto, Mobil Research & Development Company	5:30
	"Electrophilic Substitution on Saturated Covalent Bonds" G. A. Olah, Case Western Reserve University	8:30

May REMSEN MEMORIAL LECTURE

All meetings except in January and May will be held at Eudowood Gardens. Please consult your *Chesapeake Chemist* for details and reservation forms for each meeting.

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**PAUL H. EMMETT**

Professor Paul H. Emmett was born in Portland, Oregon on September 22, 1900. He obtained a B.S. degree in Chemical Engineering from Oregon State College and a Ph.D. in Physical Chemistry at the California Institute of Technology. After a year of teaching at Oregon State College, he joined the staff of the Fixed Nitrogen Research Laboratory, U.S. Department of Agriculture, and for eleven years was in charge of the catalytic research work on ammonia synthesis, water-gas conversion, and other processes. During the period 1937-43, he was Professor of Chemical Engineering at The Johns Hopkins University. From August, 1943 to December, 1944, he was employed by the Manhattan Project at Columbia University. In December, 1944, he joined the Mellon Institute on the Petroleum Refining Fellowship to undertake a fundamental research program on the mechanism of catalytic reactions. He remained at the Institute until July, 1955, when he was appointed the W. R. Grace Professor of Chemistry at the Johns Hopkins University. On his retirement from that chair in 1970, an award was created, entitled The Paul H. Emmett Award. This award, administered by the North American Catalysis Society, is to be awarded biannually to investigators anywhere in the world for outstanding fundamental research in the field of catalysis. This signal honor, which recognizes his outstanding contribution, was made possible by the generosity of the Davison Chemical Division of W. R. Grace and Company.

The research work of Dr. Emmett has included studies in gas-solid adsorption, heterogeneous catalysis, and the measurement of heterogeneous gas-solid equilibria and kinetics. In recent years, his catalytic research work has included extensive investigations of the use of isotopes as tracers in studying various catalysts and catalytic reactions. He has been a member of the National Research Council's Committee on Contact Catalysis, an associate editor of the *Journal of the American Chemical Society*, and has edited a seven-volume

treatise on Catalysis. In 1953, Dr. Emmett received the Pittsburgh Award from the Pittsburgh section of the American Chemical Society. He was elected to membership in the National Academy of Science in 1955.

Dr. Emmett received the Spanish Government's highest award for scientific achievement—a medal and an appointment as honorary councilor of the Consejo Superior, Spain's state-sponsored superior Council for Scientific Research. He was given the award in Madrid at a 25-member symposium on catalysis in October, 1964. Earlier on the same European tour, he was awarded the Docteur Honoris Causa degree by the University of Lyon in Lyon, France. Both awards were in recognition of his work on the fundamentals of catalytic reactions. More recently, with former co-workers Brunauer and Teller, he was awarded an honorary degree from Clarkson College of Technology for development of the classic, world-famous BET Theory.

He is a member of the Editorial Board of *Separation Science*, and holds an Honorary membership in Phi Lambda Upsilon. Dr. Emmett was elected Chairman of the Board of the National Catalytic Institute in September, 1965. The same year the Catalysis Club of Metropolitan New York presented him with a life membership, and organized in his honor a catalytic symposium.

**COVER**

**DR. PAUL H. EMMETT**

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## EXECUTIVE COMMITTEE MINUTES

(Continued from Page 7)

in the region, to sponsor one of these meetings. After some discussion, Mr. Parr moved that the Maryland Section express an interest in holding the 1977 MARM in Baltimore. The motion was seconded by Dr. Jones. The motion was passed.

Dr. Minnier reported on the student Science Fair to be held at the Civic Center in May. The ACS (National) has provided funds for two \$100 awards to be given to the best chemistry projects, to be selected by the local ACS panel of judges. He reported that he had wanted to obtain the services of some student observers on the panel, to provide peer evaluation, and to assist with the tallying. However, Science Service, organizers of the Fair, would not permit any students on the floor during the judging, even as non-voting observers. After some discussion, Dr. Minnier moved that the Executive Committee of the Maryland Section register a protest to Science Service in objection to the fact that the ACS was not allowed to constitute their judges panel according to their own discretion. The motion was seconded and passed.

Dr. Joyce Kaufman gave a Councilor's Report from the National Meeting at Houston, Texas. She reported that a motion to give chemical technicians full membership privileges was defeated. She also reported on discussions on chemists in the labor market, including a possible portable pension plan for the industry. She recommended that for future meetings, the National ACS executive committee agenda be discussed by the local

executive committee and/or the councilor representatives in order to formulate a consensus of views for voting purposes.

Dr. Jones reported on plans for the Sixth MARM program. He stated that any strong interest in having any given symposium topic be made known to him at this time. The deadline for submission of papers for the meeting will be October 31, 1970.

Mr. Bednarczyk reported that a new projection screen would be needed for future lecture meetings, because the old screen had been on loan to us from a local company, and had been returned to them. A motion was made that the Section purchase a new screen of the appropriate size for use at the monthly meetings. The motion was seconded and passed.

The meeting was adjourned at 11:30 P. M.

Respectfully submitted,  
HERBERT S. AARON,  
Secretary

These minutes are uncorrected, and are published for informational purposes only pending their acceptance at the next meeting of the Executive Committee.

### ACS 50-YEAR MEMBERS HONORED

This year 174 members of ACS are celebrating their 50th year of belonging to the Society. Three such members are from our local section:

Dr. F. M. Hildebrandt  
Chestertown, Md.  
Mr. Cecil O. Riggs  
Baltimore, Md.  
Dr. Thomas H. Swan  
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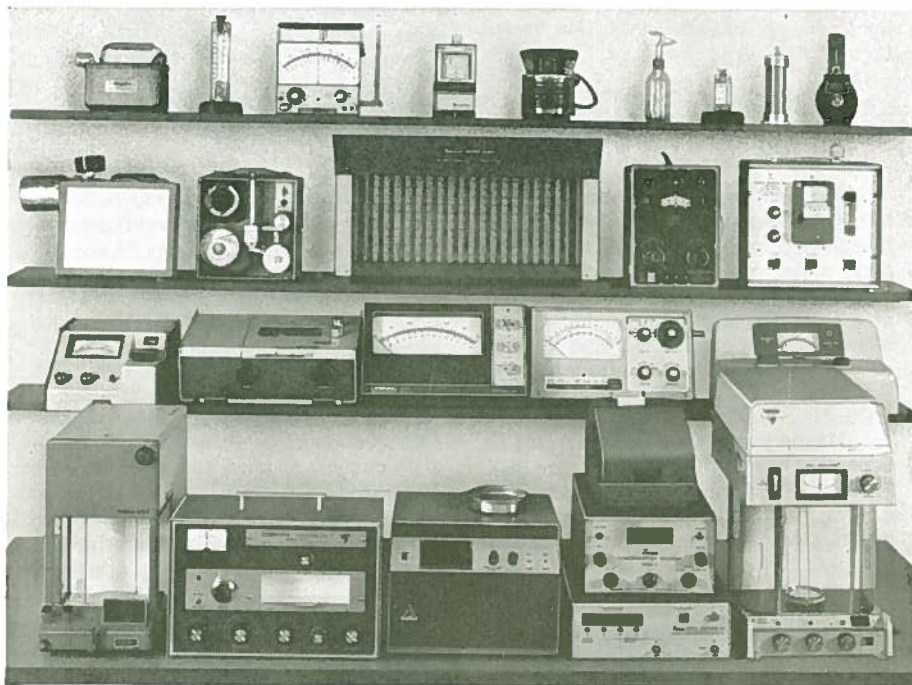


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