



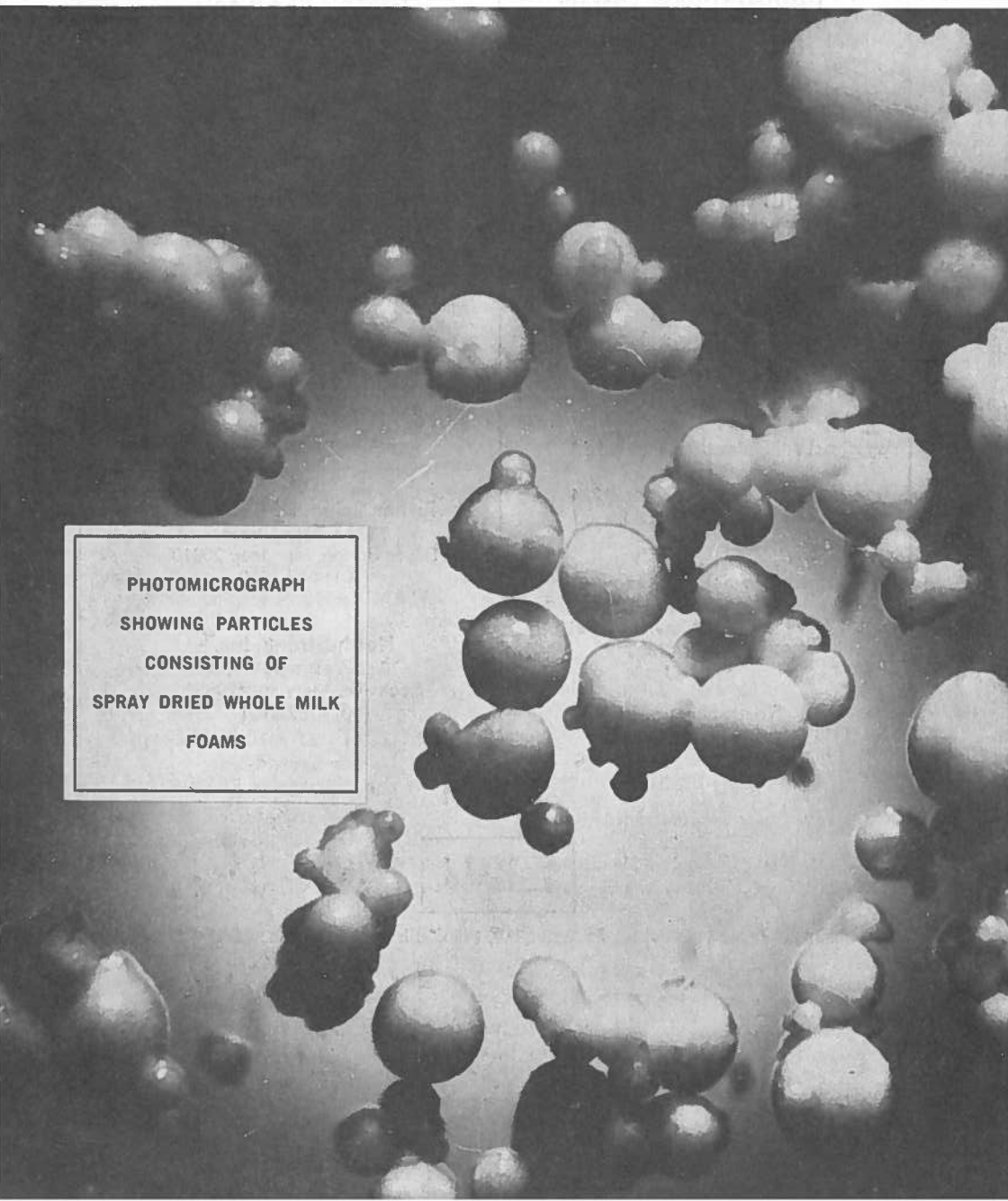
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AMERICAN CHEMICAL SOCIETY

THE CHESAPEAKE CHEMIST

VOL. XXIII

MARCH, 1967

NUMBER 3



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THE CHESAPEAKE CHEMIST

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NUMBER 3

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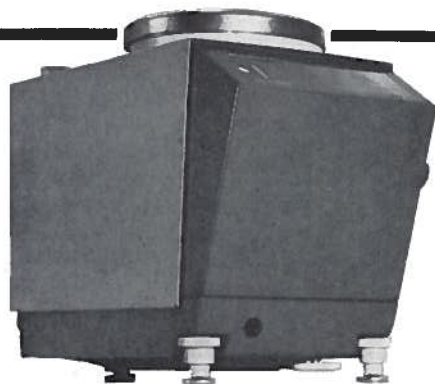
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The Chesapeake Chemist is published month September through May by the Maryland Section of the American Chemical Society. Address editorial comments to Lt. Col. Kenneth S. White, University of Maryland, 636 W. Lombard St., Baltimore, Md. 21201. Address advertising inquiries and plates to Lionel Katzoff, Sinai Hospital of Baltimore, Inc., Belvedere Ave. at Greenspring Ave., Baltimore, Maryland 21215.

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MARCH MEETING



DR. MAXINE SINGER



DR. MICHAEL PALANSCH

DATE:

Wednesday, March 15, 1967

PLACE:

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

SPEAKERS AND TOPICS:

5:30 P.M. Dr. Maxine Singer, National Institutes of Health. "The Mechanism of Action of a Ribonuclease of *Escherichia coli* and the Degradation of Messenger RNA." (see page 9).

8:30 P.M. Dr. Michael Palansch, Dairy Products Laboratory USDA. "Application of Basic Research Principles to the Development of Improved Dehydrated Milk Products." (see page 9).

Biography of Dr. Singer and that of Dr. Palansch are on page 9.

COCKTAILS AND DINNER:

Eudowood Gardens Dining Room.
Price is \$3.50 per person for cocktails (6:30 - 7:15 P.M.) and dinner (7:15 P.M.). Free parking. Reservations must be received no later than March 14. Use reservation form on page We encourage you to bring your wife and friends to both the dinner and the meeting.

SOCIAL HOUR:

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

SPECIAL NOTICE

Students (and their spouses) may attend the dinner at a charge of \$2.00 each. Prior reservations are necessary. Use reservation on page 18.

CHEMICAL SAFETY NEWSLETTER

THE SYSTEMS APPROACH TO LOSS PREVENTION

Since 1960, the frequency of industrial accidents causing injury to workers or property damage has dropped to and remained at a plateau, with relatively minor fluctuations, in industry as a whole, in most industry groups (such as aircraft manufacturing, chemical, petroleum, steel) and in many individual companies.

Those organizations most successful in preventing losses have applied sound management principles, eliminated or minimized environmental hazards, and have educated workers in the principles of both occupational and off-the-job safety. They appear to have left no remaining major hazard parameters, the elimination of which would automatically result in a corresponding major reduction in accident rates.

It might thus be assumed that the principal task for the future in the prevention of industrial losses would be to consolidate the gains of the past 50 years by holding the line in the more sophisticated organizations and by bringing the more naive or reluctant into the fold. We might, in perhaps 5 or 25 years, expect to reach some irreducible accident rate which we must then simply accept as one of the inevitable risks of life.

But no such assumption need be made. Two parallel developments have now converged during the past few years to give a new dimension, not yet fully recognized, to the loss prevention effort. Both stem from the concept of the organization as a system, and an appreciation of the dynamic interactions among the men, machines, and environment comprising the system.

One of these developments, the "total safety" concept of accident prevention, has grown out of traditional industrial safety programs, but has expanded the scope of its concern beyond the injury-generating accident to the property damage accident, and still further to any potentially serious near-miss incident.

No possible source of loss escapes attention. Under this total safety concept, the accident prevention program, fully integrated into all operations, is a basic responsibility of management, supported by whatever expert technical advice and guidance may be required. The objective is to take every reasonable precaution to prevent all accidents or losses stemming from any organizational activity which might result in injury, work interruption or damage to property, equipment or materials.

The second development, called "system safety engineering", has sprung out of military needs for safe and reliable weapons systems. By identifying potential system, subsystem and component failures or malfunctions in advance, estimating the probabilities of their occurrence and the severity of the consequences, attention can be focused on *preventing* or minimizing the most serious accidents.

Although currently strongly hardware-oriented, the systems concept and its methods have made available a powerful analytical tool capable of:

- Identifying potential malfunctions during the design phase and continuing through the entire life cycle of a system;
- Introducing and evaluating the effectiveness of preventive, corrective or protective measures;
- System simplification;
- Quantifying failure probabilities as the basis for management decision in minimizing hazards consistent with the functional objectives of the system and within the assigned constraints of cost, reliability and effectiveness.

The system engineering approach has produced such astonishing results in a short time within the aerospace industry that it has now been made a require-

(Continued on Page 13)

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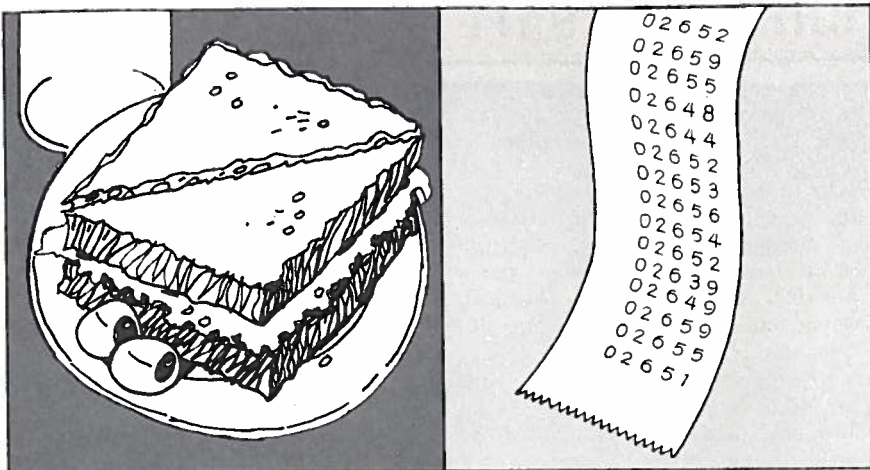
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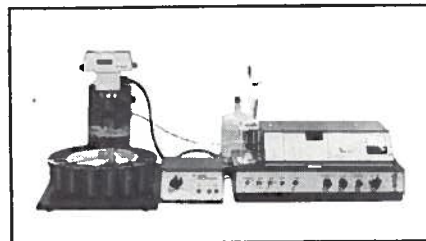
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DR. MICHAEL PALANSCH

Michael J. Palansch is a native Minnesotan, educated in the public and private schools of that state. He received undergraduate degrees in Chemistry and Philosophy from Saint John's University and earned his Ph.D. degree in the Biochemistry Department of the University of Minnesota. After holding a post-doctoral fellowship at that University he joined the Agricultural Research Service of the United States Department of Agriculture where he concerned himself with the problems of producing stable concentrated milk products. At present he is Head, Dry Milk Products Investigation, Eastern Utilization Research and Development Division, ARS. He was given an award for Outstanding Performance in 1959. In 1963 the American Dairy Science Association presented Dr. Palansch with the Borden Award for research in dairy manufacturing. He is a member of Alpha Chi Sigma, Sigma Chi, American Dairy Science Association, and the American Chemical Society. He now serves as a member of the Executive Committee of the Division of Agricultural and Food Chemistry, American Chemical Society.

APPLICATION OF BASIC RESEARCH PRINCIPLES TO THE DEVELOPMENT OF IMPROVED DEHYDRATED MILK PRODUCTS

The dehydration of milk to a form easily reconstitutable to a beverage type product involves the solution of a number of intricate problems in surface and colloid chemistry. A comparative study of the physical and chemical properties of milk powders dried by use of a variety of techniques has led to the recent development of a whole milk powder which can easily be dispersed into water to provide the consumer with a drink which he finds difficult or impossible to distinguish from fresh whole milk. Some of the problems encountered in the organoleptic evaluation of this product and its packaging in oxygen-free atmospheres will be discussed.

DR. MAXINE SINGER

Dr. Maxine Frank Singer received the A.B. at Swarthmore College in 1952 and was awarded the Ph.D. at Yale in 1957. She is married to Daniel M. Singer, an attorney, and they have four children.

Dr. Singer is a research biochemist in the National Institute of Arthritis and Metabolic Diseases, National Institutes of Health where she has been working since 1958. Her chief research interests have been in the chemistry and enzymology of ribonucleic acid.

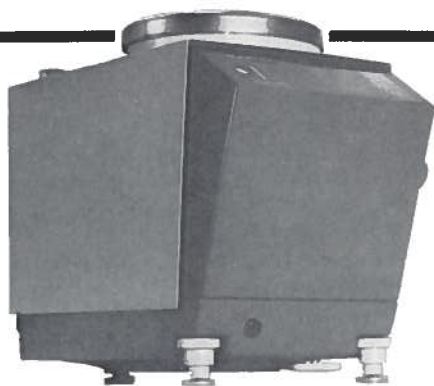
THE MECHANISM OF ACTION OF A RIBONUCLEASE OF ESCHERICHIA COLI AND THE DEGRADATION OF MESSENGER RNA

Two ribonucleases have been detected in *Escherichia coli* and one of them (RNase II) is considered to be responsible for the degradation of messenger RNA. The properties of highly purified preparations of RNase II have been studied in detail and are consistent with such an hypothesis. The enzyme requires both K⁺ and Mg⁺⁺. In order that an RNA chain be degraded readily by RNase II it must have little or no secondary structure. RNase II degrades such polyribonucleotide chains exonucleolytically, removing one 5'-nucleoside monophosphate at a time from that end of the chain which bears a free C-3' hydroxyl group. Once started on a given chain the enzyme tends to degrade it completely before starting on another polymer molecule. If the polyribonucleotide is in a ternary complex with ribosomes and transfer RNA (the polyribonucleotide thus acting as messenger RNA), it is protected from degradation by RNase II. These results will be discussed in the context of current concepts of the mechanism of protein synthesis.

COPY DEADLINE

Copy for the *Chesapeake Chemist* should be forwarded to the Editor not later than the tenth of the month preceding publication.

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1968 MIDDLE ATLANTIC STATES REGIONAL MEETING

The third Middle Atlantic Regional Meeting of the American Chemical Society will be held February 1 and 2, 1968, at the Marriott Motor Hotel, Philadelphia. Dr. Lyle Phifer of American Viscose Division, FMC Corporation, is General Chairman for this meeting which will include from seven to nine scientific sessions plus symposiums.

Co-sponsoring this regional meeting are these local ACS sections: Delaware, Lehigh Valley, Maryland, Monmouth County (N. J.), New York, North Jersey, Philadelphia, Princeton, Southeastern Pennsylvania, South Jersey, Trenton, and Washington, D. C.

Assistant General Chairman is Gerald H. Foeman of the Institute for Scientific Information. Chairmen of the various committees include: Abstracts, Dr. Walter Fiddler of the Eastern Regional Research Laboratory; Dinner and Registration, Miss Mary Kenly of Rohm and Haas Company; Physical Arrangements, Andrew Polk of Smith Kline and French, Inc. Laboratories; Publicity, William E. Coggins of FMC Corp., American Viscose Division; Scientific Program, General Chairman, Dr. Harry Reiff of Smith Kline and French, Inc. Laboratories; Analytical, co-chairmen: Dr. William B. Swann of FMC Corp., American Viscose Division and Dr. John Mitchell, Jr. of E. I. Du Pont de Nemours and Co.; Chemical Education, Dr. Frank X. Sutman of the Education Faculty of Temple University; Industrial and Engineering, Dr. William J. Stenger of E. I. Du Pont de Nemours and Co.; Inorganic, Dr. George J. Beichl, Head, Chemistry Dept. of Saint Joseph's College; Medicinal and Biochemistry, Dr. Edward L. Engelhardt of the Merck Sharp and Dohme Div., Merck and Co., Inc.; Organic, Dr. William Sheppard of E. I. Du Pont de Nemours and Co.; Petroleum, Dr. Lyle Hamilton of Socony Mobil Oil Co.; Physical, Dr. Bernard J. Downey, Head, Chemistry Dept., Villanova University; and Polymer, John A. Price of FMC Corp., American Viscose Division.

Further information may be obtained from Dr. Lyle Phifer, American Vis-

cose Division, FMC Corporation, Marcus Hook, Pa. 19061.

MARYLAND SECTION 1967 DUES

The statement for the 1967 Section dues was mailed to members at the end of February. It is requested that you send the remittance along with the statement to the Section treasurer, Thomas Simmons, RD 2, Bynum Hills, Bel Air, Md. 21014 as soon as possible. Your local section dues help to support

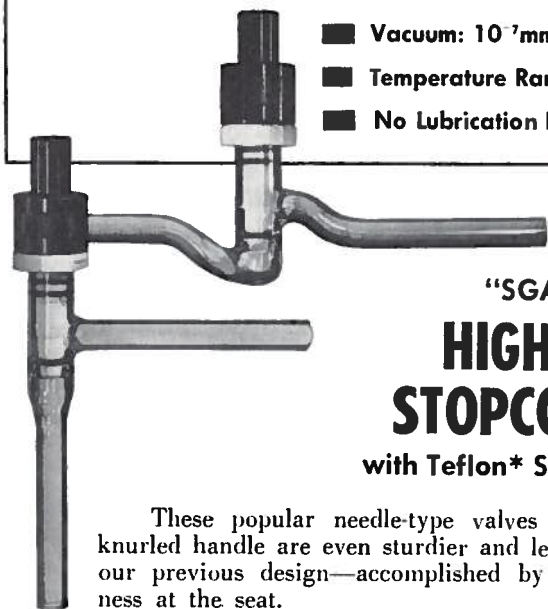
- The monthly meetings;
- The Remsen Memorial Lecture;
- The Maryland Section Award;
- The Maryland Section-ACS Chemistry Awards at the Baltimore Science Fair;
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Most of all, the payment of these dues tells us that you approve of and wish to see extended, the work of your Section in fostering this aim of the American Chemical Society—to be of service to its own members and to the public at large by promoting scientific interests and inquiry, thereby fostering public welfare and education.

A REMINDER

Members are reminded of the ACS meeting-in-miniature sponsored by the Maryland Section of the American Chemical Society and the Chemical Society of Washington. The meeting will be held at Goucher College at Towson on May 5, 1967. Details were announced in the February issue of the *Chesapeake Chemist*, and further information may be obtained from Howard J. Cohen of the Glidden Company, 335-8400, extension 360. Please keep this date free so that you can support this meeting by attending. The program will be announced in *Chemical and Engineering News*. This will probably be the last meeting-in-miniature to be held since in future years the Maryland and Washington Sections will be participating in the Middle Atlantic States Regional Meeting.

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(Continued on Page 18)

CHEMICAL SAFETY NEWSLETTER

(Continued from Page 7)

ment by all branches of the Department of Defense. Many manufacturers are investigating its potential in the design of commercial products to ensure safe use in the hands of the consumer. The marriage of the total safety concept to the system safety methodology, just beginning to be explored, offers even more exciting vistas in the accelerating drive to prevent industrial losses.

It is evident that the same philosophy, principles and techniques can be effectively used elsewhere in our society to prevent tens of thousands of deaths, millions of injuries and billions of wasted dollars. We can, indeed, bend the tremendous technical resources at our command to the protection of the child in school, the driver on the highway, the consumer of food and drugs, the very air we breathe.

Ernest Levens, *Director of Safety*,
Douglas Aircraft Co., Inc.,
Santa Monica, California

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ACS SHORT COURSE IN THE BALTIMORE AREA

The ACS Short Course, Spectrometric Identification of Organic Compounds, will be held at Towson State Teachers College, Towson, Maryland, (located one mile north of Baltimore) on May 12-14, 1967. The course will be presented by Drs. Robert M. Silverstein and G. Clayton Bassler of the Stanford Research Institute. The Maryland Section, ACS is the host for the course.

The two and one-half day course will consist of lectures on the four topics UV, IR, NMR, and Mass Spectra the first day and morning of the second day. The afternoon of the second day and morning of the third day will be devoted to working sessions for problem solving discussions.

Drs. R. M. Silverstein and G. C. Bassler have provided the following description of the course:

This course is slanted entirely toward the organic chemist who is concerned with identification of organic compounds either in a synthesis sequence, or in the course of isolation from natural products or reaction mixtures.

Identification is accomplished by utilizing the combined (complementary) information obtained from mass spectrometry, infrared spectrometry, NMR spectrometry, and ultra violet spectrometry.

Each of these areas will be covered by lectures at an introductory level. However, the pace will be quite rapid. After the lectures, the class will be divided into two working sessions for problem solving discussions. The emphasis will be on the interplay among the four complementary spectra.

The instructors are not spectroscopists; they are organic chemists. The only prerequisite for students is a sound working knowledge of organic chemistry. During the past four years of teaching this material, our audience has comprised:

- (1) Chemists in industry who find themselves supervising bench chemists who interpret spectra with greater facility than their supervisor. We deliberately raise the specter of obsolescence.
- (2) Bench chemists in industry who wish to interpret spectra with greater facility than their supervisors.
- (3) Teachers at teaching-oriented colleges and universities who wish to modernize their courses.
- (4) Graduate students (or seniors with special permission) whose undergraduate courses had not been kept up to date.

The level of the proposed offering can be judged from the required textbook. Additional material will be presented, but the level of sophistication required in each spectrometric area to solve the problems is modest. We emphasize that this is not an advanced course for spectrometrists. No instruments will be used. Instrumentation will be discussed so far as it contributes to interpretation of spectra.

The required textbook is "Spectrometric Identification of Organic Compounds", 2nd edition, by R. M. Silverstein and G. C. Bassler, Wiley, New York, 1967.

The registration fee is \$42.50. The fee with textbook included is \$52. There is no deadline — registrations will be accepted until the course capacity is reached.

Those who require employer authorization should register in the course without payment. If they do not receive authorization to attend they must cancel their registration before the cancellation deadline, April 28, or be personally responsible for the payment of the fee.

Cancellations will not be accepted or refunds made after April 28. Checks or purchase orders should be made payable to the American Chemical Society.

----- CUT HERE -----

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American Chemical Society
1155—16th Street, N.W.
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.....Please send additional information

Please enroll me in the *Spectrometric Identification of Organic Compounds* ACS Short Course, May 12-14, 1967.

.....Registration (\$42.50)

.....Registration + Text (\$52)

Payment

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.....send invoice (please give complete billing instructions)

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NATIONAL POISON PREVENTION WEEK HIGHLIGHTS SPECIFIC ANTIDOTE FOR PESTICIDE POISONING

A tested and specific antidote for pesticide poisoning — an increasing danger in the United States — is now available on prescription according to Ayerst Laboratories, of New York. The announcement was made in connection with the annually held National Poison Prevention Week, an activity of the United States Public Health Service.

This antidote, called PROTOPAM® CHLORIDE (pralidoxime chloride), has been lifesaving when used with atropine and other medical measures. It is also known as 2-PAM. PROTOPAM CHLORIDE is useful for treating the harmful,

and sometimes lethal, effects of parathion, malathion, and other pesticides and chemicals of the organophosphate class. Such pesticides are widely used in dusts or sprays for the farmer and occasionally for the home gardener. Serious exposure may occur through carelessness, faulty equipment, or an abrupt change in weather conditions. Pesticides rank fifth among harmful substances most frequently ingested by young children. In 1965, the National Clearinghouse for Poison Control Centers received 3,856 reports of children under 5 who had ingested pesticides by accident. The total number of cases is believed to be far greater than those reported.

MARYLAND SECTION NEWS



ACADEMIC

MORGAN STATE COLLEGE

Dr. Harold Delaney of the Chemistry Department of Morgan State College will assume the position of Dean of the College in July 1967. Dr. Delaney who has been associated with Morgan State College since 1948 received the B.S. (1941), M.S. (1943), Ph.D. (1958) degrees from Howard University in Washington, D. C. He was a chemist at the University of Chicago working on the Manhattan Project from 1943 to 1945, after which he was assistant professor at the Agricultural and Technical College in Greensboro, N. C. until 1948. He then joined the faculty of Morgan State College and was promoted to associate professor in 1959. Dr. Delaney has been active in the affairs of the Maryland Section.

THE JOHNS HOPKINS UNIVERSITY

Dr. A. H. Corwin attended a meeting of the Advisory Panel to the National Bureau of Standards, Institute for Basic Standards, Metrology Division, Gaithersburg, Maryland on January 16 and 17. Dr. Brown L. Murr spoke on February 8 at the Brookhaven National Laboratory on "Carbonium Ion Asymmetry Due to Restricted Rotation". Dr. Robert G. Parr was the du Pont Lecturer at the University of Rochester on February 16 to 18. He lectured on the topics "Theory of Barriers to Internal Rotation about Single Bonds" and "The Potential Energy Function for Diatomic Molecules". Dr. Parr was also a Distinguished Visiting Professor in the Department of Chemistry at the State University of New York at Buffalo from February 19 to February 25.

Dr. Dwaine O. Cowan attended a Symposium "Photochemistry: Recent Developments and Applications" on February 17 and 18 at Houston, Texas. Dr. Cowan spoke on "Some Relationships and Generalizations Useful in Industrial Photochemistry" at the Symposium and was also Chairman and Discussion Leader at one of the sessions.



INDUSTRIAL

W. R. GRACE & CO.

The appointment of Mr. Herbert H. Graham as Assistant Director of Purchases for the Davison Chemical Division of W. R. Grace & Co. was announced by Mr. C. V. Martin, Jr., Director of Purchases. Mr. Graham will coordinate the various purchasing and traffic management activities of the Purchasing Department. He had previously been a Purchasing Agent at Davison's Curtis Bay facility, and will now be located at the Division's headquarters at 101 North Charles Street.

Mr. Graham is a graduate of the University of Florida, where he earned a BS degree in Chemical Engineering, and took graduate studies in Water Chemistry. He joined Davison in 1950, and has served in a number of capacities since that time. Mr. Graham is a member of the Baltimore Chemical Association, Inc., and the Purchasing Agents Association of Baltimore.

Dr. William P. Hettinger, Vice-President of the Davison Chemical Division of W. R. Grace & Co., announced the appointment of John Juracek, Jr. as Manager of New Product Development. Previously he had been a Market Analyst for Davison.

Mr. Juracek will be responsible for coordinating work on new products of interest to Davison, developed by Grace's corporate Research Division at Clarksville, Maryland as well as new product lines resulting from Davison's research.

Prior to joining Grace in 1964, Mr. Juracek was a long-range planning analyst for the Nuclear Division of the Martin-Marietta Corporation, and before that he had held technical positions with the Applied Physics Laboratory of The Johns Hopkins University and with Dow Chemical Company.

Mr. Juracek is a graduate of Michigan State University, where he earned a BA degree in Chemistry, and George Washington University, where he earned a MBA degree in Marketing.

DU PONT

Robert S. Alexander, a chemist of the du Pont Baltimore pigments plant retired February 28, 1967 after thirty seven years with the company. Prior to his du Pont employment, Mr. Alexander had been employed in the chemical laboratory of the Schmidt Baking Company for ten years.

After graduating from the Baltimore Polytechnic Institute in 1919, Mr. Alexander earned degrees of Ph.Gr. in pharmacy and B.S. in chemistry from the Milton University of Baltimore. His work at du Pont consisted of the exposure and testing of paints pigmented with titanium dioxide. Mr. Alexander has been

FINAL PROGRAM FOR ACHEMA AVAILABLE

The final program for the ACHEMA, the 15th Chemical Engineering Congress and Exhibition, to be held in Frankfurt am Main, Germany, June 21 to 29, 1967, has been released. It gives a preview of the giant exposition which will occupy over a million and a quarter square feet of exhibit space in the Fair Grounds buildings of Frankfurt, plus over a hundred thousand square feet of open air machinery exhibits. Schedules are given for various technical meetings, including titles and authors of papers, and including the 1967 ACHEMA meeting lectures, over 225, organized in 14 groups,

the du Pont correspondent for the Chesapeake Chemist for a number of years.



GOVERNMENT

FORT DETRICK

The Fort Detrick Branch of the Research Society of America presented a "Seminar on Biophysical Technology" on January 25 in the Governor Thomas Johnson High School Auditorium. Dr. Charles K. Huston, Physical Defense Division, discussed the theory and practice of gas chromatography as applied to biologically derived materials, and Dr. Robert E. Boyle, also of the Physical Defense Division, discussed the technology and application of neutron activation analysis as a method of elemental analysis of materials. This was the third in a series of scientific and engineering symposia presented for Frederick area students, teachers, and the general public.

Dr. Elizabeth F. Neufeld of the National Institute of Arthritis and Metabolic Diseases spoke on "Glycosylation of Proteins" at the January meeting of the Biochemistry Study Group.

such as Large Scale Reactions, Mass Transfer, Effluent Gases, Low Temperature Technology, Rapid Analysis, Chromatographic Methods, Process Control, Corrosion, Plastics, etc.

Final registration forms are included in the program. These should be returned by April 1, 1967, to insure receipt of the ACHEMA yearbook (a three volume directory of over 1,400 pages), hotel accommodations, tickets for special events, etc.

The Final Program is a 40-page booklet, printed in full color. It is available free of charge, on request to the National Chemical Exposition, 86 East Randolph Street, Chicago, Illinois 60601.

**CHEMICAL SOCIETY OF
WASHINGTON**

Social hour (courtesy of J. T. Baker Chemical Company) at 6:30 P.M., followed by dinner at 7:30 P.M. (price \$4.00), at the Knights of Columbus Activities Hall, 5115 Little Falls Road, Arlington, Virginia. (At top of hill on Little Falls Road 0.3 miles southwest of Old Dominion Drive (Va. 309).) Tickets may be purchased from members of the Dinner Arrangements Committee or reservations for tickets may be made by calling Guido Cammisa at (703)-549-1622 before noon, Tuesday, March 7.

Hillebrand Award Dinner

Award of 1966 Prize to Arthur A. Westenberg and Robert M. Fristrom, Thursday, March 9, 1967.

SPEAKERS: ARTHUR A. WESTENBERG and ROBERT M. FRISTROM
Applied Physics Laboratory, The Johns Hopkins University.

SUBJECT: STRUCTURE and CHEMISTRY of FLAMES

PLACE: KNIGHTS of COLUMBUS ACTIVITIES HALL
5115 Little Falls Road,
Arlington, Virginia

Tear-Out Dinner Reservation Form

There is enclosed \$ _____ (\$3.50 per person)* for cocktails and dinner at Eudowood Caterers, Eudowood Plaza, on Wednesday, March 15, 1967 for the following persons.**

Name (Please Print or Typewrite.) Affiliation

*Please make checks payable to Maryland Section, ACS and mail together with reservation form to Mr. Allen Bednarczyk, McCormick and Co., Inc., 204 Wight Ave., Cockeysville, Md. 21030, or phone 666-3155, 666-3156.

**Return by March 14.

NEW MEMBERS

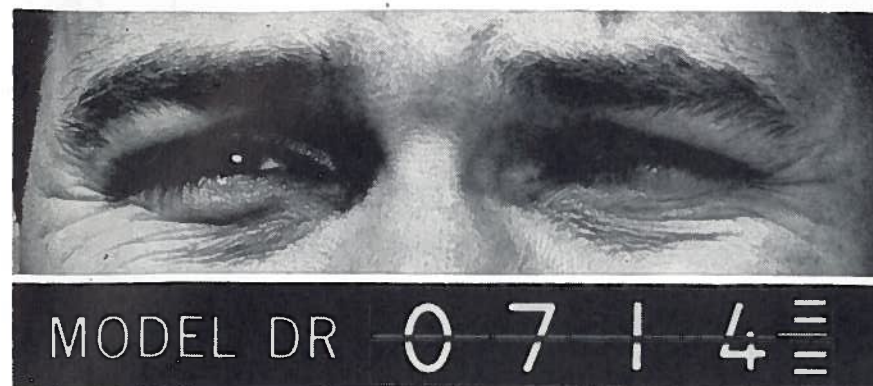
(Continued from Page 13)

- Krikorian, Samuel E., 100 McKendree Ave., Annapolis, Md. 21401
- Morse, Jerome G., 106 Allegheny Ave., Towson, Md. 21204
- Nappier, Thomas Elton, Jr., Bldg. 1430, Fort Detrick, Frederick, Md. 21701
- Scharpf, William George, 128 Milburn Circle, Pasadena, Md. 21122
- Schwindt, Capt. P.C., Jr., USAEHA, Edgewood Arsenal, Md. 21010
- Sparrow, Gene R., POB 142, Abington, Md. 21009
- Tamarelli, Alan Wayne, Box 74, Edgewood Arsenal, Md. 21010
- Ormer, David Van, USA Med. Unit, Fort Detrick, Md. 21701
- Young, Freeman M., Mail No. 3033, Martin Co., Baltimore, Md. 21203

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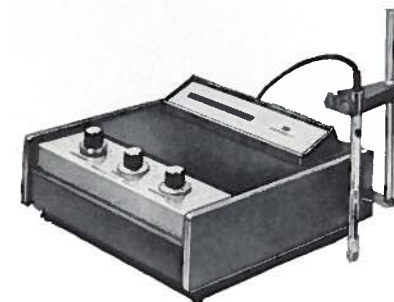
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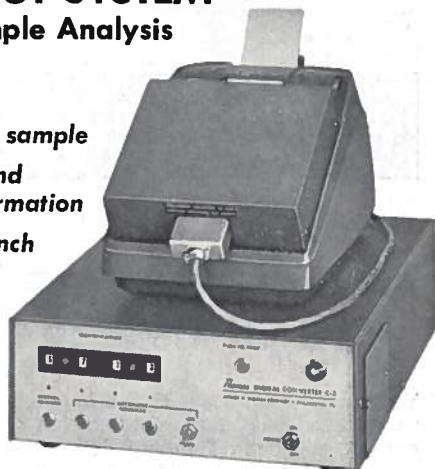
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