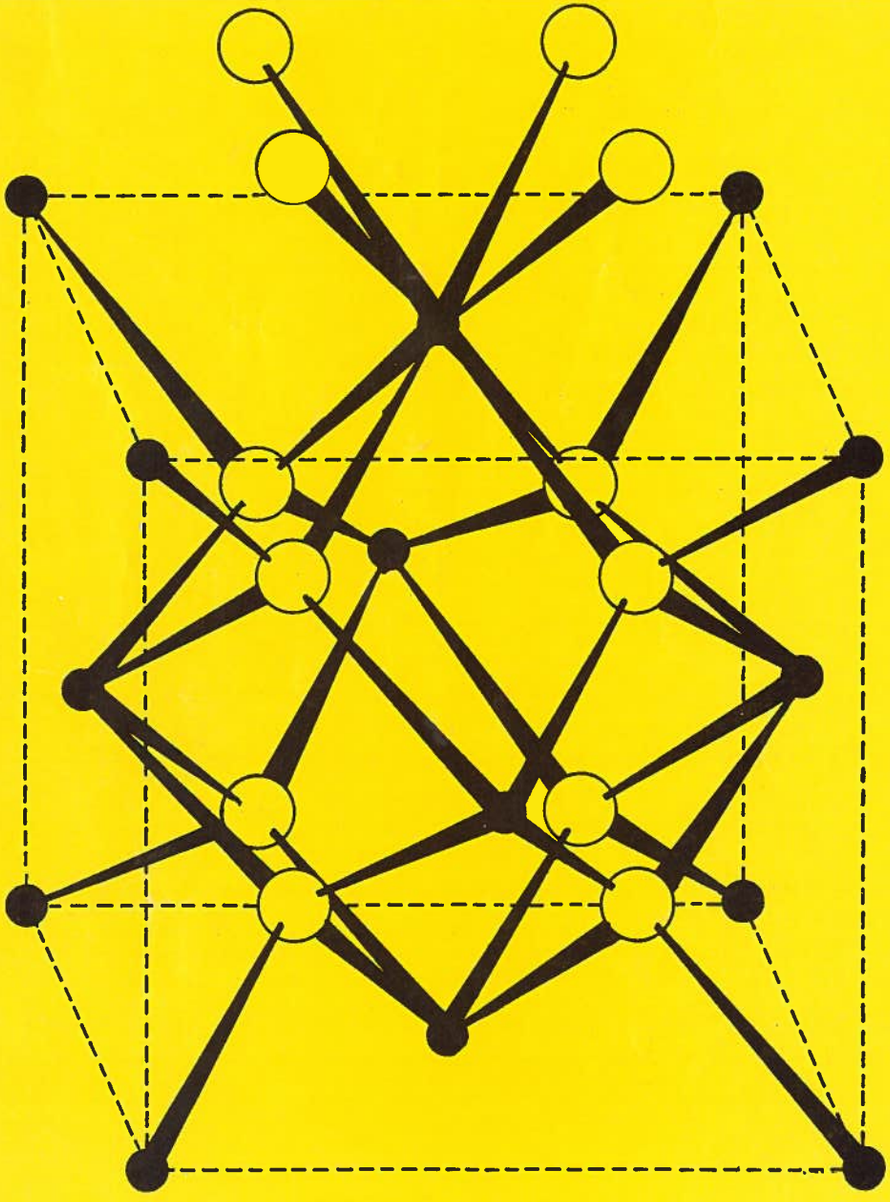
MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

THE CHESAPEAKE CHEMIST

VOL. XXI SEPTEMBER, 1965 NUMBER 6



MOLECULAR ARCHITECTURE

THE CHESAPEAKE CHEMIST

VOL. XXI SEPTEMBER, 1965 NUMBER 6

The Chesapeake Chemist is published monthly 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 J. M. Maselli, W. R. Grace & Co., Washington Research Center, Clarksville, Maryland 21029.

SEPTEMBER MEETING

DATE AND TIME:

Wednesday, September 22, 1965

At 8:30 P.M.

Chemical Education Night

PLACE:

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

SPEAKER:

Dr. L. Carroll King
Professor of Chemistry
Northwestern University

SUBJECT:

"Molecular Architecture"
(See page 10)

COCKTAILS AND DINNER:

Eudowood Gardens Dinning Room

Price—$2.50 per person for cocktails (6:30 - 7:15) and hot buffet dinner (7:15). Free parking. Reservations must be received no later than Sep. must be received no later than September 17. Use reservation form on page 10.

We encourage you to bring your wife and friends to both the dinner and meeting.

SOCIAL HOUR:

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

DR. L. CARROLL KING

Dr. King was born in Marysvale, Utah on September 9, 1914. He received his B.S. from Utah State University in 1936, and his Ph.D. from Michigan State University in 1942. Since that time, he has been on the staff of Northwestern University, where he has been professor since 1955. He is the author of fifty technical papers on various aspects of organic chemistry, including terpenes, steroids and reaction mechanisms, and is a frequent contributor to the Journal of Chemical Education on various aspects of chemical education, new lecture demonstrations and experiments.

Dr. King is vice-chairman of the Advisory Council on College Chemistry (NSF), and was chairman of the ACS Division of Chemical Education in 1961-62. He is a member of the Chicago Section of the ACS, in which he has been Director, Alternate Councilor and Chair-

(*Continued on page* 8)

Titralyzer automatic titrator operates unattended. All a technician has to do is put new samples in turntable, keep reservoir filled with titrant.

*GALBRAITH LABORATORIES SAVES 1 TO 2 DAYS A WEEK TITRATING WITH A FISHER TITRALYZER**

Titrating about 150 chlorides a week was once a full-time job for a chemist at Galbraith Laboratories of Knoxville, Tennessee. Galbraith, an independent laboratory that does quantitative organic microanalyses, serves such firms as Monsanto, Union Carbide, Armour Pharmaceutical, as well as universities and research foundations from coast to coast. Now, using a Fisher Titralyzer automatic titrator, a technician handles this work load in 3 or 4 days—a tremendous time saving when you consider that Galbraith Laboratories runs 60,000 microanalyses a year. With the Titralyzer, precision is better than before, and the chemist is freed for other work. Once the Titralyzer controls are set, it titrates up to 16 successive samples and automatically prints out the results to the nearest 0.01 ml. Price: $2750. **More details** about the time-saving Titralyzer in free Bulletin FS-245. Just call or write today for your copy.

*Fisher Scientific Company Trademark

S-463

EXECUTIVE COMMITTEE MINUTES

The meeting of the Executive Committee of the Maryland Section of the American Chemical Society was called to order on Monday, May 3, at 8:05 P.M. in the library of the Biochemical Department of the University of Maryland School of Medicine. The following members were present: Rosenblatt, Braude, Kaufman, Goldheim, Miller, Zaczek, Emery, Berkowitz, McGuire, Cogliano, Kramer, Parr and Steinberg.

The minutes of the February 22, 1965 meeting were approved as read.

Chairman Steinberg announced that Dr. Doorenbos has left the area. It was suggested that Dr. Forrest Hurley be his replacement as alternate councilor. A vote was taken and all agreed.

Dr. Freimuth sent word that Jack Hanker of Sinai has accepted the job of business manager for the Chesapeake Chemist to replace John Kerchner.

Dr. Stamberger has been asked to survey the area companies concerning retirement plans. Data have been sent to Dr. Stamberger by Dr. Goldheim and Dr. Cogliano. Dr. Steinberg will contact Association of Commerce regarding list of companies who employ chemists and have these data sent to Dr. Stamberger.

Dr. Metcalf has two nominations for the Maryland Section Award. Dr. Rosenblatt suggested that the committee membership be expanded and that the committee be more active and very discriminating concerning selection of the award winner because of the high quality of the award.

On June 2 and 3, Dr. Steinberg will attend the dedication ceremony of the Chemical Abstract Building in Columbus, Ohio.

Dr. Steinberg received a letter from Edith B. Whiteford, Director of Education for the Maryland Academy of Sciences, thanking us for the $150 check contributed to the Baltimore City-County Science seminars.

Dr.Berkowitz read the treasurer's report. A discussion of the expenses vs. the budget was held. Subjects such as cost of monthly meetings and the financial status of the Chesapeake Chemist were discussed. It was also noted that approximately $1,000 of section dues has been collected to date. The report was accepted as read.

Dr. Miller reported that all plans for the Remsen lecture are complete.

Dr. Zaczek has sent names of volunteers for jobs to the appropriate committee chairmen. He will seek more names.

Dr. McGuire announced that the Maryland Section gave an award for the outstanding junior and senior section exhibits at the Maryland Science Fair. Dr. Steinberg asked for a motion that we continue to support the Science Fair. Dr. Emery made the motion and it was seconded and carried.

Dr. McGuire gave a report on the student affiliate chapter meeting at College Park. He reports that there is much interest in this activity in the area. He made a motion that we support financially the activity again next year. The motion was seconded and a discussion followed. The motion was amended to be a recommendation that we continue to support the activity. The amended motion was seconded and carried.

Dr. Kaufman reported that the hospitality committee is doing well but that more committee help is needed.

Dr. Kaufman reported on the urgent need for an executive secretary. Chairman Kaufman contacted Mr. Wolff of the Maryland Academy of Sciences who was very receptive to a joint venture with us on employing an executive secretary. It was estimated that the cost to us would be approximately $100 a month. She also contacted Mr. Mead regarding other sections of comparable size who have paid help. She wrote to several of them asking some 15 key questions. Very informative replies were received.

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EXECUTIVE COMMITTEE MINUTES

(*Continued from page 7*)

Chairman Steinberg asked if anyone had suggestions about methods for obtaining more publicity for the section. A discussion followed and the subject was tabled.

Dr. Braude talked with Mr. Mead regarding disposition of our reserve funds. He suggested investments in savings and loan associations.. A discussion followed, but no definite plans were made.

Dr. Miller reported that an individual at the U. of M. has agreed to help the editor of the Chesapeake Chemist.

Mr. Bober sent word that all is ready for the Meeting in Miniature.

Dr. Cogliano reported on results of section questionaire. Wednesday was the most popular meeting night.

Dr. Rosenblatt brought up the subject of lack of graduate training for part-time students in this area. A discussion followed, and it was concluded that if a demand existed, the U. of M. would certainly oblige.

Dr. Braude suggested that we recognize the service of John Kerchner and Mrs. MacGee for their many years of business management with the Chesapeake Chemist. A motion was made by Dr. Braude to award a scroll to John Kerchner for his service and a gift to Mrs. MacGee for her service. The motion was seconded and carried.

The meeting was adjourned at 10:45 P.M.

Respectfully submitted,
F. T. Parr, Secretary

DR. L. CARROLL KING

(*Continued from page 5*)

man of the By-laws Committee, as well as being a member of a number of other committees. Dr. King was elected a Fellow of American Association for the Advancement of Science in 1964, and is also a member of Sigma Xi, Phi Lambda Upsilon, Sigma Pi Sigma, The Chemical Society (London), The American Oil Chemists Society and The National Science Teachers Association.

MEMBERSHIP CHANGES

NEW MEMBERS

Blocher, John Paul, P. O. Box 72, Braddock Heights, Md. 21714

Breed, Jr., Nathan Loyd, 9015 Simms Ave., Baltimore, Md. 21234

Brian, Walter Philip, 200 Glenmore Ave., Baltimore, Md. 21228

Brisson, Ernest Leo, 9905 Marriottsville, Rd., Randallstown, Md. 21133

Broening, Joseph J., 200 Mt. DeSales Rd., Baltimore, Md. 21229

Brownlee, Susan Templeton, Goucher College, Towson, Md. 21204

Cheever, Gordon D., The Glidden Co., 3901 Hawkins Point Rd., Baltimore, Md. 21226

Coffey, Donald Straley, 5104 Norwood Rd., Baltimore, Md. 21212

DeLuca, Marlene, McCollum Pratt Inst., The Johns Hopkins Univ., Baltimore, Md. 21218

DeMaster, Robert Duane, US 55733037, Co. "A", Edgewood Arsenal, Md. 21010

Dorcas, Ramona S., 3904 Edgewood Rd., Baltimore, Md. 21215

Eguchi, Shoji, Dept. of Chemistry, The Johns Hopkins Univ., Baltimore, Md. 21218

Gonzalez, Richard Donald, 6927 McClean Blvd., Baltimore, Md. 21234

Gordon, Ronald Jeffery, 5456 Narcissus Ave., Baltimore, Md. 21215

Herz, Fritz, Sinai Hospital, Baltimore, Md. 21215

Hoy, Daniel John, 315 E. Broadway, Bel Air, Md. 21014

Jordan, John Maxwell, U.S.A. CmlC, Fort Detrick, Frederick, Md.

Keiser, James R., 101 Rigdon Rd., Aberdeen Md. 21001

Klemm, Robert Bruce, 213-A Garden Ridge Rd., Baltimore, Md. 21228

Kokolas, Joseph John, P. O. Box 192, Edgewood, Md. 21040

Lochary, Joseph Frederick, 5902 Montgomery St., Baltimore, Md. 21207

Miraglia, Jr., Frank John, 61 Seversky Ct., Baltimore, Md. 21221

MOLECULAR ARCHITECTURE

A number of model systems have been devised to explain various aspects of molecular shape and structure. The familiar ball and stick type models are useful for studying over-all molecular geometry, and for predicting the number and kind of isomers, whereas the Fisher-Hirschfelder-Taylor type models demonstrate molecular shape in some detail. However, in these models numerous parts held together by sticks, rods or snap fasteners are required to represent the various molecules, and construction is so rigid and semirigid that often many interesting molecules cannot be constructed.

In the talk "Molecular Architecture," the construction of simple inexpensive models useful for predicting and understanding molecular structure will be described. These models are made from polystyrene spheres to represent electron pairs, rubber bands to simulate the attractive forces between nuclei and electron pairs, and toothpicks to act as anchors for the rubber bands.

Models of many inorganic and organic molecules, including cyclopropane and fused ring systems, can be constructed. It will be shown that molecular flexibility and rotation of groups can be demonstrated in a manner more realistic than permitted by other model systems. By defining a single parameter (bond length) in terms of model components, it is possible to predict bond angles, molecular shape, the number and kind of stereoisomers, and the probable conformation of many molecules, Furthermore, in this model system, a single model can be used to represent a variety of molecular systems. Finally, the use of these models to illustrate some theoretical ideas will be described.

NOMINATIONS FOR SECTION OFFICERS

In compliance with By-law VI, Sec. 4 (b) of the Maryland Section of the American Chemical Society, the names of the members of the Nominating Committee for the election of the officers, councilors, and members-at-large of the Executive Committee for the calendar year 1966 are listed below in order that members may suggest suitable candidates to them. A candidate so suggested to the Nominating Committee must first have given consent to such nomination.

The members of the Nominating Committee are:

Dr. Joyce Kaufman, Chairman, RIAS, 1450 S. Rolling Road, Baltimore, Md. 21229

Dr. Paul Stamberger, Baltimore Paint and Chemical Corp., 2325 Hollins Ferry Rd., Baltimore, Md. 21230

Mr. Alvin Bober, Bureau of Customs, 103 S. Gay Street, Baltimore, Md. 21202

Dr. Brown Murr, Dept. of Chemistry, The Johns Hopkins University, Baltimore, Md. 21218

Dr. David Rosenblatt, Defensive Research Division, USA Chemical Research and Development Laboratories, Edgewood Arsenal, Md. 21010

---------- Tear-Out Dinner Reservation Form ----------

There is enclosed $_____ ($2.50 per person)* for cocktails and dinner at Eudowood Caterers, Eudowood Plaza, on Wednesday, September 22, 1965 for the following persons.**

(Please Print or Typewrite.)

Name 0259-L AS

Address

*Make checks payable to Maryland Section, ACS and mail together with reservation form to Dr. F. Marion Miller, School of Pharmacy, University of Maryland, Lombard and Greene Sts., Baltimore, Md. 21201.

**Return by September 17th. Please be prompt. If required, it is possible to accommodate a few late reservations.

CHEMICAL SAFETY NEWSLETTER

ETHER PEROXIDES

The State Fire Marshall of California and the Ogden Air Materiel Area (Hill Air Force Base, Utah) have issued bulletins calling attention to the explosion potential of isopropyl ether because of the formulation of sensitive peroxides. Their concern was aroused by the violent explosion of a partially full 5-gallon can of isopropyl ether which was being destroyed as a precautionary measure for the Chemistry Department at Chico State College. A similar violent explosion occured when two 1-gallon bottles of isopropyl ether (probably over 20 years old) from the University of Maine were struck by stones thrown at them at the town dump. In another instance, a chemist was killed when a pint of isopropyl ether exploded as he forcibly loosened the ground glass stopper.

These incidents illustrate clearly that, although isopropyl ether is less volatile than ethyl ether, it is still subject to peroxide formation, perhaps even more so than other ethers. Peroxide formation is accelerated in absolute ethers and by exposure to heat, air and light. It is inhibited by reduced temperature, the presence of a few tenths of a per cent of water, the absence of light and air, and storage in contact with iron or copper. Peroxides tend to concentrate during distillation or evaporation of the ether.

The presence of peroxides can be detected by shaking 10 ml of ether with 1 ml of a freshly-prepared 10% aqueous solution of KI in a glass-stoppered cylinder protected from light. When viewed against a white background, the absence of color in both liquid layers indicates the absence of peroxide; a yellow color shows peroxides are present. The test is sensitive to about 0.001% peroxide as H_2O_2.

Peroxides can be removed by extraction of the ether with a 30% aqueous solution of ferrous sulfate, using 1 lb. of solution per 30 gal. ether. Distillation of ether should be conducted in the presence of water; if water cannot be tolerated, hydroquinone may be used to destroy peroxides.

In general, the following precautions should be taken:

1. Avoid glass containers whenever possible.
2. Date all containers when received. Remove peroxides or discard isopropyl and absolute ethers after 6 months, ethyl and other ethers after 1 year.
3. Store at as low a temperature as feasible; refrigerators should be explosive proof.
4. Test for peroxide content before any distillation or evaporation.
5. Do not attempt to open containers of uncertain age or condition or those with a tightly stuck cap or stopper.

Detailed recommendations for the safe handling of ethyl ether, applicable to other ethers, are given in Manufacturing Chemists Association Data Sheet SD-29 and National Safety Council Data Sheet D-396. Specific recommendations of manufacturers should be followed for the addition of inhibitors or the removal of peroxides.

Ernest Levens
Corporate Director of Safety
Douglas Aircraft Co., Inc.

Deadline for material for publication in the October issue is September 15.

MARYLAND SECTION NEWS

GOVERNMENT

EDGEWOOD ARSENAL

A report by **Dr. Clarence A. Broomfield** and **Byron T. Currie** on "The isolation of the Components of Cobra Venom" was judged the winning entry in the third Army Chemical Research and Development Laboratories Science Conference held recently at Edgewood Arsenal. The winning scientific paper was presented at the two-day conference by Dr. Broomfield. The second place award went to **Dr. John I. Stevens** and **Lieutenant Kenneth Shepard** for a paper dealing with a new mechanism for the synthesis of an organic chemical compound. Presentation of the paper was by Lt. Shepard. Tying for third place award were a report by **Dr. Carl Jelenko, III** and **Morgan L. Wheeler,** dealing with the loss of water from the surface of the body as a result of burns, and a paper by **Dr. Harry O. Michael, Gary List, Mrs. Ethel B. Hackley** and **Sp5 Warren Gillilian** on the reaction of enzymes and military chemical nerve agents. The reports were presented by Dr. Jelenko and Dr. Michael. **Dr. S. D. Silver,** Technical Director of the Chemical Research and Development Laboratories served as general chairman of the conference, which consisted of approximately 20 original papers in various areas of chemistry and medicine. **Dr. Bernard Jandorf, Dr. G. G. Guilbault, Dr. Milton Joffe** and **Bernard Gerber served** as co-chairmen of the conference.

More than 200 friends and well wishers have tendered **Colonel** and **Mrs. William G. Willmann** a farewell dinner at the Officers Club to mark their departure from Edgewood Arsenal. Colonel Willmann has been the Commander of the Chemical Research and Development Labs since July, 1962, and has been assigned to the post of Assistant Director of Procurement in the office of the Assistant Secretary of the Army (Installation and Logistics).

Dr. Seymour D. Silver has been designated Acting Director of the Army Chemical Research and Development Labs., replacing Colonel Willmann. Dr. Silver has been employed at the Arsenal since 1938, and assumed his previous post as Technical Director in 1956.

Dr. Edward J. Poziomek of the Army Research and Development Labs has received a research scholarship at the University of Lieden, The Netherlands. The grant was made to Dr. Poziomek by the United States Educational Foundation in The Netherlands under the Fullbright Cultural and Education Exchange Program. At the University of Leiden, Dr. Poziomek will work in the field of Photochemistry, under the guidance of Professor E. Havingo. He will begin his studies in September, 1965.

FORT DETRICK

The Maryland Branch, American Society of Microbiology held its annual spring meeting jointly with the Washington, D. C. Branch, at Fort Detrick on May 15. Ten technical papers were presented at the session. During the dinner, the annual presentations of the J. Howard Brown Student Award, and the Barnett Cohen Unlimited Award were made. The Student Award was presented to **Dr. G. Briggs Phillips,** Safety Director, Fort Detrick, and the Unlimited Award was given to Dr. Roger Reid, Chief, Microbiology Division, Office of Naval Research, Washington, D. C. **Dr. James W. Moulder** of the University of Chicago was the evening speaker. His subject was Intracellular Parasitism.

Captain Donald C. Fish has been assigned to Process Development Division. He comes from the University of Michigan where he completed his Ph.D. in Microbiology. (*Continued on page* 14)

MARYLAND SECTION NEWS

(*Continued from page 13*)

Dr. Edward J. Schantz, Physical Science Division, was recently cited for outstanding performance as Senior Investigator in Biochemistry. His Contribution during the past year included completion of an extended collaborative research program resulting in successful purification and characterization of staphylococcal enterotoxin.

The annual banquet of the Fort Detrick Branch of RESA (Scientific Research Society of America), was held June 7, 1965, at Holiday Inn. Approximately 250 members, their wives and guests attended. **Dr. Peter J. Gerone**, president, presided at the program following the dinner. He thanked the outgoing officers and introduced the incoming officers.

After a brief discussion of the origin and purpose of the Society, new members were initiated into the branch. Included in the new members was **Dr. Charles K. Houston,** a member of our Section. Dr. Gerone announced that **Thomas R. Dashiell** was the first recipient of the Arthur G. Rawson Memorial Award and a plague was presented for distinguished accomplishments in engineering.

Dr. William F. Daniels attended the annual meeting of the Tissue Culture Association in Miami, Florida.

Dr. George Wieczorek has joined the Biospecification Branch Directorate of Engineering and Industrial Services. He was affiliated for many years with Agricultural Research Service, U. S. Department of Agriculture, Beltsville, Maryland, where he worked on the production of Radioactive Fertilizers.

INDUSTRIAL

W. R. GRACE & COMPANY

Robert D. Goodall, Executive Vice President of the Davison Chemical Division, has been appointed President of the Division, succeeding **W. E. McGuirk, Jr.**, who has resigned to accept the position of Chairman of The Executive Committee of The Mercantile Safe Deposit and Trust Co., of Baltimore.

Ground has been broken for the construction of a one million dollar addition to the main laboratory building of W. R. Grace & Co.'s Washington Research Center in Clarksville, Maryland. This expansion is a direct result of the continuing growth of the Company's research program.

Expected to be completed in early 1966, the new structure will contain chemical research laboratories and offices for service support groups in thirty-nine thousand square feet of floor space. Construction will be of steel framed masonry with exterior brick walls to match existing Jeffersonian architecture. The completely air conditioned two-story structure will form the northwest wing of the present building.

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