



UNIVERSITY OF MINNESOTA  
TWIN CITIES

Department of Chemistry  
139 Smith Hall  
Minneapolis, Minnesota 55455

## MINNESOTA CHEMISTS NEWSLETTER

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*This is the annual report to alumni of changes, accomplishments and recent events in the Department of Chemistry. We hope to bring you news of interest about alumni from the Department from time to time. If any of you would like to tell us your news, we'll be happy to "spread it around."*

### New Faculty

Dr. Gary R. Gray has joined the Department as Assistant Professor. He obtained his B.S. in chemistry from Ouachita Baptist University in 1964 and his M.S. and Ph.D. in Biochemistry from the University of Iowa in 1967 and 1969 respectively. He had a NIH postdoctoral position with Dr. C. E. Ballou from 1969-1972 in the Biochemistry Department at the University of California, Berkeley. He was an acting assistant professor at Berkeley in 1972. Dr. Gray's research interests are to define structurally the carbohydrate surface antigens of pathogenic bacteria and viruses and to use this information to develop vaccines against their infection.

### Promotions

Robert G. Bryant and Donald G. Truhlar were promoted to the rank of Associate Professor, effective September 16, 1972. Professor Bryant's current interests have been in the application of nuclear magnetic resonance techniques including broadband, high resolution, and pulsed relaxation time measurements to the study of metal ion interactions with proteins, enzyme cofactors, and biological model systems. The studies of Professor Truhlar have involved the application of the quantum mechanical theory of electron collisions with atoms and molecules to the systematics of electron impact spectroscopy. He is also interested in the application of quantum mechanical scattering theory to study the details of the dynamics of molecular collisions.

### Dedication of Kolthoff and Smith Halls

The dedication of Kolthoff and Smith Halls was conducted on June 2, 1972. Professor Robert M. Hexter, Chairman, was master of ceremonies for the dedication ceremony. Dr. Malcom Moos, President of the University, extended the hospitality of the University to the assembled guests and friends. Dr. Max Tishler, President of the American Chemical Society, delivered the principal address entitled, "The Changing Shape of Chemistry." Dr. David N. Hume described the accomplishments of Professor Kolthoff and Dr. Robert B. Carlin described the contributions of Professor Smith. Professor Kolthoff responded with a short anecdotal address. Professor Smith was not able to attend because of his health. After the formal

ceremony a ribbon was cut in front of both halls and then a reception for guests was held on the plaza between Kolthoff and Smith Halls. Fortunately the sun shone during the entire reception period.

An evening reception and banquet attended by more than 300 guests concluded the day's festivities. Dean Bryce L. Crawford, Jr. was the toastmaster for the evening.

Dr. William G. Shepherd, Vice President for Academic Administration, presented Outstanding Achievement Awards to the following seven alumni:

*Frederick G. Bordwell* received a Bachelor of Chemistry degree in 1937 and a Doctor of Philosophy degree in 1941, both from the University of Minnesota. He is now a Professor of Chemistry at Northwestern University.

*Robert B. Carlin* received a Bachelor of Chemistry degree in 1937 and a Doctor of Philosophy degree in 1941, both from the University of Minnesota. He has served on the faculties of the Universities of Minnesota, Illinois, and Rochester and is now a Professor of Chemistry at Carnegie-Mellon University.

*W. D. Emmons* received a Bachelor of Science degree in 1947 from the University of Minnesota and a Doctor of Philosophy degree in 1951 from the University of Illinois. He worked for Rohm and Haas Company as a Group Leader and Laboratory Head and is now a Research Supervisor at their laboratories in Spring House, Pennsylvania.

*T. A. Geissman* received a Bachelor of Science degree in 1930 from the University of Wisconsin and a Doctor of Philosophy degree in 1947 from the University of Minnesota. After postdoctoral work at the University of Illinois, he joined the faculty of the University of California at Los Angeles, where he is now a Professor of Chemistry.

*David N. Hume* received a Bachelor of Arts degree in 1939 and a Master of Arts degree in 1940, both from the University of California at Los Angeles, and a Doctor of Philosophy degree in 1943 from the University of Minnesota. He has served on the staffs of the Universities of Chicago and Kansas and the Clinton Laboratories and is now a Professor of Chemistry at the Massachusetts Institute of Technology.

*Walter M. Lauer* received a Bachelor of Arts degree in 1913 from Ursinus College and a Master of Science degree in 1917 and a Doctor of Philosophy degree in 1924 from the University of Minnesota. A faculty member at the University of Minnesota since 1920, he has been a Professor Emeritus of Chemistry since his retirement in 1964.

*Donald S. McClure* received a Bachelor of Chemistry degree in 1942 from the University of Minnesota and a Doctor of Philosophy degree in 1948 from the University of California at Berkeley. He has served on the staffs of the University of California at Berkeley, the Radio Corporation of America, and the University of Chicago and is now a Professor of Chemistry at Princeton University.

### New Undergraduate Curriculum

The fall of 1971 saw the beginning of new undergraduate curriculum for Chemistry majors. All students take a common, five quarter "Core," of which Principles I and Principles II are offered the first two quarters. In these courses there is a greater emphasis on descriptive chemistry than has been customary, of late, in most introductory courses. The laboratory is unique in that all experiments, preparations and determinations concentrate on one compound - monochloroacetic acid and its derivatives. Analytical techniques are heavily stressed in this laboratory.

In the third and fourth quarters, another two new courses, called Synthesis I and II are offered. The increasingly interdisciplinary character of organic chemistry is reflected in the topics considered in these courses. While topics from traditional organic chemistry are emphasized, others from inorganic, biological and physical chemistry are also included. The latter include aspects of homogeneous metal catalysis, electron deficient species, conservation of orbital symmetry and enzymes, all of which are especially relevant to organic chemistry.

The fifth quarter of the Core is called, "Rates and Mechanisms." In this course the results of varied kinetic studies are integrated with the methodology and techniques necessary to obtain kinetic data. Examples from all areas of chemistry are utilized in the laboratory.

The end of the second year is a quarter of study under the title, "Modern Analytical Chemistry." The emphasis in this course is being directed toward real-life problems in chemical analyses; eg., identification of polymers, the determination of trace metals in used engine oil, mercury in tuna fish, impurities in aspirin, etc. The object is not to make each student into an analytical chemist, but to acquaint him with the power of modern analytical methods to solve current problems.

The final quarter of the "Core" is to be a new course in Statistical Thermodynamics, currently being developed by Professor Prager, who will offer it for the first time next fall. Following that quarter, the students can diverge along any of several "tracks." As they do so, we shall keep you informed of the new courses which comprise the "tracks." One of these, also in current development, is a "quantum chemistry laboratory."

### New Equipment

As in past years the Department has benefited this year from the NSF Chemical Instrumentation Program. The AEI MS-30 Double Focusing Mass Spectrometer at a cost of \$105,885 was received and placed in operation. The Department also received approval of its proposal for a computer-handled data system to enhance the utility of the MS-30. The cost of this new equipment is \$86,580.

Funds available through the Merck and Company Research Fund, permitted the purchase of a JEOL Raman Spectrometer at \$20,000 and an ESR Spectrometer at \$10,000.

The Graduate School has continued its program of helping to initiate the research programs of new faculty. Graduate School funds received by the Department totaled \$88,160 in 1972.

### Visiting Committee

The Department's Visiting Committee visited the University on February 23, 1972. Its members, Dr. R. A. Plane, Cornell University; Dr. R. E. Kagarise, Naval Research Laboratory; and Dr. I. Shain, University of Wisconsin spent the day meeting with Professor Hexter and departmental committee chairmen to discuss programs and problems. Later that same day they met with the I.T. Dean and the Vice President for Academic Administration.

The discussions resulted in a report, some of the suggestions of which dealt with faculty recruitment, outside funding, the graduate curriculum and the effects of retrenchment and reallocation. The Committee especially recommended the addition of at least one senior, well-established organic chemist to the faculty. These visits are to be an annual affair.

### Awards

Professor Robert C. Brasted will be the recipient of the 1973 American Chemical Society Award in Chemical Education. This award, sponsored by the Scientific Apparatus Makers Association, is given to those who have made outstanding contributions to the teaching of chemistry at the university level.

### Leaves, 1972-73.

Professor Richard F. Borch - the Medical School, University of Minnesota.

Professor Bryce L. Crawford, Jr. - University of Minnesota, Guggenheim Fellow.

Professor Stuart W. Fenton - University of Minnesota.

Professor C. Fred Koelsch - University of Minnesota.

Professor Wilmer G. Miller - Institut de Chimie, Universite Louis Pasteur, Strasbourg, France; and Institute for Protein Research of the Academy of Sciences, Pouschino, U.S.S.R.

Professor Paul R. O'Connor - Staff Chemist on the NSF Liason Staff in New Delhi, India.

Professor Warren L. Reynolds - University of Zagreb, Yugoslavia.

### Conferences

Professors C. Alden Mead and Albert J. Moscovitz were participants in a conference on chirality in Chemistry held at Schloss Elmau, Bavaria, Germany, October 22-26, 1972.

Professor Edward Leete presented a paper at the 4th International Natural Products Symposium in Kingston, Jamaica, January 1972.

Professor Rufus W. Lumry presented a paper at the International Symposium on Relaxation Methods in Molecular Biology in Copenhagen, Denmark during the month of August 1972. He also attended the 4th Biophysics Congress at the Institute of Protein Research of the Academy of Sciences, U.S.S.R. in Moscow, U.S.S.R. and the Prague Meeting on Macromolecules in Prague, Czechoslovakia.

Professor Bryce L. Crawford, Jr. attended a two week advanced summer institute on molecular motion in liquids at Menton, France, July 2-14, 1972.

#### New Editorial Offices

Associate Professor Victor G. Mossotti has been appointed American Editor for Spectrochimica Acta Part B. The other two periodicals housed in the Department are Organic Syntheses and the Journal of Physical Chemistry.

#### Bequests

The Maximilian Lando Fund - The annual interest earned by this \$400,000 bequest has now become available to the Department for its scholarship-fellowship fund. Discussions in the faculty are currently underway aimed at selecting the best plan for using these funds.

#### Funds

Industrial contributions to the Department during 1972 have been:

E. I. duPont de Nemours and Company	\$10,000
Eastman Kodak Company	\$10,000
Atlantic Richfield Foundation	\$ 4,600
Dow Chemical U.S.A.	\$ 2,500
Minnesota Mining and Manufacturing Company	\$ 5,000
American Oil Foundation	\$ 5,500
Uniroyal Incorporated	\$ 3,000
The Lubrizol Foundation	\$ 1,000
Gould Laboratories Incorporated	\$ 800
Hercules Incorporated	\$ 1,000
General Mills Foundation	\$ 1,000
The Upjohn Company	\$ 850

#### Enrollment Patterns

It may be of interest to alumni to know current enrollment patterns in Chemistry. Succinctly these are as follows. Over the past two years the number of undergraduate student credit hours per year has risen from 35,394 to 43,363 with effective decreases in the number of faculty and graduate teaching assistants.