UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Chemistry
139 Smith Hall
Minneapolis, Minnesota 55455

MINNESOTA CHEMISTS NEWSLETTER

No. 3 January 1974

This is our annual report to alumni of changes, accomplishments and recent events. We also hope to bring you news of interest about alumni from the Department in these annual newsletters. So please send us news about your activities and we'll be happy to include it in the next edition.

Leaves

Professor Donald G. Truhlar spent a single quarter leave as Senior Visiting Fellow at Battelle Columbus Laboratories in Columbus, Ohio during fall quarter, 1973.

Professor Robert G. Bryant spent a single quarter leave at the State University of New York at Stony Brook during the fall quarter, 1973.

Professor Wilmer G. Miller returned in September from his sabbatical leave in France and the U.S.S.R. During the fall of 1972 he was at the Institute de Chimie, Universite Louis Pasteur, Strasbourg, France; and during the winter, spring and summer he was at the Institute for Protein Research of the Academy of Sciences, Pouschino, U.S.S.R.

Professor Warren L. Reynolds returned in July from his sabbatical leave at the University of Zagreb in Yugoslavia.

Professor Richard F. Borch was on leave during fall quarter at the Medical School, University of Minnesota.

Professor John S. Dahler spent a single quarter leave at the H. C. Ørsted Institute Chemistry Laboratory 3 of the University of Copenhagen, Denmark, during fall quarter, 1973.

Professor Paul R. O'Connor was granted a leave for medical reasons by the Board of Regents from September 16, 1973 to June 15, 1975. Professor O'Connor recently returned from a two-year leave of absence which he spent in India as a Staff Chemist on the National Science Foundation Staff in New Delhi.

Retirements

Professor C. Frederick Koelsch retired in June 1973 after forty years of service to the University of MInnesota as a beloved teacher and productive research. He was winner of the American Chemical Society Award in Pure Chemistry in 1934. This prize is awarded to "that young man, under the age of 30, working in a University or College, whose contributions to chemistry are deemed the most noteworthy". His record of contributions to chemistry continued and now numbers one hundred and thirty. He continues in his retirement to maintain an office and laboratory in Kolthoff Hall. We all extend our best wishes to him for many years of a pleasant and fruitful retirement.

News of Alumni

Professor William J. Bailey (B.S. '43) of the University of Maryland, College Park Maryland was elected President-Elect of the American Chemical Society. He will serve as President of the Society in 1975 and as a member of the board of Directors for a three year term, 1974-1976.

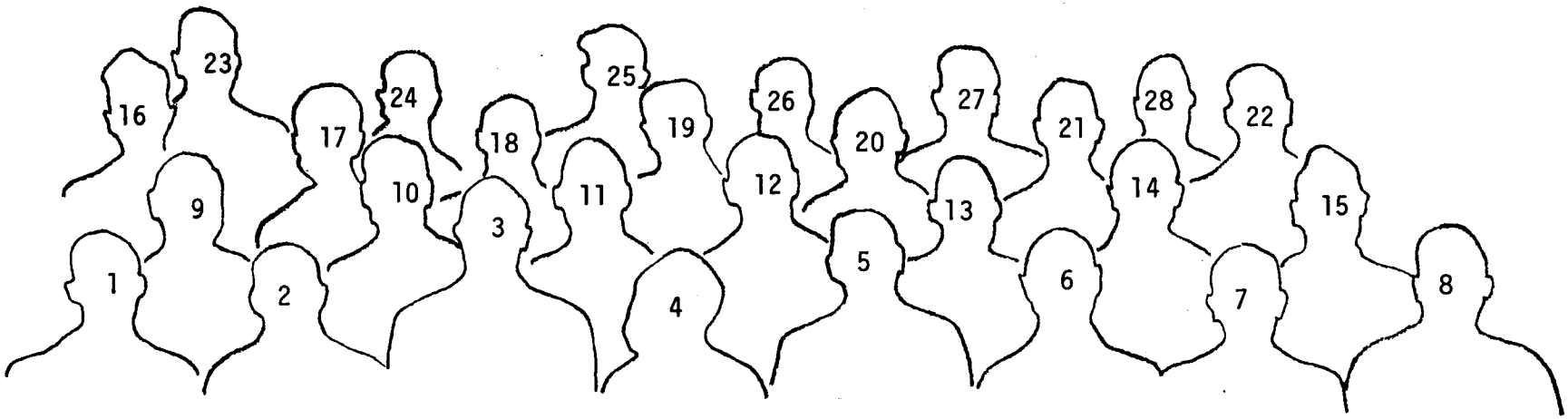
Professor Robert B. Whitney (B.A. '24, Ph.D. '27) has retired as Chairman of the Department of Chemistry at Amherst College, Amherst, Massachusetts.

Photographs from 1936

On the following pages are two photographs which Professor Emeritus G. B. Heisig has kindly presented to the Department. The first photograph is of the faculty of the School of Chemistry. With the help of Professor Heisig all of those in the picture have been identified. The second photograph is of the graduate students enrolled in the School of Chemistry at that time. We hope you can help us to identify those in this picture. Perhaps you recognize yourself and others. If so, we would greatly appreciate hearing from you.

Faculty of the School of Chemistry

May 21, 1936



1. Copeland, C. S.
2. Barber, Hervey Hubbard
3. Leland, O. M.
4. Cohen, Lillian
5. Lind, Samuel Colville
6. Kolthoff, Izaak Mauritz
7. Smith, Lee Irvin
8. Ruth, Burrell F.
9. Mann, Charles A.
10. Montillon, George H.
11. Glochler, George
12. Geiger, Isaac William
13. Reyerson, Lloyd Hilton
14. Thompson, Alberto
15. Grove, Cornelius Sherman
16. Koelsch, C. Frederick
17. Livingston, Robert Stanley
18. MacDougall, Frank Henry
19. Sarver, Landon Arndale
20. Pervier, Norville Clarence
21. Stevens, Harry N.
22. Stoppel, Arthur Edward
23. Sneed, M. Cannon
24. Maynard, J. Lewis
25. Sandell, Ernest Berger
26. Heisig, Gladstone B.
27. Montonna, Ralph Eugene
28. Lauer, Walter McClellan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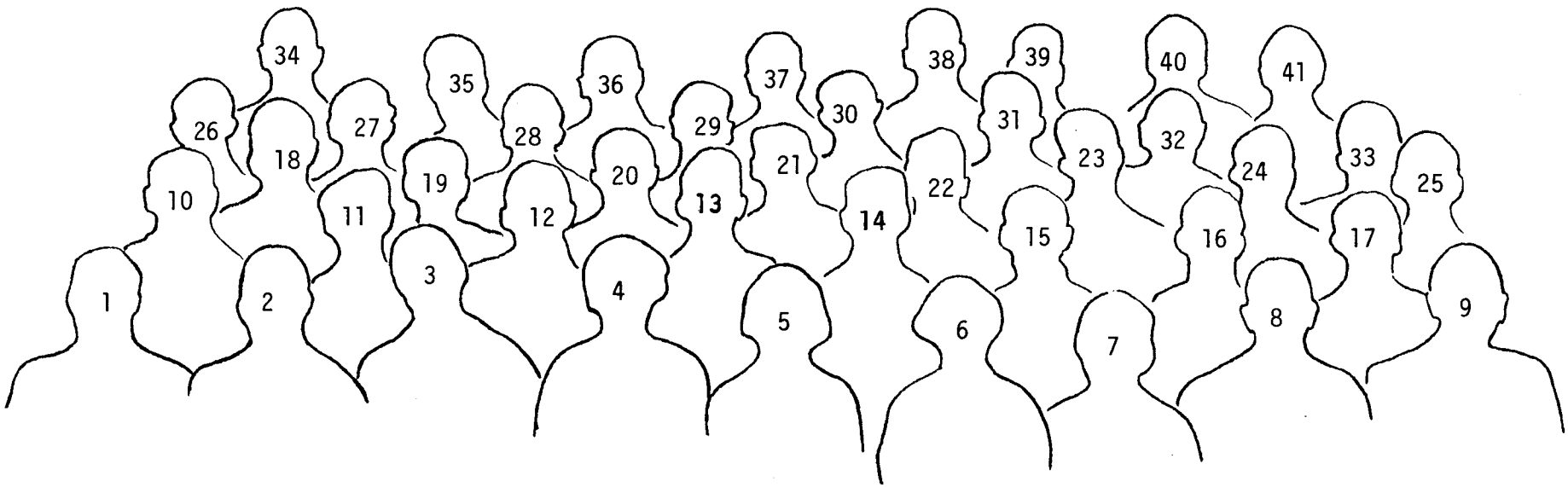
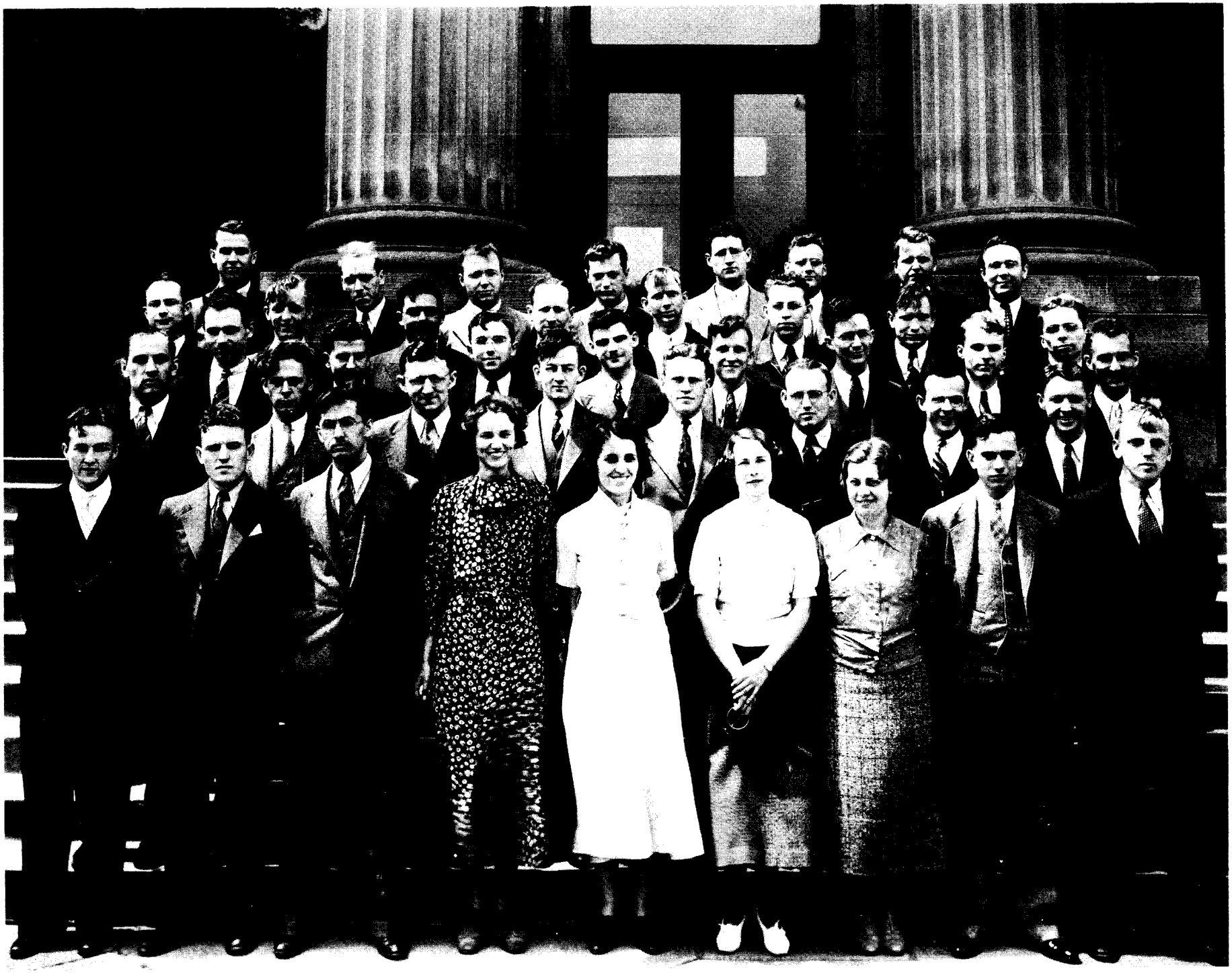
Graduate Students in the School of Chemistry
May 1936





Conferences

Professor Emeritus I. M. Kolthoff participated in the Symposium on Solution Chemistry (in nonaqueous media) which was held jointly by the Divisions of Organic and Physical Chemistry at the Spring Meeting of the American Chemical Society in Dallas. He also attended the Conference of the International Union of Pure and Applied Chemistry, Munich, Germany, August 21-28, as a member of the Analytical Chemistry Division Committee.

On May 24, Professor Sidney Buttrill gave a paper at the 21st Annual Conference on Mass Spectrometry and Ion Physics, San Francisco, California. The title was "Appearance Potential Measurements Using ICS".

Professor Robert C. Brasted attended the 24th International Union of Pure and Applied Chemistry (IUPAC) in September 1973 at Hamburg, Germany. He was also a participant in the combined IUPAC and UNESCO Conference on Chemical Education in Wroclaw, Poland, on the 17th to the 22nd of September.

Professor Victor Mossotti attended the IV International Conference on Atomic Spectroscopy at Toronto, Canada October 29 - November 2 where he presented an invited lecture entitled, "The Information Structure of Analytical Flames". He also served as chairman of the theoretical session, co-chairman of the analytical flame spectroscopy session, and on a discussion panel. He attended the XVII Colloquium Spectroscopicum Internationalle in Florence, Italy, September 17-23 where he gave a paper co-authored with Professor Steven Prager titled, "The Noise Structure of Analytical Flames". Professor Mossotti served as the official U.S. delegate to the meeting, was chairman of the session on flame plasma processes and served on a panel discussion.

Professor E. Leete gave a lecture entitled, "Biosynthesis and Metabolism of the Tobacco Alkaloids", at the 1st Philip Morris Science Symposium, Richmond, Virginia, April 26. He also attended the Natural Products Gordon Conference in New Hampshire, July 29 - August 3, where he gave talks on the biosynthesis of azetidine-2-carboxylic acid and shihunine.

Professor Warren L. Reynolds gave an invited paper at a symposium on Recent Developments in Inorganic Reaction Mechanisms at the Annual Chemical Congress of the Chemical Society in Swansea, Great Britain.

John E. Wertz gave an ACS Short Course together with James Bolton in New York City at Ely College of the City University of New York on Electron Spin Resonance in Organic and Biological Systems, September 6-9.

Professor Louis H. Pignolet presented an invited talk at the Inorganic Chemistry Gordon Research Conference August 6-10 at New Hampton, New Hampshire, titled, "Stereochemical Nonrigidity in Tris Chelate Complexes". He also presented an invited talk, "Stereochemically Nonrigid Molecules", at the Fall 1973 meeting of the American Chemical Society in Chicago.

Conferences (cont.)

Professor Rufus W. Lumry attended a Workshop Conference devoted to "Water Structure at Interfaces in the Biosphere" sponsored by Gulf Universities Research Consortium in New Orleans, LA., on June 14, 15 and 16. He also gave two talks during February at the New York Academy of Science Conferences on "New Aspects of Linkage Mechanisms in Multiple-Sub-Unit Proteins" and "Water Participation in Enzymic Energy Transduction". During April he spoke at Purdue University and Case Western Reserve University on "Dependence of Protein Function on Conformational Characteristics". In August Professor Lumry presented a paper, "Estimation of Internal Viscosity and Other Parameters of Protein Integrity by Time-resolved Emission Spectroscopy" at the Chicago meeting of the American Chemical Society. He also attended the VII International Conference of Photo-Chemistry at Jerusalem, Israel, August 29 - September 4 where he presented a paper, "TRES Studies of Indole Exciplex Structure and Protein Physical Properties.".

Professor Sidney E. Buttrill, Jr. spent the summer at the California Institute of Technology where he held an appointment as a Sherman Fairchild Distinguished Scholar.

Awards

Professor Robert C. Brasted was recipient of the 1973 American Chemical Society Award in Chemical Education sponsored by the Laboratory Apparatus and Optical Section of the Scientific Apparatus Makers Association. He was presented the award at the 165th meeting of the American Chemical Society in Dallas in April, 1973. Professor Brasted is a past-Chairman of the Division of Chemical Education and of its Board of Publications.

Professor Donald G. Truhlar was named an Alfred P. Sloan Foundation Fellow for a period of two years beginning in September, 1973.

Professional Society Activities

Professor Bryce Crawford, Jr. was a candidate for President-Elect of the American Chemical Society. In December the ACS Board of Directors meeting in Washington, D.C. re-elected Dr. Crawford to the executive committee. He also serves as chairman of the Board Committee on Chemical Abstract Services.

New Equipment

The Department continues to acquire equipment to modernize its teaching and research laboratories. For the new curriculum course, "Rates and Mechanism", a 60 megahertz NMR (Varian EM 360) was obtained for $11,065. An ambient air analyzer which cost $4,000 was obtained for the new curriculum course "Modern Analytical Chemistry".

For his research into the informational structure of analytical flames Professor Mossotti has acquired a digital PDP8N computer and peripheral accessories for $20,000. A single focusing mass spectrometer will be an integral part of the investigation of chemical ionization as an ultra-sensitive analytical tool by Professors Swofford and Buttrill. The mass spectrometer was acquired for $23,000.

In July, 1973, the capabilities of the Mass Spectrometer Laboratory were greatly enhanced by the addition of the AEI DS-30 Data System at a cost of $92,000. This system consists of a DEC PDP-8M computer with 8K of core, a 256K word disk, a high speed reader and punch, a Tektronix CRT and hard copy unit, a DEC LA-30 Decwriter, a 12-bit high speed A/D converter and mass spectrometer interface, a Versatec 1100 high speed printer/plotter, and complete set of supporting software. The system enables the Mass Spec Lab to provide its users with a complete list of elemental compositions for all the peaks in a spectrum under high and medium resolution conditions using very small quantities of sample. Moreover, low resolution spectra are now presented as a list of masses and intensities normalized to the largest peak in the spectrum and as a plotted spectrum rather than the conventional UV chart. This equipment was acquired with the help of a grant of $55,200 from the NSF Chemical Instrumentation Program, together with $36,800 in matching funds from the University.

Visiting Committee

The Department's Visiting Committee visited the University on March 5 and 6, 1973. Its members, Dr. R. A. Plane, Cornell University; Dr. R. E. Kagarise, Naval Research Laboratory and Dr. I. Shain, University of Wisconsin spent most of their time talking with individual faculty members about departmental organization, problems, curricula, and departmental services.

The discussions resulted in a report, in which some of the suggestions dealt with departmental organization for teaching-related functions and administration, outside funding, the graduate curriculum, departmental morale and the effects of reduced funding for teaching assistants. The Committee recommended a thorough faculty discussion of departmental objectives and organization schemes to meet these objectives.

Bequests

The Maximillian N. Lando Fund - The major share of the annual interest earned by this $400,000 bequest has now become available to the Department for its scholarship-fellowship fund. During 1973 the funds were used for summer fellowships for qualifying graduate students. In 1974 some of the funds will be used in a summer research program for outstanding undergraduate students who have completed three years of undergraduate study in chemistry or related fields. Students will be selected by a national competition. The fellowship will last ten weeks with a stipend of $130/week. In addition, round-trip travel costs will be paid by the fellowship. Application requests should be addressed to: Dr. L. H. Pignolet, Lando Summer Research Fellowship Program, Department of Chemistry, University of Minnesota, Minneapolis, Minnesota 55455.

Reyerson Research Fund - In 1954 Professor Lloyd Reyerson made a serendipitous discovery that eventually interested the Monsanto Corporation in its application to the production of non-woven nylon fabric. By 1965 it was felt that licensing of what became known as the Reyerson patents might result in a considerable annual income for the University. During the course of Monsanto's development of the process (which began as early as 1951) a licensing agreement was made with the University which called for a payment of $10,000 per year until the process was under manufacture. Then, a poundage rate would begin to accrue. Two years ago, however, the Monsanto Company informed the University that it wasn't using the Reyerson patents in the manufacture of its non-woven fabric, Cerex, and that Monsanto was utilizing know-how developed on its own. This announcement led to a dispute between the University and the Monsanto Company, a dispute which has now been settled. The final agreement called for the Monsanto Company to pay the University $60,000 over and above the $50,000 which had already been paid.

The use of these funds will be considered by a faculty committee whose recommendations will be presented to the full faculty for its decision.

Funds

Industrial contributions to the Department during 1973 have been:

Eastman Kodak Company	$10,000
E. I. duPont de Nemours and Company	$ 7,500
Minnesota Mining and Manufacturing Company	$ 5,000
Uniroyal Incorporated	$ 3,000
Atlantic Richfield Foundation	$ 1,000
Dow Chemical N.S.A.	$ 1,000
General Mills Foundation	$ 1,000
The Lubrizol Foundation	$ 1,000
The Upjohn Company	$ 850
Mobil Foundation, Inc.	$ 425
Monsanto Company	$ 425
	31,200

Research Grants to the Department

Graduate School grants to faculty members during 1973 totaled $52,792 and were distributed as follows:

Name	Project	Amount
Robert G. Bryant	NMR Study of Semi-liquids	$ 2,000
Sidney E. Buttrill, Jr.	Gas-Phase Sonic Equilibria and Thermochemistry	5,000
John E. Ellis	The Organometallic Chemistry of Transition, Lanthanide and Actinide Elements	4,000
Jack Z. Gougoutas	X-Ray Crystallographic Studies of Molecular Structures and their Chemical Transformations in the Crystalline State	10,000
Gary R. Gray	The Use of Antibody Affinity Column Chromatography for the Isolation, Fractionation, and Structural Characterization of Viral Glycoproteins	5,167
Maurice Kreevoy	Purchase of a Multiple-Pass Cell and Associated Optics for Raman Spectrophotometer	1,200
Wilmer G. Miller	The Kinetics of Liquid Crystal Phase Formation in Biopolymers	4,200
Albert J. Moscowitz	Magnetic Circular Dichroism of Forbidden Transitions in Organic Molecules	8,000
John Overend	Infrared Emission Spectra from Chemisorbed Species	2,000
Warren L. Reynolds	Five-Coordinate Intermediates in Cobalt(III) Substitution Reactions	7,600
Donald G. Truhlar	Use of R-matrix Theory for Chemical Reaction Rates	3,625

Research Grants (cont.)

New grants to faculty members during 1973 from sources outside the University totaled $558,147 and were received by the following professors:

Name	Project Title	Granting Agency	Amount
Ronald E. Barnett	The Role of Changes in the Plasma Membrane in Lymphocyte Transformation	Leukemia Research Foundation	$ 8,050
	Immunologic Mechanisms in Cardiovascular Disease	National Institute of Health	$ 24,550
Sidney E. Buttrill, Jr. and Harold S. Swofford, Jr.	Development of Chemical Ionization Mass Spectrometry as an Analytical Tool at Parts Per Billion Concentration Levels	National Science Foundation	$ 54,700
Lawrence E. Conroy	Analysis of Organic Carbon as a Pollution Index	United States Department of the Interior, Office of Water Resources Research	$ 13,700
W. Ronald Gentry	The Chemical Dynamics of Bimolecular Reactive Collisions	National Science Foundation	$ 25,000
Gary R. Gray	Fluorine-19 as a Reporter Nucleus for the Study of Enzyme Mechanisms by Nuclear Magnetic Resonance Spectroscopy	Research Corporation	$ 8,000
	The Chemical Structure and Immunochemical Properties of a Mycobacterial Cell Wall Lipopolysaccharide	American Lung Association	$ 12,478
	Antitumor Active Components of Mycobacterium Bovis Cell Walls	National Cancer Institute	$ 91,710/3 years

Federal

Research Grants (cont.)

Name	Project Title	Granting Agency	Amount
Maurice M. Kreevoy	The Electrochemical Generation of $NaBH_4$	Ventron Corporation	$ 1,250
Edward Leete	Synthesis and Biological Activity of Nicotine Analogs	Council for Tobacco Research	$ 23,709
Victor G. Mossotti, Jr.	Selective Modulation (Fluidic) Chemiluminescence Reactor for NO_x	Ford Motor Company	$ 3,000
	The Information Structure of Analytical Flames	National Science Foundation	$ 31,000
Wayland E. Noland	Unrestricted	Hoffman-La Roche, Inc.	$ 3,000
Louis H. Pignolet	The Dynamic Stereochemistry of a Series of Chelate Complexes of Iron and Ruthenium	National Science Foundation	$ 38,000
Donald G. Truhlar	Scattering Theory and Calculations for Chemical Reactions and Electron Impact Processes	National Science Foundation	$ 41,000
John E. Wertz	Metric Conversion	National Science Foundation	$179,000/18 months

New Undergraduate Curriculum

The new undergraduate curriculum with its six track options began in the fall of 1971 and was described in last year's Minnesota Chemists Newsletter. This past fall quarter has seen the completion of the first offering of all seven of the core courses. The seventh course which completes the core of the new curriculum is Statistical Thermodynamics. This course was developed and taught by Professor Stephen Prager. Enrollment in this course this fall was 163 of which 50 were chemistry majors.

Upon completion of the seven core course, students have the option of choosing one of six tracks which are designed to serve a variety of interests. These tracks are named: basic, biophysical, chemical instrumentation, materials science, eco-chemistry and the "open" track. Students who elect the basic track will take two other new chemistry courses during their remaining quarters. One is Quantum Chemistry Laboratory developed by Professors Gentry, Wertz, Buttrill and Crawford. The other is Advanced Inorganic Chemistry, whose laboratory was developed by Professors Ellis and Pignolet. For the chemical instrumentation track two new courses have been developed by Professors Mossotti and Swofford. These courses are Analog Instrumentation and Digital Instrumentation. Other new courses under development are Symmetry in Chemistry, Chemistry of the Atmosphere and Ecology of Water.

Currently the Undergraduate Curriculum Committee is conducting a review of the new curriculum and is assessing its merits.

Organization for Teaching-Related Functions

In June the Faculty of the Department adopted a new organizational format for teaching and related areas of faculty responsibility. The principal change was to place in one committee all responsibilities for teaching both graduates and undergraduates. This committee, which was named the Undergraduate-Graduate Operations Committee (UGOC), is comprised of coordinators from each teaching area plus the Director of Graduate Studies, the Director of Undergraduate Studies and the Chairman of the Department. The responsibilities of UGOC encompass all functions related to teaching, including teaching assignments for faculty and teaching assistants, the supervision of undergraduate and graduate teaching programs and examination procedures, and the maintenance of a healthy student advising program at the undergraduate and graduate levels. The coordinators of the five specialty areas (Biophysical-Bio-organic Chemistry, Chemical Instrumentation and Analysis, Inorganic Chemistry, Organic Chemistry and Physical Chemistry) were appointed by the Chairman of the Department after consultation with the faculty members of each specialty area.

The new organization format also authorized the formation of Three-Member Advising Committees (TMC). These committees were appointed by UGOC for each graduate student. New graduate students are asked to designate their specialty area interest or interests before arrival so that members of their TMC would represent those specialty interests.

The TMC meets with the student upon his arrival, evaluates the student's proficiency examination results and undergraduate record, and discusses with the student his educational and vocational goals. It then recommends courses to be taken in order to achieve these goals. Any special problems which may arise are also discussed by the TMC. The TMC meets at least once every quarter with the student to review his progress and make further recommendations. The TMC is responsible for student advising until the research adviser is chosen. At this time the research adviser becomes a member of the student's TMC if he is not already. By meeting at least quarterly with three different faculty members, all of whom are not necessarily in the same research area, the student is exposed to a broad background in various research areas for consideration. The TMC serves as a continuing advising body for the student throughout his tenure and is able through a good acquaintence with the student to be aware of his strengths and weaknesses.

DEGREE	NAME	DATE REC'D	THESIS TITLE	ADVISER	POSITION
M.S.	Ranade, Digambar	3/73	Non-dissertation master's degree	Parham	Position unknown
M.S.	Pesheck, Carolyn	6/73	Ion Cyclotron Resonance Studies of Chemical Ionization of Esters	Buttrill	Teaching Specialist, Dept. of Chem., University of Minnesota, Minneapolis
Ph.D.	Lam, Luke Kwok	3/73	Dimide Reduction of Heteroatom-Substituted Olefins	Garbisch	Dept. of Pathology, University of Minnesota, Minneapolis
Ph.D.	Li, Wu-Shyong	3/73	Thiodiarylamines: Reaction with Dienes	Dodson	Dept. of Chemistry, University of Ohio, Columbus, Ohio
Ph.D.	Okuniewicz, Joyce	3/73	A Spectral Theory of Time-Dependent Quantum Mechanics	Prager	Position unknown
Ph.D.	Dietz, James	6.73	Chemical and Electrochemical Reactions of Mercury in Fused $NANO_3$-KNO_3	Swofford	DuPont Wilmington, Delaware
Ph.D.	Gadde, Ramachandra	6/73	Electrochemical Studies of Nitrite Oxidation and Reduction	Bruckenstein	Dept. of Chem., SUNY, Buffalo, New York
Ph.D.	Hagnauer, Helen S.	6/73	Study of Metal-Nitrogen Bonding in Ammonia and Pyridine Solutions Using Laser Raman Spectroscopy	Tobias	Position unknown
Ph.D.	Hassan, Mohammad Z.	6/73	Ring-Disk Studies Involving Mercury at Platinum and Mercury-Coated Platinum Electrodes	Bruckenstein	Dept. of Chem., SUNY, Buffalo, New York
Ph.D.	Johansen, Dorothy	6/73	A Determination of the Ground State Rotational Constants of Ethylene	Overend	Position unknown
M.S.	Ashe, Bonnie	7/73	A Study of the Reactions of Cyclooctatetraene-Iron Tricarbonyl with Selected Olefins	Van-Catledge	Dept. of Dermotology, Diehl Hall, University of Minnesota Minneapolis, Minnesota 55455
M.S.	Chan, Alicia	7/73	Syntheses and Reactions of 2,3,5,6-Tetraaryl-1,4-Dithiadiene Oxides	Dodson	Stone Laboratory, University of Minnesota, Minneapolis, Minn 55455
M.S.	Jondle, David Scott	8/73	Non-dissertation master's degree	Kreevoy	Air Force
Ph.D.	Chedekel, Miles R.	7/73	Aberrant Biosynthetic Studies in Nicotiana Tabacum and Nicotiana Glauca. II. Synthetic Studies of the Tobacco Alkaloids. 1,4 Additions to Acyl Carbanion Equivalents.	Leete	Post-doc., Dept. of Chem., Iowa State Univ., Ames, Iowa

DEGREE	NAME	DATE REC'D	THESIS TITLE	ADVISER	POSITION
Ph.D.	Chu, Sze-Tai Yen	7/73	A Theory of the Collision-Induced Singlet to Triplet Transition of Methylene	Dahler	Position unknown
Ph.D.	Que, Lawrence	8/73	Nuclear Magnetic Resonance Studies of Stereochemically Nonrigid Metal Complexes	Pignolet	Post-doc., Dept. of Chem., M.I.T.
Ph.D.	Rothman, William	8/73	The Fluorescence of Saturated Hydrocarbons	Lipsky	Post-doc., Dept. of Chem.,Univ. of W.Ontario, London, Ontario, Canada
Ph.D.	Wang, Victor Kai-Kuo	8/73	The Vibration-Rotation Dynamics of Simple Molecules	Overend	DuPont Chemical Corp. Wilmington, Delaware
Ph.D.	Zehner, Lee Randall	8/73	A Study of Some 1,4-Transannular Peroxides: Synthesis and Rearrangements	Fenton	Atlantic-Richfield Corp., Elenolden, Pa.
Ph.D.	Grisham, Charles	8/73	The Purification of the Sodium and Potassium Ion-Activated Adenosine Triphosphatase and Its Characterization by Spin Labeling	Barnett	Nat'l Cancer Institute Philadelphia, Pa.
M.S.	Benz, Henry	12/73	The Acid Cleavage of Cyclopropylmercuric Bromide	Kreevoy	Normandale Junior College Bloomington, Minnesota
M.S.	Elder, James	12/73	Kinetic Studies of Conformational Changes in Chymotrypsin and Its Derivatives	Lumry	Crop Entymology Branch, Canadian Agriculture Research Station, Lethbridge, Alberta, Canada
Ph.D.	Baughman, Ernest	12/73	H_2BH_2CN as a Reaction Intermediate and Acid Base Indicators in 80% DMSO-20% Water	Kreevoy	Instructor, Dept. of Chem., Univ. of Minnesota, Minneapolis, Minn 55
Ph.D.	Craighead, Kathryn	12/73	Nuclear Magnetic Resonance Studies of Outer Sphere Complexes	Bryant	3M St. Paul, Minnesota
Ph.D.	Davis, Kathleen A.	12/73	The Coupling of Harmonic Oscillators in Simple Polyatomic Molecules	Overend	Position unknown
Ph.D.	Giguere, Jacques	12/73	High Resolution Infrared Spectra of Simple Molecules	Overend	Dept. of Chem., Univ. of Sherbrooke, Sherbrooke, Quebec, Canada
Ph.D.	Ibrahim, Sherif E.	12/73	Bromide Ion-Acid Catalyzed Cleavage of Cyclopentadienyl Mercuric Bromide	Kreevoy	Dept. of Chem., SUNY, Buffalo, New York
Ph.D.	Jackson, Richard	12/73	The Chemistry of Some Derivatives of the Macrolide, Zearalenone	Fenton	DuPont Wilmington, Delaware

DEGREE	NAME	DATE REC'D	THESIS TITLE	ADVISER	POSITION
Ph.D.	Lawson, Craig	12/73	Emission of Liquid Benzene: Comparison of 1849 and 253A Excitation	Lipsky	Gulf Oil Corporation Houston, Texas
Ph.D.	Raucher, Stanley	12/73	An Approach to the Synthesis of Camptothecin	Borch	Dept. of Chemistry Columbia University, New York City
Ph.D.	Shaath, Nadim	12/73	On the Mechanism of Heterogeneous Catalytic Hydrogenolysis Reactions of 2-Substituted 2-Phenylnorbornanes	Garbisch	Post-doc., School of Pharmacy, University of Minnesota Minneapolis, Minnesota 55455