

MACTLAC

MIDWESTERN ASSOCIATION OF CHEMISTRY TEACHERS IN LIBERAL ARTS COLLEGES



TO: MACTLAC MEMBERS

DECEMBER 1988

FROM : OFFICE OF THE SECRETARY-TREASURER
ILLINOIS WESLEYAN UNIVERSITY
P.O. 2900
BLOOMINGTON, IL 61702

SUBJECT: 1988 ANNUAL MEETING REPORT

THE SAINT MARY'S COLLEGE MEETING - OCTOBER 28-29, 1988

Approximately 120 members of MACTLAC met on the campus of Saint Mary's College on two beautiful but chilly fall days for the thirty-sixth annual meeting. The entire meeting was exceptionally well organized by Dr. Phillip Bays and his colleagues at Saint Mary's College.

The meeting began on Friday afternoon with an amusing welcoming statement by Dr. Dorothy Feigl, Vice President, Dean and Professor of Chemistry at Saint Mary's College. Dr. Bays introduced the main speaker, Dr. Jerry Mohrig of Carleton College and MACTLAC president who gave a talk on Opportunities in Chemistry: The Role of Graduate Education.

Following a break, the conferees attended two one-hour discussion groups. Refreshments, tours and a social hour were followed by a buffet banquet in the Dining Hall. After the meal, all gathered in Carroll Hall to hear a superb and enlightening speech on Superconductivity by Dr. Robert Dynes of AT&T Bell Labs.

Saturday morning began with the Annual Business Meeting; the minutes follow. Dr. Margaret Cavanaugh, chairperson of the ACS Women's Chemists Committee gave the keynote talk, Emerging Opportunities for Women in Chemistry. One more discussion period followed. The minutes of discussion sections which were given to me are attached to this report along with a list of the discussion groups.

REMINDED ABOUT HONORARY AND EMERITUS MEMBERSHIPS: All members are reminded that persons must be nominated for Honorary Membership whereas Emeritus membership is awarded upon receiving a request for it upon retirement providing the person has been a MACTLAC member for at least ten years. All nominations should reach the Secretary-Treasurer prior to October 1, 1989 for consideration at the 1989 Annual Meeting.

CURRENT STATUS OF FUTURE MEETINGS: The Executive Council has set the following schedule for future annual meetings: 1989 Luther College, Decorah, Iowa; 1990 Lake Forest College, Lake Forest, Illinois; 1991 Albion College, Albion, Michigan; 1992 Grinnell College, Grinnell, Iowa

RECYCLE LIST: If you have equipment or other items which you wish to give away or sell cheaply, please send a description for posting on a bulletin board at the next annual meeting.

PLACEMENT OFFICE: PLEASE SEND ANY OPENINGS AVAILABLE IN YOUR SCHOOL TO ANNE SHERREN, NORTH CENTRAL COLLEGE, NAPERVILLE, IL 60566.

REQUEST FOR ARCHIVAL MATERIALS: Those of you who have any archival materials, please contact Anne Sherren at the above address.

My thanks to all of you who have made my job easier as your Secretary-Treasurer.

Respectfully submitted,

Forrest Frank

Forrest J. Frank, Secretary-Treasurer of MACTLAC

Friday, October 28, 1988

10:00 Executive Council Meeting
Rotary Room, Dining Hall

10-11:30 Registration
Hagar Student Center
Lunch on your own at an
area restaurant or
Dining Hall (Reservation)

1:00 General Meeting - Carroll Hall
Welcome
Dr. Dorothy M. Feigl
Vice President & Dean
Professor of Chemistry

Opportunities in Chemistry:
The Role of Graduate Education
Dr. Jerry Mohrig
Carleton College
MACTLAC President

Survey of NSF Grants
Nina Rosher

The Science Hall at Saint Mary's
J. Phillip Bays

2:30 Coffee Break - Science Hall

3:00 Discussion Group I

4:00 Discussion Group II

5:00 Tours and Social Hour
Notre Dame Chemistry Dept.
or Saint Mary's College Campus
and new Science building

7:00 Banquet
Dining Hall Lower Level

8:30 Superconductivity
Dr. Robert Dynes
AT&T Bell Labs
Carroll Hall

9:45 Social
Stapleton Lounge, LeMans Hall

Saturday, October 29, 1988

7:30 Breakfast on your own
at an area restaurant
or Dining Hall (Reservation)

8:15 Annual Business Meeting
Carroll Hall

9:15 Emerging Opportunities
for Women in Chemistry
Dr. Margaret Cavanaugh
Saint Mary's College
Chairman, ACS Women's
Chemists Committee

10:15 Coffee Break

10:30 Discussion Groups III

11:30 Executive Council Meeting
Rotary Room, Dining Hall

* The financial support of AT&T Bell
Labs is gratefully acknowledged

** Funded by the Education Fund of
the St. Joseph Valley Section
of the American Chemical Society

MACTLAC Executive Committee for 1988

Jerry Mohrig, President (MN)
Larry Funk, President Elect (IL)
Forrest Frank, Secretary-Treasurer (IL)
Larry Scheich (WI)
Ray Johnson (MI)
Reva R. Servoss (MO)
William Martin (IL)
Carolyn Mottley (IA)
Pat Fish (MN)
Phillip Bays (IN)
Donald E. Koeltzow, Past President (MO)
Anne T. Sherren, Archivist and
Placement Officer (IL)

DISCUSSION GROUP A - Roundtable Discussion of Mohrig's Talk
Leader - Gene Hubble
Recorder - Pete Wickham

Graduate school representatives were asked to react to Jerry Mohrig's keynote speech. One graduate representative thought there was more discussion of goals at his undergraduate college than in his graduate program, and perhaps universities should work on creating a small collegial atmosphere in the graduate departments. Another representative said that universities would be "doing a disservice to young faculty members by encouraging them to focus on teaching...". Bringing in money has become an overriding concern to a university in matters of promotion and tenure. Quality has become equated to bringing in outside support.

At Michigan State you must have ample grant support to continue your research - there is a Director of Graduate Studies and Director of Undergraduate Students (180 in each group) but there is increasing concern about their welfare and about teaching there. Not a lot of attention is paid to the education of new faculty members - they are left pretty much alone, with enormous autonomy. At Illinois, nothing is said formally by the institution but its action says: "research, research, research is all that is important." However, new regulations now being drafted are attempting to balance teaching and research. There are ever-increasing demands for interactions with other areas - we are heading into a new era in which research TEAMS from different areas will become increasingly important.

There is no mechanism between older faculty and younger faculty at present. Particularly a problem for women faculty - there needs to be more assistance from older, established faculty. A question was raised whether there is a check on faculty keeping students AFTER they have clearly qualified for a Ph.D. There seems little that is presently done, although there are thesis review committees to overview the progress of student research.

Perhaps the lengths of time that are required to obtain a Ph.D. in each particular program or department at different universities can be summarized and used as a guide to undergraduates seeking graduate schools. The point was made that some schools pare down their requirements for Ph.D. degrees and thereby graduate them more rapidly. Perhaps these differences in requirements at different programs could be summarized too.

The question of changes in ability of entering graduate students in recent years was raised; it seems to have changed relatively little. However, the number of foreign students has increased enormously in the last few years. Many of these have exceptional abilities; the abilities of domestic chemistry graduate students entering may have decreased somewhat in the last several years.

Perhaps this is indicative that the infrastructure of science in this country is in pretty bad shape. Gene Hubble put a graph on the board which showed an inverse relationship between the percent of the NSF budget devoted to science and engineering education and the proportion of graduate students who are from the U.S.

Almost all graduate students are required to do at least one year of teaching.

It was asked whether Mohrig had been asked to visit any graduate schools and talk about his concerns. He has not, but several graduate faculty have asked for permission to copy his address and distribute it to their students.

Is the value system at universities a little skewed? Can the question of quality of faculty work be evaluated? This is evaluated in terms of the funding they receive and in terms of the journals in which their articles are published. No mention of teaching was made in these evaluations.

DISCUSSION GROUP D - Organic Chemistry
Leader - John Yordy
Recorder - William Bordeaux

Three ideas were suggested as potential starting off points. In serial order:
MICROSCALE ORGANIC EXPERIMENTS elicited quite a bit of response with 7 institutions presently using or considering some use of microscale. Four institutions use the Mayo Kits and two use Williamson's. One institution uses the Wilcox book. Comments on microscale included use of sand baths of various sizes, potential hazards of using hot plates and cold pyrex dishes with sand, use of aluminum blocks for heating, use of dimmer switches for control of sand baths, frustrations by some students with little or no yields, and the timing of micro experiments in terms of lab schedule (some thought that early use proved to be less frustrating to students than micro only in the second term).

TEXTBOOKS were also discussed and reference was made to the August, 1988 issue of J Chem Ed for an article on the concern for quality in textbook and the "sameness" of so many standard texts. Three institutions currently use Morrison & Boyd, three use Solomonis, and one each for Carey, Pine(?), Ogren(?), and McMurry. Comments were solicited on texts and criteria for choosing a particular one. Some general comments were that a text needs to be readable, have good examples, teach what organic chemistry really is, and that the chapter sequence be agreeable to the professor. One suggestion made was that potential adopters should be able to contact other faculty who have adopted the proposed text to ascertain their satisfaction with it. Specifically, Solomonis, 3rd ed. was said to be very readable with good student feedback; 4th ed. readable, good "artwork", good problem sets and pleasing order of topics; Siretweiser expected very strong introductory background, was difficult to use, and the multitude of details gave even talented students difficulty; Wade inferior to Solomonis but with good four-color artwork liked by students; McMurry, 1st ed. readable and liked by students, chapters relatively short, good summary problems and within-the-text problems, content in many ways almost a clone of Solomonis, good summary of nomenclature in student guide (2nd ed. has four-color artwork).

PEDAGOGICAL TECHNIQUES APPROPRIATE FOR MEN AND WOMEN was not discussed except for an excerpt from a book, Women's Ways of Knowing discussing the different ways men and women learn and how we can choose the best ways to achieve our objectives in teaching chemistry.

Miscellaneous items included discussion of different molecular model kits, Darling and macro kits available from Aldrich, inexpensive kits by Freeman, and a way to illustrate S_w2 reactions with a dowel inserted into the base of a music stand. Music Departments, BEWARE!

** For next year's meeting, there was a suggestion for talks on chemical safety, handling of hazardous wastes generated in the lab, governmental regulations and OSHA standards.

DISCUSSION GROUP G - Computers in Chemistry, MS DOS Environment
Leader - John Zimmerman Recorder - Ray Johnson

John Zimmerman gave demonstrations of several programs for MS-DOS Computers. The programs were

Wordperfect Library
Wordperfect word processor
FABTIC - an acid-base titration curve generator
KC Discoverer - a database of properties of the elements
- program allows plots of properties
Hyperplot - a graphics program that was used to display titration curves, Fourier transform plots, and smoothing
Statgraphics - a sophisticated statistical package

His demonstrations were carried out on a liquid crystal PC tablet. Handouts listing several programs for use in chemical education, and a description of his Computers in Chemistry course were available. MACILAC members may obtain copies of these and also a handout on LC tablets by contacting John at Wabash College, Crawfordsville, IN 47933.

DISCUSSION GROUP H - Biochemistry
Leader - Rodney Boyer Recorder - Addison Ault
Attendance: 12

The Moderator was Rodney Boyer of Hope College. Twelve persons were present. Topics discussed were 1) the organization of the contemporary biochemistry course, 2) the relationship between the biochemistry course of a chemistry department and courses taught in the biology department, 3) the lab component of biochemistry courses, and 4) computer-based molecular graphics.

Discussion of Topic 1) suggested that basic topics such as carbohydrates and amino acids were still present, but that perhaps metabolism was being replaced by "molecular biology", or "molecular genetics". Photosynthesis was mentioned as a topic that received little attention. Texts mentioned were Lehninger and Stryer.

Discussion of Topic 2) led to the observation that chemists seem to emphasize chemistry, or structure, mechanism and regulation, while biologists consider function, or the place and the role of the process in the cell.

Discussion of Topic 3) included mention of simple labs such as the titration of an amino acid or determination of caffeine by HPLC, and more elaborate experiments such as the isolation of alkaline phosphatase. Reports varied from fill-in-the-blank to full discussions that include an introduction and sections on methods, results, and discussion.

Discussion of Topic 4) indicated that no one present was doing anything in this area.

DISCUSSION GROUP O - Physical Chemistry
Leader - Luther Erickson Recorder - Larry Schweich

The group began with a discussion of the use and availability of software to be used in Physical Chemistry. Dr Erickson from Grinell brought a copy of "The Library of Physical Chemistry Software" by Ayscough and Atkins that is available from W.H. Freeman and Company. It is a 6 disk package that covers the major areas of Physical Chemistry and has been well received by those in the group that have tried it. This package is only for IBM and compatibles, It was also reported that the software by Barrow is out in a new version and that copies can be purchased for either the IBM or Apple. There are also many packages available for specific purposes such as graphing and solution of equations. The group felt that the time spent teaching these packages, as well as word processing and spreadsheet packages, is well worthwhile. A brief discussion of how to get students interested in Physical Chemistry followed. It was suggested that demonstrations can be a very useful way to gain the attention and interest of the students.

The cost of experimental Physical Chemistry, in particular the increasing use of lasers and the associated expense, was discussed. Many in the group felt that for the small colleges this expense can become a burden. The discussion turned to the topic of Math and Physics requirements for Physical Chemistry. There is a wide range of requirements within the group, however the general impression is that it is difficult to require enough Math and Physics in the liberal arts setting. Most of the programs have a minimal requirement and then recommend that additional courses be taken. A brief discussion of the merits of having students do summer research at other institutions and, as usual, a discussion of course content with various suggestions of material that could be eliminated from the courses followed.