theCHEMICALbulletin

OCTOBER • 2000

CHICAGO SECTION AMERICAN CHEMICAL SOCIETY

Joint Meeting of Northwestern University Department of Chemistry and the Chicago Section ACS

Basolo Medal Award Lecture, Dinner and Presentation

FRIDAY, October 6, 2000

Basolo Medal Lecture Location:
Northwestern University

Technological Institute
2145 Sheridan Road
Evanston, IL
Lecture Room 3

DIRECTIONS TO THE TECH INSTITUTE:

From the city: Take Lake Shore Drive North to Sheridan Road into Evanston. Continue on Sheridan Road to the Tech Institute.

From the west: take I-88 east to 294 north to Dempster east. Proceed east on Dempster into Evanston. Turn left onto Chicago Ave and proceed to Sheridan Road. Take Sheridan Road north to the Tech Institute.The Technological Institute is at the intersection of Sheridan Road and Noyes Street in Evanston.

The location of parking lots and one-day parking stickers will be available to those who register in advance with the Section office. Please register before Wednesday, September 27, 2000 to allow time for the parking stickers and maps to be mailed to you. Parking is scarce at the Technological Institute; car-pooling is encouraged.

Lecture room 3 is on the first floor of the Technological Institute and is most easily reached by entering through the main doors facing Sheridan Road. The lecture room is clearly marked and there will be signs at the entrance to guide you to the room.

Basolo Medal Lecture:–4:15 P.M.-5:30 P.M.

The Medalist Lecture is open to the public and admission is free to all those wishing to attend.

James P. Collman, Daubert Professor of Chemistry at Stanford University, "Functional Synthetic Analogs of the Active Site in Cytochrome-c Oxidase"

In mammals, the principal source of energy is the oxidation of carbohydrates, proteins and fats. Although, oxygen is the ultimate oxidizing agent for these processes, it does not react directly with these nutrients. Instead, electrons from the breakdown of these compounds are passed to the oxygen molecule along a complex chain of catalytic molecules called the respiratory chain.

The catalysis of multi-electron redox reactions is a fundamental problem, which has been solved, in certain biological systems through the agency of multimetallic enzymes (cytochrome c oxidase, laccase, and nitrogenase). The detailed mechanisms by which these metalloenzymes function are still obscure.

Cytochromes, consist of two parts, namely an iron complex called heme and a protein. The active site in metabolic oxidation is in the heme portion, which contains an iron ion coordinated by four nitrogen-iron bonds at the center of a planar ligand called a porphyrin.

All members of the porphyrin family have the same central ring structure, but in living systems, their bonding properties and catalytic performance have been modified by the presence of different peripheral substituents in various biologically important materials. By synthesizing modified versions of various heme analogs in the laboratory and observing the effects on performance, it is possible to gain insight into the nature and mechanism of the electron transfer process.

Professor Collman's research is directed towards the synthesis of such functional biomimetic catalysts for the electrochemical reduction of dioxygen to water (a 4e- process), nitrogen to ammonia (a 6e- process), and the oxidation of hydrogen (a 2e- process). Recently Collman's group has developed five functional models for the active site in cytochrome c oxidase. These complexes reduce O2 by 4e- at pH 7. The complex that is structurally closest to "the real thing," is the best catalyst.

James P. Collman, Daubert Professor of Chemistry at Stanford University, was born in Beatrice, Nebraska, October 31, 1932. He received B.S. (1954) and M. S. (1956) degrees from the University of Nebraska, and a Ph. D. from the University of Illinois. He joined the University of North Carolina faculty as an instructor in 1958, rose to full professor by 1966, and moved to Stanford in 1967. Professor Collman is a member of the National Academy of Sciences and of the American Academy of Arts and Sciences. He has been a NSF pre-

(continued on page 2)

doctoral and postdoctoral fellow, as well as an Alfred P. Sloan fellow. He has twice held Guggenheim fellowships; he is also a Churchill fellow (Cambridge, Great Britain) and has been Visiting Erskine fellow in New Zealand. In 1972, Collman won the ACS California Section Award (13 western states). In 1975, he received the ACS Award in Inorganic Chemistry, and in 1986 he was one of the first Arthur C. Cope scholars. In 1983, Collman was named California Scientist of the Year. In 1990 and 1991 respectively, he received the ACS Pauline Award and Distinguished Service Award in the Advancement of Inorganic Chemistry. In 1997, he received the ACS Bader Award in Bioinorganic Chemistry. His teaching has been recognized by Stanford University with a Distinguished Teaching Award (1981) and the Allan V. Cox Medal for Excellence in Fostering Undergraduate Research (1988). He has received honorary degrees from the University of Nebraska and the University of Burgundy in France.

Professor Collman's research interests are very broad, encompassing projects which reach across the face of chemistry. He has prepared synthetic analogues of the oxygen binding and activating hemoproteins. He has invented catalysts for the four-electron reduction of dioxygen. He has carried out extensive work in organometallic chemistry. Recently, he has made and characterized a wide variety of metalloporphyrins manifesting multiple metal-metal bonds. He also works in superconductivity (in collaboration with a Stanford physicst, W. A. Little). Approximately 30 of Collman's former coworkers hold academic positions in universities throughout the world.

Dinner Location: Kendall College
Culinary School
2408 Orrington Avenue
Evanston, IL
The Dining room

DIRECTIONS TO KENDALL COLLEGE:

Kendall College is located just a short walk (about 3 blocks) from the Tech Institute. If you are not attending the lecture and, instead, driving directly to Kendall College Culinary School, the following are directions from the Edens Expressway. Take the Edens to the Old Orchard Road exit. Proceed straight east to Green Bay Road and turn north two blocks to Central Street. Turn right onto Central Street and go two streets beyond Ridge Road to Orrington Avenue. Turn south onto Orrington Avenue 1.5 blocks. The culinary school has limited parking in the lot adjacent to the dining room.

Social Hour: **5:45 P.M. - 6:45 P.M.**
Complementary wine and hors d'oeuvres served butler style

Dinner: **6:45 P.M.**

Because of the special nature of this program and the limited seating available, reservations will be taken in a manner similar to our annual Willard Gibbs event. Refer to the reservation response form below.

Dinner reservations must be received by Wednesday, September 27, 2000. Dinner cost is $35.00.

The menu is: Mesclun Salad, Choice of either Braised Beef Short Ribs with Potato Turnip Puree and Onion Tumbleweed Sauce, Blackened Red Fish with Creole Rice and Cajan Beurre Blanc Sauce, or Vegetarian Pasta Preparation. Rolls, butter, and beverage. The Dessert will be a selection by the pastry chef.

General Meeting: **8:00 P.M.**

Presentation of the Basolo Medal and remarks: Sharon Northup, Chairman, Chicago Section American Chemical Society, James A. Ibers, Chairman, Chemistry Dept., Northwestern University, James P. Collman, 2000 Basolo Medalist, Stanford University

BASOLO MEDAL DINNER RESERVATION FORM

NAME_____

AFFILIATION_____

ADDRESS_____

CITY_____STATE_____ZIP_____

TELEPHONE_____FAX_____e-mail_____

PLEASE RESERVE_____TICKETS at $35 PER TICKET.

TOTAL (Make check payable to "ACS Chicago Section") $_____

DINNER CHOICE: MEAT_____ FISH_____ VEGETARIAN_____

RESERVATIONS ARE A MUST. WE WOULD LIKE TO HAVE THE COMPLETED RESERVATION FORM AND CHECK IN THE CHICAGO SECTION ACS OFFICE BY SEPTEMBER 27, 2000 so that the tickets and directions can be mailed in a timely manner.

Please return this reservation form to:

CHICAGO SECTION AMERICAN CHEMICAL SOCIETY, ATTN: BASOLO RESERVATIONS, 7173 N. Austin Ave., Niles, IL 60714

Please advise if you need special directions or a one-day parking sticker for the Tech Institute.

"CHEM SHORTS" For Kids

THE SCIENCE OF MONEY

Kids, chemistry is so common that it can even be found in money. Here we'll learn some science about coins and bills. Let's talk about coins first. Pennies obviously look different by their color while all the rest appear to be the same silvery color, until the new 2000 "golden" Sacagawea dollar coin came along. Have you ever thought about what metals are used to mint these coins? All the silvery-looking coins are actually made out of copper with small amounts of nickel. This nickel amount can be as low as 8% (dimes, quarters, and half dollars) to as much as 25% (nickels). Makes sense that the most is used for the nickel, right? The new gold dollar is really made of "manganese-brass", which is 88% copper, 6% zinc, 4% manganese, and 2% nickel. The penny has seen quite a few changes over the years. It was pure copper way back in 1793-1837. For the next 20 years it was bronze (95% copper, 5% tin+zinc). Then even this small amount of tin was removed in 1962. In 1982, pennies became copper-plated zinc coins, with a thin coating of Cu (2.5%) over a pure zinc core.

Have you noticed that some coins have grooved edges? Dimes, quarters, half-dollars, and dollars used to contain precious metals like gold and silver. Grooved edges helped stop counterfeiting. It also stopped the filing down of edges by people who were collecting (actually stealing) the precious metals. Even though coins no longer have such metals, grooved edges are kept because they help the visually impaired to identify them. The chemical element symbols for all of these coinage metals are: copper (Cu), nickel (Ni), manganese (Mn), zinc (Zn), tin (Sn), gold (Au), silver (Ag).

Did you know that "paper" money is actually made of 1/4 linen and 3/4 cotton? This makes it more like fabric than paper and explains why it's washable. There are many counterfeighting-fighting features used, especially on the new "big head" bills, but we'll mention only a few here. You notice of course that the portraits are enlarged and off-center. This allows for a watermark, which is another portrait visible when held up to bright light. The watermark is formed by varying paper density in a small area during the papermaking process, and does not copy on color copiers or scanners. A security thread appears in a different location on each new denomination. When held to a light you can see "USA TEN" or "USA TWENTY", etc., and flags in this thin thread. When viewed under ultraviolet light, the thread glows different colors. For $5 it is blue/purple, $10 is orange, $20 is a bright green, $50 is yellow, and $100 is pink-red. These colors arise from various fluorescent dye molecules used in the inks. Finally, for every new bill except the $5, a color-shifting ink feature is used. The number in the lower right corner changes from green to black as the bill is moved. The change in color is the result of multi-layered metallic flakes added to the ink. When the bill is tilted, light reflects off these flakes at different wavelengths and changes colors. This is called color diffraction, which is also responsible for the color variations found on the wings of some butterflies.

References: The Bureau of Engraving & Printing's website at www.moneyfactory.com, and the U.S. Mint's website at www.usmint.gov (both have great kids sections) Also www.pbs.org/wgbh/nova/moolah/anatomyprinting.htm

Written by: K. A. Carrado, Elementary Education Committee.
Past "ChemShorts" are on the internet at: http://membership.acs.org/C/Chicago/ChmShort/kidindex.html

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History of the Basolo Medal

The Basolo Lectures were established by the former students of Fred Basolo in appreciation for his contributions to inorganic chemistry at Northwestern University and for his equally outstanding contributions to the profession of chemistry. Fred Basolo, Charles E. and Emma H. Morrison Professor Emeritus of Chemistry, Basolo, a faculty member for more than 50 years, is a pioneer in understanding the basic chemistry of transition metals such as iron, copper and zinc. Professor Basolo was President of the American Chemical Society in 1983 and Chairman of the Chemistry Section of AAAS in 1979. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Italian Academy of Sciences Lincei. He received the first Joseph Chatt Medal of the British Royal Society of Chemistry and the 1996 Willard Gibbs Medal from the Chicago Section of The American Chemical Society. He will receive the 2001 Priestley Medal, the highest honor awarded by the American Chemical Society (ACS). The award is given for distinguished service to chemistry. Other recent awards include the 1993 Chemical Pioneer Award and the Gold Medal Award from the American Institute of Chemists, the 1992 ACS George C. Pimental Award in Chemical Education, and the 1991 Padova University Medal. He has also received the ACS Award for Distinguished Service in Inorganic Chemistry and the Chinese Chemical Society Medal. Basolo has published more than 380 scientific papers and co- authored two books.

Since 1991, the department has honored an individual for outstanding research in inorganic chemistry. The award consists of a medal and an honorarium. The Fred Basolo Medal is engraved on the reverse with the medalist's name and the date of the lecture. Previous Basolo Medalists are: Ralph Pearson (1991), Henry Taube (1992), Jack Halpern (1993), Harry Gray (1994), Lawrence Dahl (1995), Richard Holm (1996), Kenneth Raymond (1997), Malcolm Green (1998) and Thomas J. Meyer (1999).

NORTHWESTERN UNIVERSITY DEPARTMENT OF CHEMISTRY SEMINARS

When classes are in session, each week the Department of Chemistry has an inorganic division seminar, an organic division seminar, a physical/analytical division seminar and a catalysis & surface science seminar. Often there is a colloquium scheduled at 4:00 p.m. on a Friday, of general interest to all chemistry divisions.

You can access a current listing of colloquia and seminars at: http://www.chem.nwu.edu/calendars/.

This listing is updated on a daily basis. Some of the colloquiums are here.

October 6 BASOLO MEDAL (4:30 p.m., Tech Lecture Room 3)
James P. Collman, Stanford University
"Functional Synthetic Analogs of the Active Site in Cytochrome-c Oxidase"

October 13 CHEMISTRY COLLOQUIUM (4:00 P.M., Tech Lecture Room 3)
Cynthia M. Friend, Harvard University
"Selective Chemical Processes on Thin-film Oxides and Nanoparticles: NO reduction Processes"

October 27 (4:00 P.M., Tech Lecture Room 3)
ACS INORGANIC CHEMISTRY AWARD SEMINAR --Sponsored by Aldrich Chemical Company
Edward I. Stiefel, Exxon Corporation
"Transition Metal Sulfar Chemistry: Fundamental Redox And Reactivity Trends And Their Exploitation In New Technology"

MUTUAL RELATIONSHIPS
SHARON NORTHUP, CHICAGO ACS CHAIR 2000-2001

The local chapters of the ACS serve as conduits of new ideas and services as well as developing National ACS programs in the local area. This article expands on these mutual relationships and identifies opportunities for member involvement.

As an example of these mutual benefits, Larry Berman and Steve Sichak, co-chairs of the Chemical Health and Safety Committee, co-authored a book on chemical safety based on their work in Chicago area schools. This was directed to chemistry teachers in primary and secondary education. National ACS was impressed with the quality and thoroughness of the book and has printed 10,000 copies for national distribution. Kids and Chemistry is a regular column in the Chemical Bulletin by Kathleen Carrado, chair of the Elementary Education Committee. Kids and Chemistry is widely distributed through our web pages and the National ACS.

The local chapters also have an important role in improving the public understanding of science. Our monthly meetings are targeted towards presentations by outstanding chemists for the general audience as well as the specialist. Keith Kostecka and Diane Kozelka are responsible for the 2000-2001 program schedule. Resolve to attend one or more of the monthly meetings to broaden your horizons and learn more of the basic science and how we are shaping our futures.

Topical groups often have a monthly meeting prior to the dinner meeting. These sessions focus on topics of interest to the specialist. Dave Crumrine, Margaret Levenberg and Russ Johnson will be working to bring some new and interesting programs in the coming year. The House committee Chair, Frank Jarzembowski has been active this summer in making the site arrangements for the monthly meetings. Cherlyn Bradley, Richard Cornell and Suzanne Shih, members of the House committee, will be at the door to greet you each month.

Educational activities are a major service function of the local sections. Many of these implement local programs that are also part of the National ACS outreach. In November, local ACS sections will celebrate National Chemistry week. These programs are geared towards improving the public understanding of science and introducing our youth to chemistry. Many of our members and the local schools look forward to this annual program. The National Chemistry Week program requires many volunteers and additional help is always welcome. David Crumrine and Tom Kucera, co-chairs of the section's National Chemistry Week committee, are planning organizational meetings in preparation for the big event.

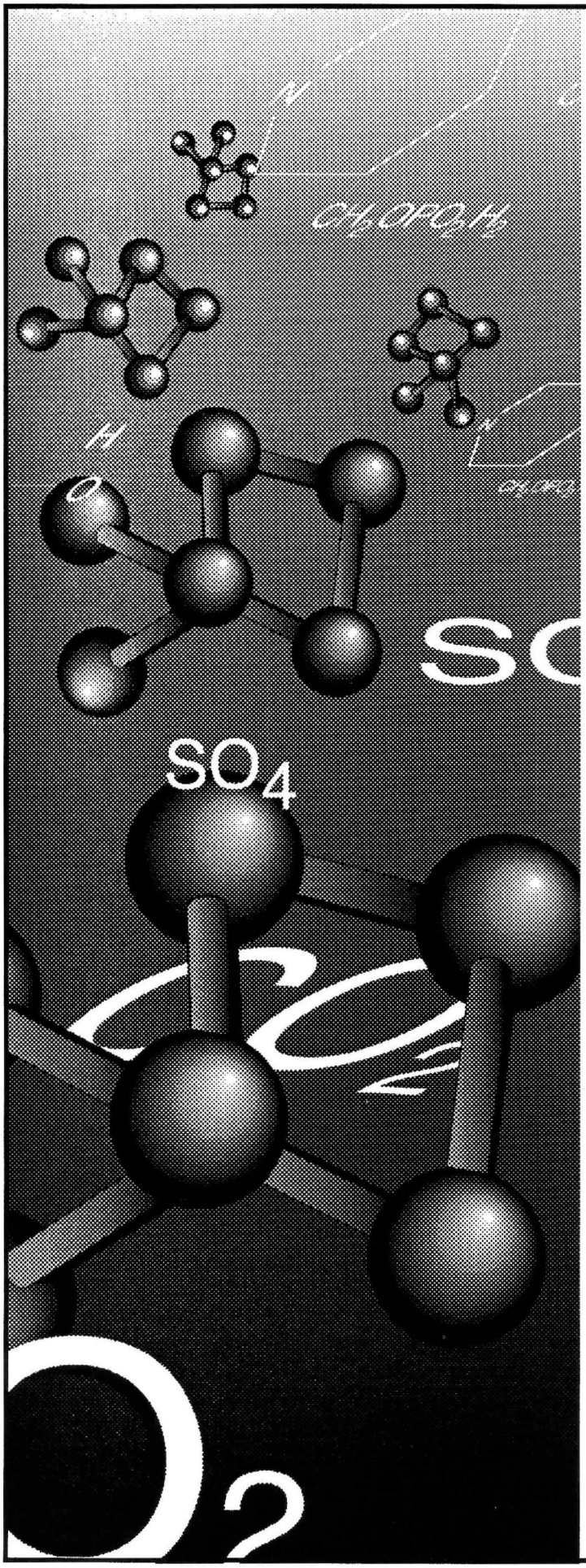
A more intense educational activity is the Chemistry Olympiad for high school students. The winner of the local examination of chemical knowledge will compete in the national exam and hopefully, the international Olympiad. The local section plays an active role in preparing the exam, communicating with the local high schools, and other arrangements. The endowment funds and contributions from local businesses and corporations together provide generous scholarships to the top participants in the Chemistry Olympiad. If you would like to play a part in this program, please contact the High School Education co-chairs, Ann Levenson and Ami Lefevre. Project SEED works at the local level to provide funding and summer research activities in chemistry. This program enables minority students to gain experience in chemical research and is managed by Cherlyn Bradley and Charles Cannon. Other educational outreach activities are focused on college education (Charles Cannon, chair), continuing education (Fred Turner and Marsha Phillips, co-chairs) and the Chicago School Board Liaison (Nathaniel Gilham and Elizabeth Cozzi, co-chairs). The June dinner meeting is dedicated to education and includes appropriate programs as well as the awarding of scholarships to the Chemistry Olympiad winners.

Services for ACS members in the Chicago area are other areas of local initiatives. These include committees on Employment (Bob Shone and Anthony Toussiant, co-chairs), Membership Affairs (Guy Rosenthal, chair), Minority Affairs (Woody Johnson and Daryl Prater, co-chairs), Professional Relations (Seymour Patinkin, chair) and Younger Chemists Committee (Allison Aldridge, chair). Barbara Moriarty, editor, and Milt Levenburg, Webmaster, work hard to keep everyone informed of these activities through publication of the Chemical Bulletin and maintenance of our web site (http://membership.acs.org/Chicago), respectively. Marilyn Kouba and Kenneth Olsen serve as delegates and assist with the organization of the Great Lakes Regional meeting of the ACS.

Your local section also celebrates the achievements of its members, volunteers and other chemists. These annual activities include recognition of ACS membership anniversaries, the holiday party, the Distinguished Service Award for contributions to the local section, Steiglitz Lecture, Basolo Lecture, and Gibbs Medal. The Steiglitz and Basolo lectures are co-sponsored by The University of Chicago and Northwestern University, respectively. The Endowment committee (Paul Labine, chair) assists our celebrations by raising funds for these awards and scholarships. The Awards committee works hard to identify a list of candidates for the awards and in the selection of jurors for the Gibbs Medal. Last but not least is the Public Affairs committee's (Jim Schoffner and Barbara Moriarty, co-chairs) commitment to keep our local section abreast of issues relevant to the chemical community.

Much less visible but no less important are the committees, staff and volunteers who keep the office running, manage the budget and protect the assets of the Chicago ACS. Adele Rozek, Director of Budgets and Office Affairs, has been busy developing the budget for the fiscal year and organizing the office. Tom Kucera, Claude Lucchesi and Arthur Westin are Section Trustees and oversee our investments. Gayle O'Neill and Ellen Sullivan staff our office through a contract with TEI Analytical, Inc. The Bylaws and Policy committees are involved in keeping these documents current with the evolving nature of the local section activities and programs. The members of the Bylaws committee are Adele Rozek, Herb Golinkin, Sharon Northup and the immediate past chair. The policy committee consists of Herb Golinkin, Marilyn Kouba, Marty Lansdorf, Sharon Northup, Daryl Prater and the immediate past chair. The Board of Directors will elect a member to fill the vacancy of the past chair, Bob Buntrock who has relocated to Minnesota.

I often wonder how our local section blossomed into such a rich variety of programs and services for our members. The answer lies in the skills and expertise of our members. Many members derive immeasurable satisfaction in "giving-back" to society through work in professional organizations. Others recognize a need to contribute and strengthen education and professionalism. Many create closer friendships with colleagues in their community. Irrespective of the source of motivation, the local section welcomes participation in its activities and new ideas to serve the needs of our membership.



The Eastern Analytical Symposium would like to announce . . .

the presentation of sessions specifically devoted to the needs of Pharmaceutical Analytical Chemists at the 2000 EAS. These sessions will take place during our annual meeting to be held October 29 – November 3, 2000 at the Atlantic City Convention Center in Atlantic City, New Jersey. Program highlights will include, but will not be limited to sessions on the following topics:

- Thermal Analysis for Polymorph Characterization
- Solids Characterization
- Methods Transfer
- Pharmaceutical Near-IR
- Dissolution
- Methods Validation
- HPLC of Pharmaceuticals
- Laboratory Investigations
- Pre-Approval Inspections

In addition, the roster of invited and contributed papers will be well complemented by both Short Course and Workshop presentations targeted at the attendees interested in more in-depth exposure to each of the above noted topics.

This program, combined with the new central location of Atlantic City, New Jersey, provides the Pharmaceutical Analytical Chemist with the right technical program in the right location for either picking up a new skill or sharpening existing ones.

This year, as always, EAS will continue to offer sessions, short courses, and workshops geared to the interests of all Analytical Chemists, spanning the range from microscopy to NMR, miniaturization, and separations based on chip technology.

EAS
P.O. Box 633
Montchanin, DE 19710–0633

For more information visit our EAS web site:

http://www.eas.org
email: easinfo@aol.com
EAS Hotline: 1-610-485-4633
EAS Faxline: 1-610-485-9467

IN MEMORY OF ELLEN COZZENS; JULY 14, 1914 - JANUARY 18, 2000

By Jim Shoffner

Somehow the manner in which I heard about Ellen's passing seems quite fitting, given the fact that we had both spent so much time working together on section meetings. Thus, it was during the social hour at the January monthly meeting that I got the news of her death. I just know that Ellen would have had something witty to say about it; something like, "Well, Jim, what did you expect? You didn't expect to get the news in a grocery store did you?" Those of us who got to know her learned to be ready for her comments about situations, people, the world; just whatever happened to be on her mind at the time from a book she had just read, or some other life experience. She seemed to be able to find some type of insightful nugget from any situation that had come into her view since you last saw her. But mostly we talked about the American Chemical Society, which she dearly loved. All of it, not just the Chicago Section. Ellen was not a chemist, but she had been around so many of them for so long that you would not have known it. She used to attend National Meetings occasionally, and she would tell me that "She just wanted to find out what was going on." And so it was that Tom and Dorothy Kucera, Claude and Ruth Lucchesi and I traveled to St. Chrysostom's Church to pay our last respects at a memorial service for her on a snowy Saturday Morning in January. The church is the parish church in her old North Dearborn neighborhood about two blocks from where she had lived during all the time I had known her. That is, except for the last year of her life that she spent in Presbyterian homes in Evanston. Each of us had been section chairmen at one time or another while Ellen was office manager. No matter how old you were, Ellen referred all of us as her "boys." And perhaps that was proper terminology, because she did order us around like boys and we in turn behaved accordingly. We knew that if we wanted to have a successful year, we had better do exactly what she said. She had a knowledge of section history, the various "characters" who had been in the section etc.

As chairman, you had everything organized for you and there was no doubt about who was in charge. You just knew that she was giving freely of her advice and experience for the good of the section. Indeed, there were some who were willing to run for chairman-elect because they knew that Ellen would be there to support them. I have been told that the same was true for those who were Bulletin editors. Ellen had her degree in English from Northwestern and she was a superb writer and editor of text. She served the section faithfully and well from 1946 until her retirement in 1979, being manager from 1971- 79. After she retired she still came to section meetings occasionally, especially if something was taking place that involved people whom she had worked with. I was very happy and thrilled to see her in the audience when I received the Public Affairs Award in 1986. She was associated with some of the great times and achievements of the section. All of us can best honor her memory by committing to do the very best we can to maintain a strong section office which continues to support the most outstanding local section in the American Chemical Society. She would love that.

My special thanks to Tom Kucera for sharing many of his memories and much of his knowledge of Ellen.

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