

# BARNARD CHEMISTRY DEPARTMENT NEWSLETTER

## August 1995

Greetings once again to alumnae and friends from the Barnard Chemistry Department. We enjoy this opportunity to keep in touch with you and give you our news, and we hope we can help your keeping in touch with each other. Keep those notes and letters and visits coming!

### NEWS OF THE COLLEGE

President Judith Shapiro, on the job for a year now, has been very effective in setting an upbeat and optimistic tone and in moving the college forward in many practical ways. She visited the Chemistry Department very early on, last August, and got a first-hand glance at our laboratories and offices, and heard about our needs and plans. Lots of much-needed repair work and upgrading of the physical spaces at Barnard continues - lighting, painting, roofing. Judith is a strong advocate of computing college-wide, and she herself answers e-mail messages. This is not a channel we use casually, but it is very nice to know that the lines of communication really are open now.

Last year Flora Davidson did an extraordinary job as Acting Dean of the Faculty, during a year when great changes were occurring in college personnel, and over a dozen faculty tenure cases went through the lengthy and difficult Barnard/Columbia evaluation process. Bob McCaughey, who had resigned as Dean to return to the History department, pitched in to help with this particular aspect of the dean's job. This says a great deal about the spirit and dedication to be found at Barnard when we are at our best.

A search for a new Dean of the Faculty was mounted last year, and Prof. Lessinger served as a faculty member of that committee. Several excellent candidates emerged from a very thorough search. The final selection, made by President Shapiro from three names sent to her by the committee, is Dr. Elizabeth Boylan, who has just started on the job. Liz is a biologist, whose expertise is in the study of cancer and the effects of various steroids on its incidence in mice. She was an undergraduate at Wellesley College, has her Ph.D. from Cornell University, and comes to us from Queens College, where she has been for over 20 years. She has considerable administrative experience at Queens College, and I think exactly the right blend of understanding and personality to deal with the Barnard faculty and promote its interests, and those of the college. Since I was on the selection committee, I have had an advance look at Liz, and as chair of the department I have already started to work with her. I think she will be a splendid dean, and I think Barnard will be very well served.

The Altschul lobby is indeed finished and open for business, and we found it an excellent space in which to have our departmental luncheons each semester. It is large and light, people can circulate easily and talk with one another, and it is well appointed without being too formal. Other parties and displays and functions have been held there, and it is turning out to be a useful and much-needed space.

On the 4th floor of Altschul, the new computer facility is up and running. The college decided to install 16 Pentium personal computers, all hooked up to the network, and two laser printers. The computers were used in a variety of classes last year, including our analytical laboratory course, some environmental science courses, and others. Instructional classes for faculty and staff are also held in this room. Yours truly, always scrambling to keep up with the rapid changes in computing, took some classes himself, on using e-mail and on using Windows and File Manager. The college really is moving into the computer age across the board, and these classes are very popular. The Barnard Computing Center is extremely helpful. There has been a great and positive change under its new director, Jean Follansbee, formerly of the Physical Education Department.

Cynthia Bennett has returned to the Grants Office as the Director of Foundation and Corporate Relations. We have always been happy to work with Cynthia in the task of raising money. Cynthia is ably assisted by Julia Bonem, who has worked closely and well with the Chemistry Department. We have been fairly successful in our efforts, during a time when financial support is increasingly hard to come by.

### NEWS OF THE DEPARTMENT

The big news is our success in the search for a new Assistant Professor of Biochemistry. We had 58 applications; perhaps 10 or 12 of those fit what we needed in terms of appropriate experience, field of research, and demonstrated abilities or strong promise as teachers and research scientists. We had full-day interviews with four candidates, each of whom described his or her research work. We are very pleased to announce the appointment of Dr. **Ann Shinnar**. Ann has a B.A. in Chemistry from Goucher College and a Ph.D. in Biochemistry from Princeton University. She has extensive research experience, with post-doctoral appointments at Harvard Medical School, Rockefeller University, and the University of Pennsylvania. She has also taught, at Goucher, Swarthmore, and UPenn. Ann comes to us after working for several years at Magainin Pharmaceuticals, a small company set up to investigate and develop new peptide antibiotics. She submitted two patent claims based on her original research at Magainin.

Ann's own research interests are in peptide chemistry. She would like to take a look at primitive animal species with simple immune systems as sources from which to isolate and characterize new peptides, especially those useful in chemical defense, either as antibiotics or with some other sort of activity. She is also interested in peptide conformation and would like to do some circular dichroism investigations in this area. A further interest is to investigate the insertion of peptides into lipid monolayers. These all sound like projects that would fire the enthusiasm of undergraduate researchers as well, and we think Ann will have no shortage of students to work with once she gets up and running. As I write this, Ann is setting up to teach the biochemistry laboratory in the fall, working with Noraini Yatim. Ann and her husband, who is a cardiologist now working in New York City, have just moved to Teaneck, NJ from their previous residence in Bala Cynwyd, PA. They have 3 children. There should be no problem keeping busy!

The Chemistry Department was very grateful to receive a gift from Hewlett-Packard, another gas chromatograph / mass spectrometer, a newer model of the HP GC/MS that we bought a year ago. This instrument, worth \$38,100, will be incorporated into the organic chemistry course immediately, and will also be used for experiments by environmental science students. The first GC-MS was so successful and popular that it became a workhorse overnight for the organic students, and was used by Julie Nichols '95 as the main instrument for her environmental science thesis. We also received a \$10,000 gift from Bristol-Myers Squibb for the purchase of a new autoclave for the biochemistry laboratory. When that laboratory was set up, we could only afford a used model, which has had to be refurbished yet again. It really is time to get a better autoclave. Ann Shinnar is looking at the catalogs and making the calls now.

After many years, we noticed that the ventilation in our organic stockroom could be much improved simply by putting the inflow and exhaust openings where they would move vapors out of the room, instead of leaving them pretty much untouched as in the original design. This renovation gave us the chance to move everything off the shelves, clean up, and dispose of chemicals either of historic interest only, totally useless, completely decomposed, or liable to become dangerous if left around. The new stockroom looks lean and clean, and while not exactly like a meadow in spring, it really doesn't smell that much now.

As Sally Chapman told you last year, the college and the chemistry department have moved into the electronic age, and every faculty member is now connected to the network and has an e-mail address. That this took so long, and that the Altschul science departments were connected last, and that the wiring left something to be desired in terms of location and the ability of the channels to stick to the wall, all of that we ascribe as faults of the old regime. We reglued the channels to the wall ourselves, and we are now off and running, first with e-mail (great for saving on paper clutter and avoiding telephone tag) and now with the World-Wide Web. Prof. Chapman is already starting to moan about how much time one can spend, channel-surfing as it were, once you start looking for interesting things on the network.

Enrollments in chemistry continued very high indeed, in the introductory course, in organic lectures and labs, and in the analytical course. Judging from preliminary figures for introductory chemistry, it is possible that interest has peaked and may be leveling off. We'll see when real students show up in September. Much of the enrollment increases are driven by interest in medicine, but getting in to medical school is becoming extremely difficult, since the competition is so strong. Barnard is trying to do a better job of informing students about the many other options available in the health professions.

Continuing a recently instituted tradition, all students working on theses were invited to the ACS New York Section's annual Nichols Award Symposium and dinner in March. Three seniors were able to attend, together with the faculty. Last year the award was given to Prof. Stephen J. Lippard, now at MIT and formerly on the faculty at Columbia. Prof. Lippard has done extensive and important research in a very wide area in bioinorganic and organometallic chemistry.

In April, all Barnard students who did summer research sponsored by the Hughes Science Pipeline Project presented their work at a symposium. Biology, chemistry, and physics were represented. Ten students spoke, among them our majors Rebekah Adams, who worked with Prof. Megehee, Julie Nichols, who worked with Prof. Pagnotta, Sin Chun Hwang, who worked with Prof. Jeanne Poindexter in Biology, and physics major Rachayl Novoseller, who worked with Prof. Robie. Increasingly, the natural science departments collaborate and work together, and this increases the research opportunities available to students as well as strengthening the overall research productivity and environment for faculty work,

We are very proud that Barnard was host in May for the 43rd Annual Undergraduate Research Symposium of the ACS New York Chemistry Student's Association. Prof. Marco Pagnotta was the local organizer. Prof. Ann McDermott of Columbia's Chemistry Department gave the keynote talk, describing the role of spectroscopy in understanding enzymatic mechanisms. 42 students, representing some 15 institutions, presented their work in sessions on analytical, organic, inorganic, physical, and biochemistry. Barnard students Rebecca Lipsitz, Juliet Nichols, Joan Chang, Nihan Simsek, Amy Law, Stephanie Lau, Sin Chun Hwang, and Leah Basickes gave talks on their research, so our college was well represented, and the quality of the research was clearly high.

There was again a large group of graduating senior majors this year. Many students did research either as a senior thesis or in a research course or in a summer program, which pleases us greatly and is a trend we wish to encourage as strongly as we can. Interest in medicine as a career continued high, here and across the country. This makes admission to medical schools a rather difficult and uncertain process, though, even for students with strong records. At this time we still do not have a final listing of who will be going where, or whether any students will have to reapply before they can begin medical studies. If you have good news, write us a line and we will share it with your friends in the next newsletter!

**Rebekah Adams**, a chemistry major, did research with Prof. Megehee on the synthesis of rhodium(III) complexes with dithiolate ligands. Rebekah was co-recipient of the Ida and John Kauderer Prize for a Barnard pre-medical student majoring in chemistry. She will be starting the M.D. program at Mt. Sinai Medical School. **Leah Basickes**, a chemistry major, did her senior thesis research with Prof. Robert Beer of the Columbia Chemistry Department. She did synthetic work on making a model of non-heme iron lipoxxygenase. Leah will start in the chemistry Ph.D. program at UPenn. **Joan Chang**, a chemistry major, did senior thesis research with Prof. Koji Nakanishi at Columbia, investigating the circular dichroism spectra of vinblastine analogs. Vinblastine is an anti-cancer drug from a plant. Joan graduated with departmental honors, and she will begin research at the Albert Einstein School of Medicine. **Irene Chen** graduated with a degree in chemistry, but her plans were not known to us when she left in May.

Our special congratulations to **Teresa Dowell**, who in a perfect world would have received her degree in chemistry in 1987 but lacked a few small pieces and then got tangled up first in the majors examination and then in a horrible bureaucratic mess with transfer credits. Teresa was determined to get her Barnard B.A., so she commuted from Kentucky (!) to get those last few credits, and she passed both parts of the majors examination. Teresa finally received the degree in February 95. Well done! **Marife Enriquez** received her degree in chemistry; we do not know what her immediate plans are. **Sin Chun Hwang** did a special major in chemical physics, a program jointly sponsored by the Chemistry and Physics Departments. Sin Chun did her senior thesis research with Prof. Tim Halpin-Healy of Physics on an oscillating chemical reaction system. Sin Chun graduated with honors in chemical physics, and was elected to Phi Beta Kappa. She will be starting medical school at SUNY Stony Brook, and she wants to do medical research. **Eileen Kang** and Millicent King received degrees in chemistry, but their immediate plans were not known to me.

**Linda Lam**, a biochemistry major, will be working at the NIH doing AIDS research. Linda is ultimately interested in a career in medicine. **Stephanie Lau**, a chemistry major, did her thesis research with Prof. Chapman, carrying out a dynamical study of the reaction  $O^- + HF \rightarrow OH + F^-$ . Prof. Chapman has presented this work at a research symposium and is preparing it for publication. Stephanie graduated with departmental honors. She is seeking a research position, but her ultimate aim is to go to medical school.

**Amy Law**, a chemistry major, did her thesis research with Prof. Robie, characterizing the cavity ring-down system for absorption spectroscopy that he is setting up in his laser lab. Amy received departmental honors, and will begin graduate school in chemistry at the University of Rochester. **Rebecca Lipsitz**, a chemistry major, did research with Prof. Ann McDermott of Columbia on proton exchange in solid ammonium hydrogen oxalate dihydrate, studied by NMR. Rebecca will start graduate work in chemistry at the University of California at San Diego. **Efrat Meier** received her degree in biochemistry, and will begin medical school at Albert Einstein.

**Juliet Nichols** somehow managed a triple major, in chemistry, environmental science, and Italian (!). She did her thesis in environmental science, but worked closely with Prof. Pagnotta in her study of atmospheric pollution on Morningside Heights. Julie became the mistress of the HP GC/MS, which allowed her to undertake the project she did. Julie received departmental honors in environmental science, and was elected to Phi Beta Kappa. Julie was co-recipient of the Grace Potter Rice Fellowship for graduate study in the natural sciences; the Anne Davidson Fellowship for a graduating senior who has demonstrated continuing interest in conservation; and the American Institute of Chemists, New York Chapter Prize for an outstanding senior chemistry major. Julie is taking some time in Italy, living near Milan. She eventually wants to study oceanography.

**Dana Ostrow**, a chemistry major, will start in a research position at the University of Medicine and Dentistry of New Jersey, Newark. **Nihan Simsek** received a degree in chemistry. She did thesis research with Prof. Pagnotta on structure and solvent effects in Diels-Alder reactions, comparing conventional and microwave heating. Nihan received departmental honors and was co-recipient of the Ida and John Kauderer Prize for a Barnard pre-medical student majoring in chemistry. Nihan will start medical school at Mt. Sinai. **Alla Shapiro** received a degree in biochemistry. I do not know Alla's immediate plans. **Deni Taveras**, a chemistry major, is excited to be starting in the Ph.D. program at the University of Utah, where she had done summer research. Deni is interested in theoretical and calculational chemistry.

Our students won many awards; those given to graduating seniors are listed above, others below. All awardees were recognized at the Barnard Honors Assembly in April. **Hui-Yun Noreen Chen '98** won the CRC Press First-Year Chemistry Achievement Award with her spectacular work in introductory chemistry. **Jane Pan '97** received the American Chemical Society's Division of Polymer Chemistry Award for outstanding work in organic chemistry. Jane also received a summer research stipend from the Bernice G. Segal fund, to support her work with Prof. Jeanne Poindexter of the Biology Department. **Man Hoi Wong '96** received the American Chemical Society's Division of Analytical Chemistry Award for outstanding work in analytical chemistry. Man Hoi was designated as a Hughes Research Intern, receiving a stipend to support summer research work with Prof. Megehee. **Stephanie Gluck '96**, a biochemistry major who switched into our department rather late in the day and will be staying at Barnard for a fifth year, received the Marie Reimer Scholarship Fund Prize, for an outstanding junior major in chemistry or biochemistry. Stephanie is doing research this summer with Professor Pagnotta, supported as a Hughes Research Intern. **Erin Fown '96** is doing research with Professor Robie this summer, supported by the Pew Foundation.

We had a departmental luncheon each semester, as always, but this time in the attractive new Altschul atrium space, which is also very convenient for us. In the fall we were privileged to have as our speaker Dr. Peter Meinke, a synthetic organic chemist with Merck Research Laboratories, who talked about the natural product avermectin, its analogues, and isolation of its receptor. Avermectin is a very potent antihelminthic and insecticide. The description of research work in an industrial setting was fascinating and informative for our students. Merck is very much interested in recruiting good chemists and biologists and is reaching out to Barnard and many other schools. They have established an excellent summer research program. Our speaker in the spring was Dr. **Laural Boone '88**, who is now a research fellow at Rockefeller University. Laurel gave an excellent talk about her work as a chemist at the interface with biology, in her study of how molecules cross membranes using specialized protein transporters. We are very pleased that our department has so many alumnae that we can now call almost every year on a Barnard graduate involved in research to come back and talk to our students at the luncheon. Our current chemistry and biochemistry alumnae mailing list has 969 names, and alumnae live in 14 countries and 42 states, including Brooklyn!

## NEWS OF FACULTY AND STAFF

Happily returning the running of the department to Prof. Lessinger in July 1994, Prof. **Sally Chapman** enjoyed having a bit more time for her own work. Stephanie Lau wrote her honors thesis this year under Prof. Chapman's direction. They studied a new system, the gas phase ion-molecule reaction  $O^- + HF \rightarrow OH + F^-$ . Stephanie did a lovely job, completing a collinear study, and doing most of the background work for the corresponding 3D study. Stephanie gave a presentation on this work at the New York ACS Students Symposium. After some additional calculations, Prof. Chapman reported on the completed project at the biennial conference on the Dynamics of Molecular Collisions in Monterey, CA in July. She hopes to have a paper completed sometime this fall. Other research projects (energy transfer in HFCO, the reaction  $O + HCCH$ ) are still in progress. Prof. Chapman will be on sabbatical in the spring term of 1996, and plans to spend the time visiting the Molecular Reaction Dynamics group in Perugia, Italy.

Prof. Chapman taught General Chemistry I in the fall, with 165 students enrolled at the time of the first exam. The large enrollment is a challenge, but we still resist time-saving devices like multiple choice exams and fill-in-the-blank lab reports. The first two weeks of the semester are the most trying for us and for the students, as too many students try to get into the lab of their choice at the last minute. By the middle of the term, things run rather smoothly, thanks to the efforts of everyone involved in the course. In the spring, Prof. Chapman returned to teaching the Quantitative and Instrumental Techniques Lab, after not teaching it for over a decade. She always enjoys that class. This year's group was large (29 students) but a particularly enthusiastic and congenial group.

Prof. Chapman continues to devote considerable time to two American Chemical Society (ACS) committees. She is on the Advisory Board to the Petroleum Research Corporation. This is an interesting assignment, reviewing and ranking about 50 proposals three times a year. While this is a lot of work, it is a nice way to keep up with new ideas in the field. Prof. Chapman is in the middle of a three-year stint as Chair of the ACS Committee on Professional Training (CPT). As its primary task, this committee reviews and approves undergraduate chemistry programs across the country. As Chair of CPT, Prof. Chapman finds that she is frequently called upon as a spokesman for chemical education issues --- a role for which she does not always feel qualified. In January, she attended the Gordon Research Conference on Innovations in College Chemistry Teaching. In April, she was went to a National Academy of Sciences Convocation on Undergraduate Education on Science, Mathematics, Engineering, and Technology (with the unfortunate but increasingly commonly used acronym SMET). In August, she is participating on a panel at the ACS meeting dealing with the implications on the new K-12 standards on college chemistry teaching. She is also working with a group of Community College faculty on issues relating to articulation with four-year schools. She will also be working with a group of university faculty, convened by Prof. Breslow of Columbia, President-Elect of the ACS, discussing the content of Ph.D. programs in chemistry.

Prof. Chapman's committee service at Barnard this year included the Faculty Planning Committee and the Campaign Planning Committee. At the request of President Shapiro, the latter, composed of faculty, trustees, students, and administrators, reviewed the needs of the college and tried to set priorities for Phase II of the Capital Campaign. Needs, of course, far exceed realistic expectations of even a vastly improved fund-raising operation. The importance of fiercely loyal and hard-working alumnae to the future welfare of the college cannot be overestimated; we who work here are deeply grateful for all your efforts.

Prof. **Leslie Lessinger** took over as Chemistry Department chair and traded teaching the introductory general chemistry course with Prof. Sally Chapman. In the fall he went back to teaching quantum chemistry, a course he is very fond of. Lots has changed in the nine years since he last taught that course, especially computing. From word-processing to spreadsheet programs, lots of new material and ways to do problems were incorporated into the course, including a computer database program on the periodic table. The class was fairly large, 15 students, mostly seniors. The same group continued in the spring with the third semester of physical chemistry, a course we now call Methods and Applications. This was the first time that Prof. Lessinger taught this course, and he has now at one time or another taught every lecture and laboratory course in general, physical, and analytical chemistry. In this course, a separate section was devoted to crystallography, with an emphasis on proteins, and students had to read a current paper in the literature and give both a written and an oral report on it. This mini-symposium on current research taught everyone a lot about an important and rapidly expanding field of biochemical research.

Somewhat reluctantly, Prof. Lessinger agreed to serve on the search committee for a new dean of the faculty. This was a very important task, but it took an immense amount of time throughout the year, especially in the spring. Luckily, the search committee turned out to be a great group of faculty and administrators, and there were some excellent candidates. The committee presented President Shapiro with three top candidates, and she chose Professor Elizabeth Boylan. We think Liz Boylan will be a splendid dean and we look forward to working with her.

Professor Lessinger continued to serve as co-director of the Centennial Scholars Program, this past year together with Professor Natalie (Tally) Kampen, chair of the Women's Studies Department and Professor of Art History. Tally is lively, energetic, and enthusiastic, and it was a great year. Eleven Barnard Centennial Scholars presented their projects. Two had to do with science: Sheila David '95, an environmental science major, talked about her research on the water resources of the Colorado River; Yelena Gluzman '96, a biopsychology major, described her work on brain anatomic correlates of the circadian rhythm in golden hamsters, research she carried out in a laboratory in Paris. In general, there are too few scientists among the Centennial Scholars, but the quality of the students and their presentations remains extraordinary. The entering group of scholars, who were in the Centennial Scholars seminar course in the spring, were incredibly gifted writers, and as lively and varied a group as the program has ever had. This coming year, Professor Helene Foley of Classics will return as the other co-director with Professor Lessinger.

Although he was not able to do much new research, some past work by Prof. Lessinger finally saw its way into print or was submitted for publication. "Hydrogen-Bonding Equilibrium in Phenol Analyzed by NMR Spectroscopy", *J. Chem. Ed.* 72, 85-87 (1995) describes one of the physical chemistry laboratory experiments that our majors perform. "9,11-Secogorgost-5-en-9-one, a Marine Steroid from the Sea Whip *Pseudopterogorgia hummelinkii*", *Acta Cryst.* C51, 415-419 (1995) describes the structure of a natural product, and was work done together with Wayne Schultz, a graduate student, and Prof. Jon Clardy, of Cornell University. "Bis(acetato-O)bis(urea-O)zinc(II), [Zn(H<sub>2</sub>NCONH<sub>2</sub>)<sub>2</sub>(CH<sub>3</sub>COO)<sub>2</sub>]" in press in *Acta Cryst.* C51 (1995), reports the structure of the compound made by **Ogei Yar '94** and described in her thesis. "Molecular and Crystal Structure of Azadirachtin-H" accepted for publication in *Acta Cryst.* B, describes the structure of a complex natural product, one of a group of insect antifeedants. This work was done in collaboration with scientists in Madras, India. "The Crystal and Molecular Structure of a New Z-DNA Crystal Form: dCGT(2-NH<sub>2</sub>-A)CG and a Platinated Derivative", submitted for publication to *Biochemistry*, is research done mostly in the laboratory of **Helen Berman '64**, Professor of Chemistry at Rutgers University. It includes some clever inorganic chemistry by **Georgia Arvanitis '82**, Professor of Chemistry at Trenton State College. Great people to collaborate with!

Professor **Marco Pagnotta** reports that this has been an especially exciting year for him, as we begin to take our chemistry courses into cyberspace. We've added a chemistry bulletin board and have increased the use of E-mail to answer questions. We also have added some new software to the Barnard network on organic reaction drills, IR spectroscopy, and Lewis structures, and even developed some of our own. Together with **Julie Nichols '95**, Prof. Pagnotta developed a new experiment using the GC/MS to measure organic volatiles in the atmosphere. This experiment was successfully used by the Environmental Science department in their environmental measurements course. Fortunately, we also got a grant from Hewlett-Packard for a new GC/MS to handle the increased demand.

Last May Barnard was also very proud to host for the first time the ACS New York Chemistry Student's Association Undergraduate Research Symposium. Prof. Pagnotta serves on the organizing committee for the association. With the help of many of our majors, this was a huge success and a great day for the department. In all, there were 42 papers from 15 different institutions; Barnard was well represented, with 7 papers presented by our students.

On the home front, Prof. Pagnotta had a most eventful year in his household. Cindy and Marco are very excited to announce the arrival of a prospective Barnard alumna, class of 2015: Adrianna Pagnotta was born October 28 of last year. Although she hasn't yet shown an interest in dad's molecular models she is almost ready to walk and loves to hear her own voice.

Prof. Pagnotta, in addition to his usual enormous teaching load, has been very busy writing papers: "Solvophobicity in Diels-Alder Reactions as a Function of Substrate Molar Volume", with **Nihan Simsek '95**, submitted to *J. Org. Chem.*; "Inversion of Cyclohexane: What Path Does It Take?", submitted to *J. Chem. Ed.*; "Updating the Content of Undergraduate Organic Chemistry Courses: Results from a National Survey", with Prof. Hull of Union College and Prof. Wasacz of Manhattan College, submitted to *J. Chem. Ed.*; and a manuscript in preparation with **Julie Nichols '95**, based on her thesis in environmental science, "Collection and Analysis of Volatile Organic Air Samples", to be submitted to *J. Chem. Ed.* Another paper, "Microwave Activation of a Diels-Alder Reaction: An Example of a Solvent Dependent Non-Thermal Microwave Effect", written with **Anna Nolan '92**, has been accepted for publication in *J. Phys. Org. Chem.*

Professor **Elise Megehee** had a busy year. In the fall she taught inorganic chemistry to a class of 12. This is the first year this course was required for chemistry majors. Barnard chemistry majors now receive an ACS certified degree. The highlight of the course for Elise was a paper and presentation from each student on a current topic in inorganic chemistry. Elise also continued to supervise the General Chemistry I laboratory along with Dr. Robie and Mrs. Jebejian. In the spring Elise was on a special Assistant Professor research leave, at Columbia University. She was able to run some photochemical experiments with Prof. Turro's group. In addition, the leave allowed her to organize and begin writing several papers.

Elise presented posters at Inorganic Gordon Conferences in the summers of 1994 and 1995. In 1994, **Rebekah Adams '95** worked in Prof. Megehee's laboratory on a Hughes fellowship, on the synthesis and characterization of Rh(III) complexes with diimine and dithiolate ligands. Rebekah had to begin by making the ligands, before attaching them to the rhodium. Rebekah continued her research during the year and presented her work at the Hughes symposium in the spring. This summer, **Man Hoi Wong '96** worked in Prof. Megehee's laboratory on a Hughes fellowship, studying the microwave-promoted and conventionally-heated synthesis of  $[\text{Rh}(\text{bpy})_2\text{Cl}_2]\text{PF}_6$ . She found that water is necessary for the reaction to proceed efficiently! Man Hoi also worked on the synthesis and purification of rhodium diimine dithiolate complexes.

Professor **Daniel Robie** worked in the introductory laboratory course this past year, together with Professor Elise Megehee, Mrs. Olympia Jebejian, and a small army of associates and graders. He ran the first semester of the advanced physical chemistry laboratory course, taught the second semester general chemistry lectures, and started the three-semester physical chemistry lecture sequence with the course on basic thermodynamics and kinetics. Interestingly, a few Columbia students were in that class.

This past year, Prof. Robie's work on setting up a cavity ring-down system to measure absorption spectra using lasers continued. Last summer, a new high-speed digital oscilloscope was acquired. This device measures voltage every two nanoseconds, or 500 million times a second. This makes it possible to detect the short-lived events on which the cavity ring-down technique depends. Using this oscilloscope, **Amy Law '95** completed her senior thesis on characterizing the ring-down cavity. The cavity, comprising two facing mirrors, traps light for times ranging from fractions to tens of microseconds. The cavity ring-down technique depends on precise measurements of the time it takes for the light to leave the cavity.

During the last school year, Rachayl Novoseller '96, a physics major, worked with Prof. Robie on a research project to connect the cavity ring-down system (including lasers and oscilloscope) to a personal computer. **Erin Fown '96**, on a Pew fellowship, has continued that work with Dr. Robie this summer. Hardware and software to transfer the data at high speed with correct timing is now under development. Measurements of the visible absorption spectra of hydrogen, water, and nitrogen dioxide are in the near future. Part of the spectrum of water has just been observed (known transitions), so the system works!

Mrs. **Olympia Jebejian** continued to direct the general chemistry laboratories. With the continuing large enrollments in Chemistry BC1601x, accommodating all the students in the laboratory kept her busy and challenged throughout the fall semester. She also taught the special problem-solving help class for this course. During the spring term, she was responsible for the overall set-up of the General Chemistry II (Chem BC1602y) laboratory and the Quantitative and Instrumental Techniques laboratory. She taught the analytical course together with Prof. Sally Chapman.

Olympia was also an academic adviser for first-year and second-year Barnard students once more. She enjoyed this component of academic life a lot now that she has almost mastered the ins and outs of advising.

During the summer of 1994, Mrs. Jebejian taught chemistry in two different programs for minority students. One was the Higher Education Opportunity Program (HEOP), where students participate in a rigorous six-week program in preparation for the fall semester, when they join Barnard as first-year students. The other was the Science and Technology Entry Program (STEP), in which high school students studied science on a more in-depth level than they previously had in high school. This second program concluded with a science fair, where a large academic audience enjoyed watching colorful demonstrations presented by the students and coordinated by Mrs. Jebejian. Olympia once more found teaching in these programs rewarding and challenging. She really enjoyed seeing the progress made by the students both in their marked development of self-confidence and in their studying chemistry with motivation.

**Dr. Jim Carter** continued as Director of Organic Chemistry Laboratories, dealing with massive enrollments in both the introductory lab, required for pre-medical students, and the modern techniques lab, an increasingly popular course despite its heavy demands on student time and effort. Jim is still being treated for lung cancer, and is spending much of the summer in his vacation home on a lake in New Jersey.

New faces in the department: **Dr. Don Estes**, who is trained as a physicist, was the laboratory associate in the two advanced physical chemistry labs, working with Dr. Robie in the fall and Dr. Jean Donahue in the spring. **Dr. Heidi Reese**, who taught in the department several years ago, joined as an associate for the organic chemistry laboratories. Dr. Reese also began taking on some responsibilities for laboratory safety and chemical hygiene, areas of longstanding concern where we constantly must improve and keep up.

**Dr. Jean Donahue** did a splendid job teaching the biochemistry laboratory course in the fall and the spectroscopy part of the advanced lab in the spring. Not an easy job! She displayed great versatility and talent, and got rave reviews from students. We are very fortunate that Jean will be staying on in the department this year to work as a lab associate in the organic courses. The enrollments are still huge.

Continuing their superb work in the department were **Dr. Frances Feerst**, who has limited herself to the introductory general laboratory in the fall; **Dr. Toby Berger Holtz '67**, who rejoined the department a year ago, and **Dr. Colette Levi**, both teaching introductory general and organic labs; and **Ms. Noraini Yatim**, biochemistry laboratory and introductory organic lab. **Dr. Meena Rao** was a tremendous asset to the department last year, working in the introductory general chemistry lab, running the second semester general chemistry laboratory together with Mrs. Jebejian, and taking on the extra task of teaching the lecture course on intermediate general chemistry for pre-medical students. Dr. Rao was substituting in that course for Prof. Elise Megehee, who was on a special Assistant Professor research leave in the spring.

Please note that we are often looking for new laboratory associates. If you are in the greater New York City area, and would be interested in a part-time teaching job in the chemistry department, please tell us. We would be happy to keep your name on file. These jobs are often available on short notice. Part-time academic jobs do not pay very much for the skill and dedication that our laboratory associates typically demonstrate, unfortunately; we can offer a congenial department and excellent students, though!

Mrs. **Gauri Gupta** tried her hand at working as a laboratory associate, as well as doing her usual splendid job administering our purchases, budgets, student work, and keeping the organic stockroom orderly. She enjoyed the teaching very much. As I write this, Gauri is momentarily expecting to deliver a baby, and she will take a short time off before she returns to the department. Gauri has also just moved to Edison, NJ.

Last year we reported that Ms. **Gwen Buchanan**, faculty secretary for the sciences, and her mother had been burnt out of her apartment in a horrendous 8-alarm fire. We are happy to tell you that Gwen and her mother have since found a lovely apartment on Haven Avenue, near the medical school. Gwen was very lucky, since they were able to move on the last day of the deadline the college had set for getting their temporary apartment ready for incoming students. Gwen's new apartment is located where she gets her daily exercise walking up three hills to the bus stop, "cane free".

In March, Gwen's mother was admitted to New York Hospital - Cornell University Medical Center for treatment of a thyroid problem, which has now been brought under control through medication. Gwen was very happy to see our own Barnard alumna **Rana Kaplan '92**, who is a third-year resident. She remembered Gwen and wanted everyone to know that she is working very hard and doing well.

This year Gwen had a great summer. She went to Las Vegas for a week in June. It was very exciting, especially at night with all the casinos lit up like a Christmas tree. For all the inquiring minds who want to know -- no, Gwen did not hit the jackpot! She did come back rested and relaxed.

**Shelley Weinstock** and Paul Bartick proudly announced the birth of their daughter, Kate Erin Bartick, in September. Their son Max adores his new baby sister. The chemistry department sent a scientist teddy bear as a gift. Shelley and Paul have moved, to 64 White Oak Drive, South Orange, NJ 07079, Their telephone number is (201)-275-0290, and Shelley's e-mail address is weinstock@apollo.montclair.edu. Shelley continues as a professor of biochemistry at Montclair State University in New Jersey.

**Grace King** continues to enjoy retirement, but maintains her interest in the department. She visits us regularly, and attends our special functions. Summer still means relaxation on an island in New Hampshire.

**Emma Stecher** writes from her new address, Flushing House Room 318, 38-20 Bowne Street, Flushing NY 11354. Dr. Stecher is 89, and moved to a comfortable senior residence to be nearer two brothers and their families. She writes that life is easy there, with two delicious served meals and many varied activities. She is still interested in Barnard and wanted to make sure she was kept on the mailing list for this newsletter. We are most happy to oblige.

**Steve DeMeo** has visited the department several times. He continues busily writing up his ideas in papers for the *Journal of Chemical Education*, and he and his wife continue the search for suitable jobs for both of them, never an easy task. We wish them both the best.

#### **BERNICE G. SEGAL MEMORIAL FUND**

Prof. Segal established a fund at the college in her lifetime, and assigned a share of the proceeds of her textbook to it. She believed strongly that undergraduate summer research was a wonderful opportunity, and was particularly concerned that financial pressures sometimes prevent students from availing themselves of this chance. The fund was set up to provide generous summer research fellowships at Barnard for particularly able students, first in chemistry, but also, when funds are sufficient, in other sciences. After her death, the Bernice G. Segal Memorial Fund was created. Last summer **Nihan Simsek '95** was the recipient of the Segal summer research internship. Nihan worked with Professor Marco Pagnotta on microwave activation of Diels-Alder reactions. This summer **Jane Pan '97** is the Segal intern. Jane is working with Professor Jeanne Poindexter of the Biology Department on electroporation of cells.

The Segal fund continues to grow. The department and the students are deeply grateful to those of you who have helped to create these opportunities for our outstanding students. If you wish to contribute, you may do so by sending a check to the Barnard Development Office, payable to Barnard College. *Please indicate that your gift is specifically for the Bernice G. Segal Memorial Fund.*

#### **EDWARD J. KING MEMORIAL FUND**

Established to honor Professor Edward J. King, chairman of the Chemistry Department from 1960 until his death in 1973, the Edward J. King fund provides research assistance for non-tenured faculty in any field at Barnard. This past year, grants were provided to Assistant Professor Bruce O'Gara in Biology, who studies the nervous system of the medicinal leech, and to Assistant Professor Dan Robie in Chemistry, for developing a laser spectroscopy system to measure the quadrupole spectrum of hydrogen. Research support is increasingly difficult to find, so this fund can be critical in the career of a young scholar. It is a fine tribute to Prof. King that the fund in his memory plays an important role in the intellectual life of the college. So many worthy projects have been supported in recent years, though, that the fund could use a financial boost at this time. Dr. Grace King, the department, and the whole Barnard faculty are grateful to all who have contributed. If you wish to make a donation to this fund, you may do so by sending a check to the Barnard Development Office, payable to Barnard College. *Please indicate that your gift is specifically for the Edward J. King Memorial Fund.*

#### **ALUMNAE NEWS**

We rely mostly on you to provide us with news about your doings, but we also find out about you from newspapers and journals, friends and acquaintances, accidental circumstances and happy chances. If you write to us you are guaranteed to get in the newsletter! If anything we report is incorrect, please accept our apologies, and send us the right information so we can correct it in the next newsletter. For those who like electronic mail, the Barnard Chemistry Department has entered the electronic age (finally!) and you can reach Professor Lessinger at lessinger@barnard.columbia.edu. Reach us any way you like, but let us know about yourself and the alumnae you keep in touch with.

**Lisa Velasquez '95** writes that she is working for the New York Regional Transplant Program. She evaluates patients who have just died to see if they would be suitable donors for bone, heart valves, veins, eyes, or skin. She then approaches the family for consent. This is the hardest part of the job. Lisa works very long hours, and

is very happy with her occupation. She is particularly gratified when she sees the results of eye donations. Lisa asks you all if you have filled out your donor card.

**Sara Dayal '94** started at Howard University Medical School in Washington D.C. She wrote just before school began to say she didn't know anyone there. We're sure you'll do fine, Sara.

**Tara de Jesus '94** stopped by during her spring break from Rush Medical School in Chicago. She likes Chicago very much. She says she has particularly enjoyed Biochemistry and Gross Anatomy this year.

**Linda Liou De Jesus '93** made a professional (and social) call on the department recently. She is now working as a sales representative for Brand-Nu Laboratories of Meridian, CT, a reagent chemical manufacturing and distributing company. New York City is included in her sales area. Linda enjoys sales, which allows her to use her knowledge of chemistry and her fondness for working with people. Linda's husband Danny is now in medical school. They take great pleasure in their little daughter, Isabela Lynn.

**Anna Nolan '92** is finishing her third year of medical school at Downstate - SUNY Brooklyn. She lives in the same Brooklyn neighborhood as Prof. Lessinger, and they see each other occasionally on the street.

#### *Classes of the 1980s*

**Simone Kahn Griff '88** wrote a nice letter catching us up on her news. She received her M.D. from the University of Pennsylvania in 1992. She and her husband, Charles, also a UPenn M.D., interned at Beth Israel in Boston. They are now back in New York. Simone is a resident in Radiology at New York Hospital, and Charles in Dermatology at NYU. They enjoy their son, Zachary, who is now 1½.

We received a card from **Maria Emanuel Ryan '85**, announcing her appointment as an Assistant Clinical Professor at the School of Dental Medicine at SUNY Stony Brook. She specializes in Periodontics. Maria is working on her Ph.D., and was recently awarded an NIH Physician Scientist Award.

**Debra Bogen Leshko '85** sent a sweet picture of Shana, born December 29. Debra is finishing a residency in Pediatrics at Johns Hopkins, will work for a year, and then will return for a Fellowship at Hopkins. Debra and Brian recently moved into their first house, in Baltimore.

We hear that **Karen I. Goldberg '83** has accepted a faculty position in Chemistry at the University of Washington. Karen has established a successful research program in the kinetics and thermodynamics governing reductive elimination and oxidative addition reactions at Illinois State University, Normal. Recently her work was recognized by Union Carbide, which named her to its Innovation Recognition Program. She was one of six young investigators so recognized. Brian Bent of Columbia was another recipient. Karen was also named one of five Henry Dreyfus Teacher-Scholars for 1995. We wish you well in your new job, and continued success!

**Georgia Arvanitis '82**, Professor of Chemistry at Trenton State College, received an American Cyanamid Faculty Award, recognizing her excellence as a scholar and an educator of chemists. Georgia works with platinum compounds. Part of her work aims at developing more effective and safer anti-tumor drugs; other research seeks ways to recognize and distinguish DNA molecules by tagging them with platinum.

**Linda Peteanu '82** is making an excellent start as an Assistant Professor of Chemistry at Carnegie Mellon University. She has received several external grants, including an ACS-PRF grant, and is presenting some new results at the ACS meeting in Chicago in August. She is using high-resolution Stark spectroscopy to probe proton-transfer reactions.

**Zenta Batarags Hayes '81** unexpectedly met Professor Lessinger when he was at a crystallography meeting and she was at a food chemists meeting in Atlanta. A lot of catching up -- Zenta married Brian Hayes in 1989, they live in Pawling, NY, she still plays volleyball, and she travelled to Latvia in 1987. Zenta works as a chemist at Seagram's. She started in product development and worked on wine coolers and liqueurs. Now Zenta is in the flavor technology group, creating new flavors and duplicating natural ones. You can do a lot with a chemistry degree from Barnard!

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**Polly Gregor '81** started a job as Assistant Research Professor at Sloan-Kettering in September 1995. Polly reports encountering a number of Barnard alumnae who also work there.

**Jill Horowitz '80** used e-mail (jillh@helix.nih.gov) to send us her news. Having spent a number of years at the NIH in Bethesda as a postdoctoral fellow, Jill is now an Independent Investigator there, in the Center for Biologics of the FDA. She works on RNA metabolism, and also does regulatory work. She reports that her Barnard Chemistry background has served her well over the years. Jill is married and has two children.

#### *Classes before 1980*

**Patricia Andrade-Gordon '79** is a team leader at the R.W. Johnson division of Johnson and Johnson. Patricia holds a Ph.D. from SUNY Stony Brook.

**Freya Schnabel '78** came to Barnard to participate in a panel on breast cancer, sponsored by the Barnard Center for Research on Women. Freya discussed risk factors and screening factors related to this disease. Freya is an Assistant Professor in the Breast Service Unit at Columbia-Presbyterian Medical Center.

**Marguerite del Valle '78** also wrote a nice long letter catching us up on her news. She is an attorney, practicing in Manhattan. Her major focus is patent law and intellectual property --- a hugely important area about which we hear more and more. She and her partner also do *pro bono* work, and have been involved with a difficult death penalty case in Alabama. Marguerite was enthusiastic about this career choice for chemistry majors.

**Jackie Kapelman Barton '74** continues to win a variety of distinguished awards. She was honored as the 1994 recipient of the R.C. Tolman Award of the Southern California Section of the American Chemical Society this year.

**Helen M. Berman '64** met Professor Lessinger at two meetings, in Atlanta and in Montreal. Helen runs a very productive laboratory at Rutgers, and continues to be a leader in crystallography in the field of DNA studies and also in the area of computer transmission, archiving, and use of crystallographic data.

There was a nice write-up of the forthcoming biography of Lisa Meitner by **Ruth Lewin Sime '60** in the newsletter of the Committee on the Status of Women of the American Physical Society. The book will be published by the University of California Press in 1996. Prof. Sime, who teaches chemistry at Sacramento City College, has been working on the book for nearly 20 years. We look forward to reading it.

**Liane Reif-Lehrer '56** has written a new book, *Grant Application Writers Handbook* (Jones and Bartlett, Boston MA, October 1994). The book, a recent selection of the Library of Science book club, has received excellent reviews. Dudley Hershbach (1986 Nobel Laureate in Chemistry) characterized her advice as "sensible and well-tempered". Dr. Reif-Lehrer runs a consulting firm which, among other things, runs workshops on successful grantsmanship. She and her husband, Sam (also a chemist) have two children. Their son, Damon Lehrer, completed his MFA in 1994, and does oil paintings, woodcuts, and etchings. Their daughter Erica recently received a grant to mount her Poland Project at the Grinnell College Sesquicentennial in 1996.

**Katherine Mero Mogul '48** wrote requesting a copy of the memorial minute for Prof. Downes. Dr. Mogul wrote: "I myself 'strayed' into psychiatry, but the discipline of an early science background has stood in good stead".

Thanks again for all your letters, cards, phone calls, e-mail, and especially visits. Keep in touch.

Yours very truly,

Leslie Lessinger  
Chair, Chemistry Department

**Chemistry Department Newsletter**  
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**To:**