WILLIAM & MARY

CHEMISTRY DISTILLATIONS

THE DEPARTMENT OF CHEMISTRY NEWSLETTER

FALL 1998

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Dear alumni and friends,

This "annual" edition of *Chemical Distillations* kept getting delayed so that it now extends over two graduating classes. However, we still want to bring you up to date on the activities of the Chemistry Department and to encourage you to correspond with us. We have new awards to both faculty members and students to announce, and some very impressive statistics about science at William and Mary.

This newsletter is a very important way for us to keep in touch with our graduates and friends. It is also a way to learn what you are doing. In future editions, we would like to have a section on what alumni are doing. Let us hear from you. Send your information to Editor, Chemistry Distillations, Department of Chemistry, College of William and Mary, P.O. Box 8795, Williamsburg, VA 23187-8795. (The P.O. box number is very important now; the U.S. Post Office will not deliver mail to the College without it.) You can also correspond by e-mail if you prefer, to rlkief@chem1.chem.wm.edu .

Remarks by the Chair

This edition of *Chemical Distillations* was edited by three faculty members, Gary DeFotis, Bob Orwoll, and myself, with an article by Trevor Hill on Old Rogers Hall, and an article by David Kranbuehl on our financial needs for undergraduate research. Of course, as usual the bulk of the work was done by Louise Menges. A sincere "thank you" for all who contributed. Part of the reason that the date for this edition kept getting pushed back was the change in the Department Chair. After three years of dedicated service, Bob Orwoll decided not to accept another term as Chair. So, on the first of July, I became Chair and look forward to overseeing the high quality chemistry program which the William and Mary Chemistry Department offers.

Once again, we are proud to highlight awards to our faculty. Randy Coleman received the 1998 Thomas Jefferson Award for his service and dedication to the College in developing and directing the program of student advising. This is the highest honor that the College can bestow to a member of the College community. We are fortunate that Randy continues his excellent teaching in the Chemistry Department each semester. Gary DeFotis once again has received a prestigeous award. He received one of Virginia's 1998 Outstanding Faculty Awards, which recognizes the State's best educators. We are proud that one of our faculty members was deservedly recognized by the highest award that the State grants to a member of a university faculty. Last year, Chris Abelt was named the Garrett-Robb-Guy Professor of Chemistry. When this Chair was initiated, the Chemistry Department decided that a new deserving recipient would be named every five years. Gary DeFotis served with distinction for the previous five years.

An important part of this issue is the section on our students. In 1997, we had 64 chemistry graduates, down slightly from the record high of the year before, but still very impressive. Nineteen of these graduates earned departmental honors, and 12 were elected to Phi Beta Kappa. In 1998, our number of graduates was somewhat lower at 52, but this is still very high compared to most other institutions our size. In this class, 18 earned departmental honors and 8 were elected to Phi Beta Kappa. At the 1998 Charter Day celebration, a new award was announced, the Jefferson Prize in Natural Philosophy, to be awarded to an outstanding student in the natural sciences. We are pleased and proud that the first recipient was a chemistry concentrator, Jennifer Johnson. (With Randy Coleman's and Jen Johnsons's awards, the ceremonies at Charter Day had a very high chemistry focus.) Jen graduated last May with highest honors in chemistry having worked with Professor Gary Rice. We have also included in this issue some very impressive statistics on William and Mary science students which were compiled by Geoffrey Feiss, Dean of the Faculty of Arts and Sciences.

In the fall of 1997, we welcomed a new faculty member, Cary Bagdassarian. He came to us from a postdoctoral position at the Albert Einstein College of Medicine. Cary is a physical chemist and in his first semester he initiated a new course called Principles of Biophysical Chemistry, designed for students who wish to minor in chemistry or who elect the new minor in biochemistry.

Last October, we welcomed six members of the Class of 1972 who were here to celebrate their 25th year reunion. A small reception was organized by Trevor Hill and was attended by some faculty members, particularly those of us who remembered the honorees. Five of the six are pictured in this issue. We would like to make this a regular event, possibly not just limited to 25 year reunions but to those with other milestones as well. Because we are so late with the newsletter this year, Homecoming will probably have come and gone by the time you read this. We hope many of you will make plans to attend next year's Chemistry reunion, which we promise to announce in a more timely fashion!

Trevor Hill has written an article on Old Rogers Hall based on the recollections of our long-time colleague Alfred Armstrong. Alfred continues to stay close to home but he welcomes the periodic visits from members of the faculty and staff. Some of you will undoubtedly remember (fondly we hope) some of what Trevor describes or that is shown in the accompanying pictures. We would value any stories that you have to share.

David Kranbuehl has written about a very important part of our chemistry program, summer undergraduate research. Last summer about 50 undergraduate chemistry concentrators spent 10 weeks in Williamsburg working with a faculty member in his or her research laboratory. The students receive a stipend and free housing in a College dormitory. Summer research has been a recent initiative at the College, and the Chemistry Department has been well in the lead having far more students than any other William and Mary department. We daresay that few —if any— chemistry departments in the country support 45–50 of their own undergraduates each summer. We have been fortunate to be able to support most of our students with external research grant and private department funds. David presents an opportunity for everyone to assist in this endeavor.

We have a healthy department with a dedicated and active faculty that is privileged to work with top-notch students. We hope to hear from you either by e-mail, letter, or better yet in person.

Dick Kiefer

Current Faculty

Chris Abelt, organic
Garrett-Robb-Guy Professor
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Carey Bagdassarian, biophysical
ckbagd@chem1.chem.wm.edu

Debbie Bebout, biochemistry
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Gary Rice, analytical
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Barbara Siles, analytical
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Bill Starnes, polymer
Gottwald Professor
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Dave Thompson, inorganic
Chancellor Professor
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Emeriti

Alfred Armstrong,1976

Ed Katz, 1979

Trevor Hill,1992 (adjunct)
tbhill@chem1.chem.wm.edu;

Cirila Djordjevic, 1992

Faculty Changes

On leave for 1998–1999

Dave Kranbuehl (Research Leave) Spring 1999

Gary Rice (Research Leave) Spring 1999

Part-time faculty for 1997–1998

Trevor Hill (Emeritus) Fall 1997

Welcome!

We welcome **Carey K. Bagdassarian** as Assistant Professor of Chemistry. Cary received a B.A. in Chemistry and Biology and an M.S. in Chemistry from New York University, and a Ph.D. in Chemistry from UCLA, working with William Gelbart. He then spent two and a half years doing postdoctoral work at the University of Chicago with David Oxtoby, followed by a similar time at the Albert Einstein College of Medicine working with Steven Schwartz and Vern Schramm. He joined our department in the fall of 1997, where he has been doing theoretical studies of the physics and chemistry of biologically relevant processes such as enzymatic catalysis and interactions of ecologically coupled systems.

Bon Voyage!

Eric Dawnkaski leaves the Department after three years as Visiting Assistant Professor. He is now in a research associate position in the Department of Physics here at William and Mary. In addition to conducting research, he maintains the Physics Department's computer system.

Faculty News

Promotions

Chris Abelt, Full Professor

Bob Pike, Associate Professor

Awards

Randy Coleman Receives the 1998 Jefferson Award

In recognition of his significant service to the College through his personal activities, influence and leadership, Randolph A. Coleman, Associate Professor of Chemistry, received the 1998 Thomas Jefferson Award at Charter Day exercises on Saturday, Feb. 7.

Probably the best reminders of the value of Randy Coleman's work are the letters and email that he regularly receives from his students thanking him for his support and encouragement or just letting him know how they're doing. "I have gotten so much advice, support and kindness from you," wrote one of his former students recently. "I can never thank you enough ...You are really one of the people who made me feel connected to William and Mary."

A hallmark of humility, Randy has been making students feel connected to the College and indeed themselves for nearly all of his 28-year career at William and Mary, single-handedly building the pre-med advising program into one of the best in the country, and more recently leading a College-wide effort to overhaul the undergraduate advising program.

Randy realized his calling to advising soon after he was hired as a professor in 1970. One of the courses he taught, and continues to teach, biochemistry, was taken primarily by pre-med students. They frequently sought him out later for letters of recommendation, and he realized that the College needed a formal pre-med advising program. So, Randy assembled a program to help students build the experience needed for admission. Since the program began more than two decades ago, he has advised more than 3,000

pre-med students, and medical school admission officers say consistently that William and Mary has one of the best pre-med advising programs in the country.

Although he continues to work most closely with pre-med students, writing more than 100 letters of recommendation each year, Randy's commitment to undergraduates in all disciplines has been unwavering. In the late 1980s, a College committee recommended a complete overhaul of the College's undergraduate advising program and named him to head that initiative.

As director of academic advising, Randy was instrumental in securing a $175,000 grant from the state that was essential to the overhaul of the undergraduate advising program. Today, that program has also become a model and one of the strongest at any college in Virginia. Its strength owes in large part to the low student-to-faculty advising ratio and the system used for matching students with mentors. More than 140 professors, almost half of the faculty, volunteer as advisors to the approximately 2,700 students in the freshman and sophomore classes. While Randy and his staff in the academic advising office realize that most students have not decided on a concentration as freshmen, they try to pair students with faculty members whose disciplines match the students' interests. Technology has become his passion in recent years as he has tried to realize its potential in the advising experience. Faculty advisors now have immediate access to student records over the campus computer network and can record everything associated with the advising session electronically.

While the advising experience may grow more sophisticated, the personal interactions continue to be most important to Randy. "Students appreciate what we're doing here and that we care about them," he says. "That's my greatest pleasure."

Gary DeFotis Wins1998 Virginia Outstanding Faculty Award

Chemistry Professor Gary C. DeFotis is one of eleven winners of Virginia's 1998 Outstanding Faculty Awards. Elizabeth McClanahan, Chair of the State Council of Higher Education (SCHEV), presented the awards at a ceremony in Richmond on March 13.

The General Assembly established the annual Outstanding Faculty Awards program in 1986 to recognize "outstanding educators, selected because of distinctive accomplishments in the fields of teaching, research, and public service." A committee appointed by SCHEV identified this year's awardees from 75 nominees submitted by the 39 public and private colleges and universities in Virginia. "This award is quite distinctive because it is given to those faculty members who possess a rare combination of research, of scholarly excellence and a strong dedication to classroom teaching", said Gillian Cell, William and Mary's provost. "This combination has long been a hallmark of William and Mary faculty members."

Gary DeFotis is highly regarded for his teaching skills and the contributions of his research to his teaching. Over the years DeFotis has been awarded $700,000 from the National Science Foundation, the Camille and Henry Dreyfus Foundation, and the Petroleum Research Fund to support the research he conducts with his students. Because of his contributions to scientific knowledge and the positive impact that his endeavors have had on the instructional aspects of his profession and on the intellectual life of William and Mary, Gary was the 1987 Advancement of Scholarship awardee of the William and Mary chapter of Phi Beta Kappa and was the 1982 recipient of a teaching award from the William and Mary Society of the Alumni.

"Teaching by doing" is Professor DeFotis' approach, and his students quickly find themselves engaged in rigorous research assignments. His research with William and Mary undergraduates resulted in his being awarded the American Chemical Society's 1997 Award for Research at an Undergraduate Institution. The award noted his "exemplary teaching through research, his dedication to the personal and professional development of his students, and the excep-

tional breadth and depth of his outstanding investigations in the field of magnetism." DeFotis and his students study the magnetic properties of inorganic compounds and their mixtures at low temperatures, sometimes approaching absolute zero. Specifically, their focus is on lower dimensional magnets, mixed magnets, and spin glasses.

Gary has been a member of the faculty at William and Mary for 18 years. He received a B.Sc. in chemistry from the University of Illinois and a Ph.D. in physical chemistry from the University of Chicago.

Chris Abelt Awarded Garrett-Robb-Guy Chair

Chris Abelt has been designated the Garrett-Robb-Guy Professor of Chemistry. Chris came to William and Mary after two years of postdoctoral work with AT&T. He earned his undergraduate degree at the University of Wisconsin-Madison and his PhD. at UCLA in 1983. His major area of interest is organic chemistry. His academic accolades include becoming a Henry Dreyfus Teacher-Scholar, a Camille Henry Dreyfus Scholar and an Alumni Fellow. His professional awards include over a dozen monetary grants, and he has published over 25 papers in his career, most of them with undergraduate authors.

One of Chris' more notable contributions to the well-being of our department lies in his willingness to work closely with our chemistry majors in the laboratory, showing them the techniques and attitudes required for good research. His mild-mannered patience in dealing with students and colleagues, sometimes in difficult circumstances, sets him apart from most. Over one third of his formal off-campus talks have been presented by invitation.

He is knowledgeable in the electronics of much of our analytical instrumentation, particularly the FT-NMR; his willingness to take the time to maintain and repair these instruments, so as to render them functional to all our researchers, is invaluable. In his 12 years with us, much has been accomplished by Chris in overall interests to the department. Our faculty, who remember Dr. Guy, feel that he would be very pleased with this selection for the professorship which carries his name.

Other Recognition

Professor **William H. Starnes, Jr.**, Gottwald Professor of Chemistry, was elected to Fellowship in the New York Academy of Sciences. The citation stated that his election was for "landmark contributions in the field of polymer chemistry, most notably in the area of polymer aging and degradation. ...Polymer chemists are unanimous in assessing his work on poly(vinyl chloride) as the standard in the field." We congratulate Bill on this important recognition of his distinguished career.

Research Profiles

We begin here a series which will extend over several successive issues of the Newsletter, in which the research activities of faculty members in the department are described. In this issue the recent efforts of Professors Abelt, DeFotis, Siles and Starnes will be surveyed.

Christopher J. Abelt

Professor Abelt is attempting to understand, model and mimic the non-covalent binding inherent to biological systems in some relatively small organic molecules. He uses β-cylodextrin, a cyclic oligimer of glucose, as a template for binding. The organic molecule which is attached resides outside rather than within the cavity of the β-cyclodextrin. Photochemically active molecules, such as 9,10-dicyanoanthracene-2,6-disulfonyl, have been successfully attached to create catalytic host systems. Currently, attempts are being made to attach dye molecules in order to generate pH-sensitive host systems. This research has resulted in several new procedures applicable to carbohydrate synthesis.

Some recent publications from Professor Abelt's group include:

M. F. Acquavella, M. E. Evans, S. W. Farraher, C. J. Nevoret and C. J. Abelt, "Synthesis of a Water-Soluble Dicyano-anthracene as a Cap for β-Cyclodextrin", J. Org. Chem. *59*, 2894–2897 (1994).

M. F. Acquavella, M. E. Evans, S. W. Farraher, C. J. Nevoret and C. J. Abelt, "Static and Dynamic Fluorescence Quenching of a Dicyanoanthracene-capped β-Cyclodextrin", J. Chem. Soc., Perkin Trans. 2, *1995*, 385–388.

B. K. Hubbard, L. A. Beilstein, C. E. Heath and C. J. Abelt, "Synthesis and Characterization of Dicyanoanthracene-tethered β-Cyclodextrins", J. Chem. Soc., Perkin Trans. 2, *1996*, 1005–1009.

Gary C. DeFotis

Professor DeFotis studies magnetic materials in which there is reason to expect novel behavior of various kinds: low magnetic dimensionality, nonstandard critical behavior, spin glass and other nonequilibrium phenomena, mixed magnets and temperature-composition phase diagrams with unusual structure. The materials examined are transition metal compounds in which exchange interactions dominate the behavior at temperatures near the boiling point of liquid helium. For example, the deceptively simple looking series $MCl_2 \cdot H_2O$ (where M is Mn, Co or Fe) has been the object of much recent attention, and has provided several examples of novel magnetic behavior. A mixture of $CoCl_2 \cdot H_2O$ and $MnCl_2 \cdot H_2O$ has also been examined.

Some recent publications from Professor DeFotis' group include:

G. C. DeFotis and K. D. Dell, "Thermoremanent Magnetization Relaxation in the Insulating Spin Glass $Co_{1-x}Mn_xCl_2 \cdot 2\ H_2O$". *Phys. Rev. B50*, 9937–9941 (1994).

G. C. DeFotis, G. A. Coffey, C. C. Cinquina, S. Chandarlapaty, W. W. Brubaker, D. J. Krovich, R. V. Chamberlain and W. R. A. Jarvis, "Magnetic Phase Diagram, Static Properties, and Relaxation of the Insulating Spin Glass $CoCl_2 \cdot H_2O$". *Phys. Rev*. *B51*, 15,113–124 (1995)

G. C. DeFotis, G. A. Coffey, G. S. Coker, J. L. Marmarino, K. L. Beers, S. Chandarlapaty, W. W. Brubaker, V. J. Pugh, S. A. Carling and P. Day, "Concentration Dependent Critical Behavior in Dilute Ferromagnetic $Fe_{1-x}As_x[S_2CN(C_2H_5)_2]_2$ Cl". *J. Appl. Phys. 79*, 4644–4646 (1996)

G. C. DeFotis, C. C. Cinquina and J. Hammann, "Low Temperature Magnetization and Thermoremanence of $FeCl_2 \cdot H_2O$". *J. Appl. Phys. 81*, 4403–4405 (1997).

Barbara A. Siles

Professor Siles' research group is engaged in several projects that involve the separation of DNA fragments using capillary electrophoresis (CE). In each project heterogeneous separation matrices comprised of SeaPrep agarose and hydroxyethyl celluose in aqueous buffer solutions are being applied. Using these unique size-sieving matrices in CE with either UV/VIS or LIF detection, they observe a significant increase in separation selectivity for DNA fragments in the 50 to 12,000 base pair size range in a single analysis. This size-range of fragments is well-suited to the other projects being addressed. These include separation of DNA plasmid conformers as a function of experimental conditions and plasmid size; the analysis of DNA fragments produced as a result of apoptosis (natural cell death), especially from tissue associated with Alzheimer's Disease; and the genetic fingerprinting of grape plants.

Some recent publications of Professor Siles include:

Barbara A. Siles and G. Bruce Collier, "The Characterization of a New Size-sieving Polymeric Matrix for the Separation of DNA Fragments using Capillary Electrophoresis.", *J. Cap. Elec.* (1996) 3 (6) 313–321.

Barbara A. Siles, G. Bruce Collier, Dennis J. Reeder and Willie E. May, "The Use of a New Gel Matrix for the Separation of DNA Fragments: A Comparison Study between Slab Gel and Capillary Electrophoretic Formats." *Applied and Theoretical Electrophoresis* (1996) 6 15–22.

Barbara A. Siles, David E. Anderson, Nathan S. Buchanan and Matthew F. Warder, "The Characterization of Heterogeneous Agarose/Hydroxyethyl Celluose Matrices for the Separation of DNA Fragments using Capillary Electrophoresis.", *Electrophoresis* (1997) 18 1980–1989.

Barbara A. Siles, Zeena E. Nackerdien and G. Bruce Collier, "The Detection of DNA Fragmentation using a New Size-sieving Polymer Solution in Capillary Electrophoresis.", *J. Chromatogr. A* (1997) 771 319–329.

William H. Starnes, Jr.

Professor Starnes is interested in the polymerization mechanisms, molecular microstructures, degradation, stabilization, and fire retardance of important synthetic polymers such as poly(vinyl chloride) (PVC), poly(vinyl acetate), vinylidene chloride copolymers ("Sarans"), and Nylon 6,6. A significant recent achievement of his group was the elucidation of the complete mechanism for chain transfer to the monomer during the polymerization of vinyl chloride. This accomplishment will enable PVC manufacturers to obtain grearly enhanced control of PVC structure and properties by varying the polymerization conditions. The Starnes group also has recently established the mechanisms for transfer to monomer and to aromatic solvents during the polymerization of vinyl acetate.

Some recent publications from Professor Starnes' group include:

W. H. Starnes, Jr., H. Chung, B. J. Wojciechowski, D. E. Skillicorn and G. M. Benedikt, "Auxiliary Mechanism for Transfer to Monomer during Vinyl Chloride Polymerization. Implications for Thermal Stability of Poly(vinyl chloride)", *Advances in Chemistry Series*, 249, 3 (1996).

W. H. Starnes, Jr., J. A. Wallach and H. Yao, "Six-Center Concerted Mechanism for Poly(vinyl chloride) Dehydrochlorination. *Requiescat in Pace*?" *Macromolecules*, 29, 7631 (1996)

W. H. Starnes, Jr., S. Frantz and H. T. Chung, "Aluminum Chloride [Alias Its Reaction Product(s) with Ethanol] for the Stabilization of Poly(vinyl chloride)?", *Polymer Degradation and Stability*, 56, 103 (1997).

W. H. Starnes, Jr., V. G. Zaikov, H. T. Chung, B. J. Wojciechowski, H. V. Tran, K. Saylor and G. M. Benedikt, "Intramolecular Hydrogen Transfers in Vinyl Chloride Polymerization: Routes to Doubly Branched Structures and Internal Double Bonds", *Macromolecules*, 31, 1508 (1998).

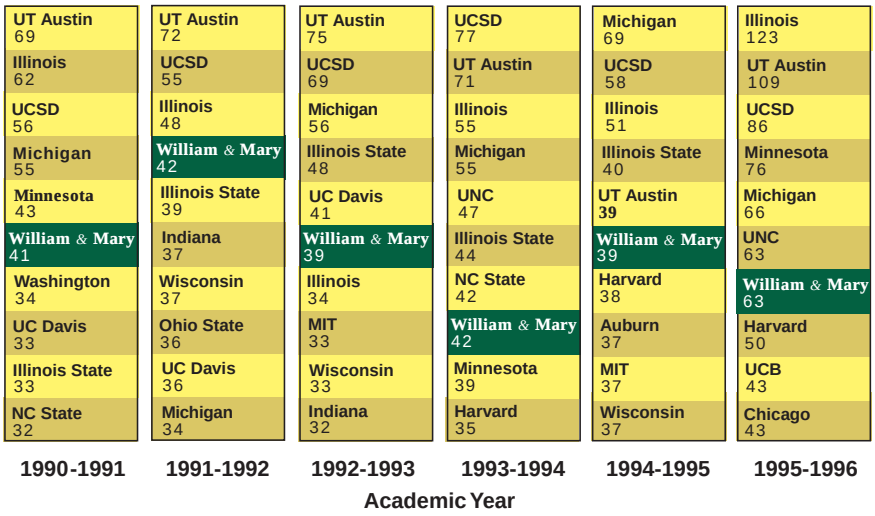
Impressive Data on Science at William and Mary

During his first semester as the new Dean of Faculty of Arts and Sciences, P. Geoffrey Feiss (a geologist and former member of the faculty and associate dean at Chapel Hill) performed an analysis of recently available data from the National Science Foundation.

A number of highlights from the Dean's report are:

- In the last two years approximately 25% of William and Mary's undergraduate student population has either graduated with a degree in the sciences or has declared a concentration in one of the sciences or mathematics (biology, chemistry, computer science, geology, mathematics and physics).
- William and Mary graduates received more Ph.D.s in science from 1991 to 1995 than did the graduates of any other "doctoral institution". (We are so classified because the college awards around 70 doctorates annually; this classification is to be distinguished from "research university" or "baccalaurate-only" institutions.)
- Among "baccalaurate-only" schools, which includes the great majority of the well known private colleges, only Carlton College had more former students who obtained a Ph.D. in one of the sciences than did William and Mary. Schools like Swarthmore, Oberlin and Reed are just behind us in this respect.
- There is an 8.6% chance that a William and Mary science graduate will go on to obtain a Ph.D. in one of the sciences.
- Regarding the probability that an incoming freshman (who graduates) will eventually receive a Ph.D. in one of the sciences, we are equal with Duke and Dartmouth, and well ahead of Wake Forest, Chapel Hill and most other schools. There are only six schools which exceed us in this respect: MIT, Harvard, Yale, Princeton, Stanford and Brown.
- A freshman who matriculates at William and Mary has at least twice the chance of eventually obtaining a Ph.D. in one of the sciences as does a comparable student at *any* other Virginia school.
- In cost effective terms (tuition and board) no other Virginia school, nor any of the prestigious "baccalaurate-only" schools referred to above, is competitive with us. As the Dean put it, "William and Mary is far and away the best buy for a Virginia high school student who wants a competitive advantage in seeking a Ph.D. in science or math."

Continued on Page 8



For the last 6 years, William and Mary has ranked among the 10 universities awarding the most ACS-certified chemistry degrees.

- William and Mary's Chemistry Department has ranked in the top ten in total number of ACS-certified degrees for the most recent 6-year period for which data are available. Among the six schools that have been in the top ten in each of these years, we have the highest average per capita number of ACS-certified degrees awarded by from 50% more to four times more!
- In the last three years 44% of chemistry graduates from William and Mary went on to graduate school in chemistry or a related science; 13% went to medical school. The 1996 medical school acceptance rate for William and Mary students (primarily biology and chemistry) was 65%, compared to a national average of 38%.
- Between 40 and 50% of William and Mary undergraduates will have taken at least one chemistry course at the College before they graduate.

Undergraduate Research Symposium

The 4th Annual William and Mary Undergraduate Sciences Research Symposium was was held on September 19, 1997, in the University Center.

Students from the departments of biology, chemistry, computer science, geology, mathematics and physics presented their research either as a talk or a poster. Fourteen talks were presented in concurrent sessions of Chemical Sciences, Life Sciences and Physical Sciences. The talks were followed by the presentation of 71 research posters. As in the first three symposia, the Chemistry Department had the largest number of student participants. Of the 85 presentations, nearly half were done by chemistry students (5 talks and 35 posters). This reflects the ability of the Department to continue to attract very talented students to its undergraduate research program.

Once again, Professor Debbie Bebout deserves accolades for doing a superb job of organizing and running this year's Symposium. It was supported by an award from the Merck Foundation, administered by the American Association for the Advancement of Science and supplemented by funds from the the Charles Center at William and Mary. The College recently secured new funding from GTE to continue the Research Symposium.

Jennifer Wasyk,'98, left, explains her research on reflective silver polyimide films to Jennie Weisman, '99.

A Varian installation engineer purges the magnet dewars with nitrogen gas prior to the initial liquid nitrogen and helium fills.

The magnet is shown here being filled with liquid nitrogen.

Chemistry Expands Its NMR Capability

This summer the Department installed a new Varian Mercury 400MHz NMR spectrometer. The decade old GE (now Bruker) 300 has been moved into the corner and will be left to operate as long as possible. The Varian system has higher resolution, can run 2D experiments more effectively, and is equipped with pulse-field gradient capabilities.

The installation caps our two year effort to gain more instrumentation. We applied twice for NSF Chemical Research Instrumentation and Facilities (CRIF) grants and once for a Defense University Research Infrastructure Program (DURIP) grant, and were successful with the second NSF grant. Chris Abelt was the persistant principal proposal writer.

Despite the NSF granting us half the requested funds, we were able to obtain a suitable system for $230,000 from Varian through the competitive bidding process. The new instrument was finally paid for by combining the $105,000 NSF grant, a generous $5000 gift from Rohm and Haas, and $120,000 from the College. The two NMRs will satisfy the demand for spectrometer time that is especially prevalent in the summer.

Should the old 300 MHz magnet continue to work, we would envision purchasing a used Varian 300 console to make the systems compatible. If anyone has a used console, perhaps in a garage, we know of a good home for it.

Undergraduates working at both consoles. A second NMR has brought some congestion to Rogers 103.

Old Rogers Recollections Returns

(Editor's note: Most of this story came from the recollections of Alfred Armstrong in a recent conversation with Trevor Hill. Trevor completed the writing of this report a couple of days before he and his wife Shirley took off to sail up the Chesapeake toward New England and maybe the Canadian Maritime Provinces.)

The Chemistry department moved to its present location on the new campus in 1975, into a brand new building which retained the name of Rogers Hall. Old Rogers Hall is presently Tyler Hall, but still retains the name of "Old Rogers" in the minds of some.

Old Rogers will still be remembered by many as housing primarily the Chemistry and Physics departments. It was constructed in 1925 at a cost of $300,00, half of which came from the Rockerfeller Foundation. (The Rockerfeller Trust was instrumental in establishing Colonial Williamsburg.)

The design of Old Rogers was curious, indeed, with the *front and back* doors entering onto stairs up to the second floor, which in turn had stairwells leading to a third floor and attic; these floors housed primarily Chemistry. The Physics Department was accessed from outside through the *side* doors, which led down to the basement, sometimes considered the first floor. This meant that the only way to get to Physics from Chemistry was out the front (or back) door, and then around the building and down to the basement through a side door of the same building; with the reverse operation in effect to get from Physics to Chemistry. There was no stairwell from the second floor to the first floor (basement). Apparently the intellectual purpose of this architectural design was to leave each disclipline uncontaminated by the other; however, hearsay has it that this design was influenced by a physicist in interests of making it more difficult for Chemistry to pinch scientific equipment from Physics. (It is recalled by some that Professor Armstrong followed the same policy on moving into New Rogers when he placed a large wooden storage cabinet in front of the second floor preproom door which led out into the physical chemistry laboratory, and, it is suspected, for similar reasons.)

This photograph of Rogers Hall was taken in 1928, three years after its construction. The entry door facing the photographer was one to the physics department, with Chemistry's main entrance on the left, facing the yet-to-be excavated Sunken Garden. Most of us have never had such a unobstructed view of this 73-year-old building, which is now surrounded by mature trees.

In the late 1960s the College asked the Virginia Legislature for funds to construct a stairway connecting the first and second floors inside Rogers. One of the lawmakers in Richmond expressed disbelief that there existed a state building for which one had to go outside and walk a quarter of the way around the building to get from one floor to the next. After being persuaded that this was indeed the case, the legislator then asked why, if the building had been like this for more than 40 years, did the College want to change it now. Nonetheless, the appropriation passed and a full interior stairwell was completed about 1970.

The truly modern innovation in Old Rogers was the installation of a freight elevator at the back door to haul chemistry supplies (and people) to the second and third floors. Students and faculty, of course, greeted this piece of innovative engineering with much enthusiasm, because less work (personal effort) would be required to get to third floor labs and classes! Actually, the elevator, which was greeted at the dedication ceremony with vocal accolades and (land-of-hope-and-glory) song, soon fell into disuse. It turns out that getting to the higher floors from the back door required pulling on a hideous thick rope, as opposed to simply pushing a button. No doubt the rope puller had mechanical advantage through a system of blocks and counterweights; still and all, it soon came to light that *less* work was expended by simply carrying oneself (plus equipment) up the stairs.

Thus the elevator remained more or less permanently parked at the back door level, and became storage space for Chemistry; and as so often happens to chemistry storage space, one day in 1931 it caught fire, with flames shooting up the elevator shaft and out the roof. The extinction of the fire was difficult in that the fire department didn't have a pump powerful enough to push the water from the hose as high as three stories, which in turn meant they had to go in through one of the doors. (It must have been fun deciding exactly *which* door.) It turns out that the final extinction of the fire resulted in the direct current conduit pipes becoming filled with water, thus shorting out the electrical circuitry. For whatever reason, a laboratory in those days, whether for teaching or other use, was not a state of the art laboratory unless it had both AC and DC outlets.

Old Rogers was renovated in the '70s and '80s, and now, in addition to stairwells clear to all floors, Tyler Hall boasts a pushbutton elevator.

This undated photo from the College's archives shows the chemistry library, on the third floor.

Miscellany

Mrs. Guy's Birthday

Gladys Guy, whose late husband Bill was Chemistry Department Head from 1946 to 1968, celebrated her 100th birthday in June. The incumbent Garrett-Robb-Guy Chair in Chemistry has been invited since 1986, when the Chair was endowed. Chemistry has chosen to make this chair a rotating one, and Cirila Djordjevic, Gary Defotis and Chris Abelt have all shared in the festivities during their tenures.

Where Are They Now?

Bill Bunnelle, 1982–1984, is engaged in pharmaceutical research at Abbott Labs.

Kyle Dolbow, 1976–1978, is President of American Environmental Network in New Jersey.

Eric Herbst, 1975–1979, is professor of physics at Ohio State.

Gary Hollis, 1988–1995, is associate professor of chemistry at Roanoke College.

Tappey Jones, 1985–1987, is associate professor of chemistry at Virginia Military Institute.

Patty Kane, 1990-1991, is a member of the biochemistry faculty at SUNY Health Science Center.

Mel Schiavelli, 1968–1993, is Provost of the University of Delaware.

Chemistry held its first reunion with an invitation to 25-year grads last October

In October 1997, six members of the class of 1972 gathered in the Rogers Hall Conference Room to celebrate their 25th reunion. The gathering was organized by Trevor Hill at the suggestion of one of the class members. We welcomed **David Boerner, Scott Key, George Lock, Sam Marcuson, Jane Muse Partin** and **Ginger McKay**. Five of them are pictured below.

Members of the Class of 1972 in Rogers Conference Room at Chemistry's first reception for alumni, during Homecoming, in October 1997. From left are George Lock, Sam Marcuson, Scott Key, David Boerner and Jane Muse Partin. Missing from this photo is Ginger McKay.

Alums Contribute to Chemistry

Each year, the Department is honored to receive gifts from alumnae, alumni and friends. Most of these are sent to the Development Office and designated for the Chemisty Department or one of the several funds, such as the Armstrong Fund, designated to the Department. We are pleased to acknowledge those who have contributed over the last three years. In some instances, these gifts were matched by the donor's employer. These companies are listed among the corporate donors on the list.

The Department is most grateful for all these gifts. As written elsewhere in this newsletter, these gifts to Chemistry have been used to support students doing summer research and to purchase instruments for the department. We hope this list is accurate, and aplogize to any whose names may have been left off in error.

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Your Financial Help Is Requested and Needed

Most people who receive this newsletter were chemistry concentrators at William and Mary. They have been major contributors to the Chemistry Department's recognition as one of the premier undergraduate departments in the U.S.: ranked 5 to 7 over the past 10 years for number of certified chemistry majors, with two thirds of students going on to get advanced degrees in chemistry, bio-sciences, materials science, law or business. Almost all (over 90%) of our majors are involved in basic research with a faculty member during their senior year. Now each year 10 to 15 students become involved in research during the first semester of their freshman year.

We believe that involvement in open-ended research is the most valuable learning experience of our chemistry program. This belief is shared by many others here, in the administration, and throughout the country. It is expensive. At the heart of this program is providing the opportunity for students to have a modest stipend, to spend a summer conducting research. This period provides a unique and enormous boost to their ability to pursue their research interests during the academic year.

With increasing pressures on the federal government to do more with less, receiving grant funding is increasingly difficult and extremely competitive. Furthermore, most of these funds are needed for equipment and chemical supplies. Virtually all of our state and tuition funding supports the conventional instructional program. Simply stated, our talented new faculty are facing serious challenges to maintain an active research program and generate the support needed to fund the undergraduate summer research program.

In this time of diminished funding at all levels, your financial support is requested and needed. We encourage you to identify the Chemistry Department in your contribution. Please think about the importance of your experience here at William and Mary, and join the list of chemistry graduates who make an annual contribution to the Department by designating your gift for the Chemistry Department.