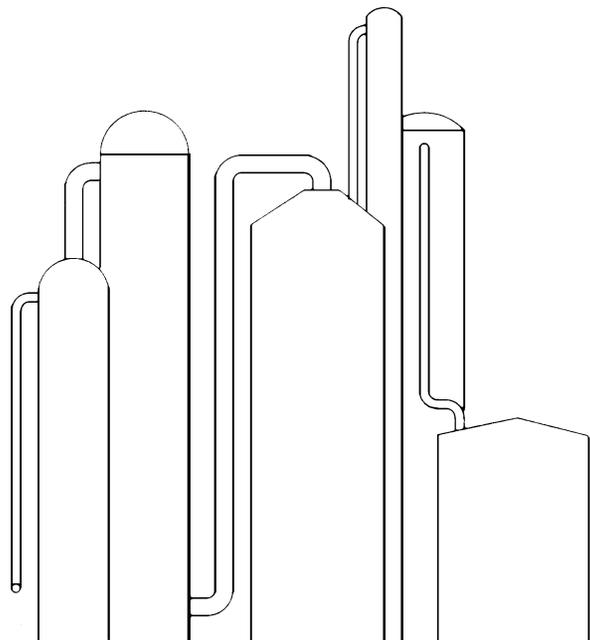


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## June Calendar

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### NEW YORK SECTION

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Inorganic Chemistry  
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Tuesday, June 7, 2005  
Chemical Marketing & Economics Group  
See page 9.

### NORTH JERSEY SECTION

Monday, June 13 2005  
Teacher Affiliates Executive Committee  
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**Deadline for items to be included in the  
September 2005 issue of *The Indicator* is  
July 15, 2005.**

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### WHO INVENTED THE TWISTY LITTLE BIT OF WIRE INSIDE THE LIGHT BULB?

By Kevin K. Olson

We all learned in our history classes that Thomas Edison invented the light bulb in 1879 and that the first successful filament was a carbonized piece of cotton thread that burned for 13.5 hours. Today, light bulb filaments are not something we think about, unless they burn out, but their early development is a fascinating story of 19th century chemistry and materials science.

Edison decided to develop an incandescent lighting system at a time when he was acknowledged as the nation's foremost inventor of telegraphic equipment. By the fall of 1877 Edison had developed some critical insights and announced to the press that he would soon have a commercially successful system.

He concluded that a current regulator was needed prevent the bulb's filament from overheating. Either a thermal expansion device or telegraph style relay could be used to open the circuit when the current was too high. Circuit breakers protecting each filament meant that light bulbs would need to be wired in parallel.

Fortunately Edison knew enough about Joule's and Ohm's laws to recognize that high-resistance lamps would work most efficiently in parallel circuits. Experiments carried out in the Menlo Park, New Jersey, laboratories, revealed that a filament's energy consumption was proportional to its radiating surface, not its resistance. In other words, high resistance lamps would not require more energy than low resistance ones. Decreasing the radiating surface actually produced more light. Thus the ideal filament would be a long, thin wire with high resistance. And once he reached this point in October of 1878, Edison believed that the incandescent light was as good as already invented.

By the time Edison had started his lighting project in 1877, some twenty inventors had already built light bulbs with either platinum or iridium filaments heated in air, or carbon filaments heated in a vacuum. Platinum was the ideal material. It had a high melting point, could be wound in a tight coil, and resisted oxidation. Carbon on the other hand was too easily oxidized and difficult to protect with the current vacuum technologies. Earlier inventors tried unsuccessfully to get around this problem by using carbon filaments in nitrogen and even hydrocarbon atmospheres.

To overcome platinum's expense Edison tried to find new sources and develop platinum alloys. Both efforts failed, as did attempts to use less expensive metals. By this time the press, which had come to expect miracles from Edison, (a view which Edison himself strongly encouraged) was becoming impatient for results.

It is well beyond the scope of this article to describe Edison's 1878 work on electrical generators, generating publicity, and how financial backing was arranged for the incandescent lighting system. Suffice to say that these efforts were critical for bringing the project to completion.

It was while working with metallic filaments that Edison and his staff made one of their most important contributions to chemistry. Microscopic and chemical examinations of platinum/iridium alloy filaments that had been heated in air, revealed that oxidation was a major problem. The metal seemed to adsorb gasses during heating and that its melting point depended on the amount of gas in its pores. What was obviously needed was a better vacuum pump.

By combing the scientific literature the Menlo Park staff learned that the two best pumps were the Sprengel and Geissler mercury types. Unable to acquire them, Edison commissioned a glass blowing firm to build new pumps that combined the best features of both. A McLeod gauge was added and the laboratory soon had the world's most efficient (though sometimes temperamental) vacuum pump.

Heating platinum in a better vacuum degassed the filaments and in turn enabled them to be

*(continued on page 6)*

## **WHO INVENTED THE TWISTY LITTLE BIT OF WIRE INSIDE THE LIGHT BULB?**

(continued from page 5)

thinner and to withstand higher temperatures. It would also make the system cheaper since individual circuit breakers were no longer needed for each lamp.

Edison eventually presented his work on gasses in metals to the American Association for the Advancement of Science. It is recognized as a major contribution to the chemistry of metals. All of this work however did not solve the problem of platinum's cost.

Armed with a better vacuum pump, Edison now turned to carbon as a potential filament. He sought a naturally occurring fiber that could be carbonized. Among the many fibers tried were human hairs, animal hairs, thinly sliced horn, all kinds of threads, and botanical specimens from around the world. In order to improve their strength, Edison tried impregnating the carbonized fibers with rock candy, whale oil, cotton oil, and any number of hydrocarbons. Ultimately, the most successful fiber proved to be thinly sliced strips of bamboo.

Meanwhile, the press, public, and financial backers were growing impatient. Edison needed light bulbs for his demonstration projects. And so the first bulbs had carbonized paper filaments. Even the finest paper had an irregular distribution of fibers and varied in thickness. Paper filaments only lasted about 300 hours.

It is at this point that the research split into two very different paths. Inspired by the nineteenth century ideal of a bounteous natural world that was filled with good things for all mankind, Edison sought a natural fiber somewhere in "God's almighty workshop." His rivals attempted to create a synthetic one.

As they saw it, only an amorphous, dense, and completely uniform carbon filament would provide long lasting illumination. No natural fiber could ever meet these requirements.

Edison's two principle rivals were William Sawyer of New York and Edward Weston of Newark, New Jersey. Weston was a native of England who came to the United States as a young man of twenty in 1870. He settled in New York where his first position was with a manufacturer of photographic chemicals. The chance to revamp an almost-bankrupt plating company led Weston into the field of electrochemistry. Since at that time there was no reliable source of electric current, Weston began building his own dynamos, which in turn became his primary business.

He moved to Newark, New Jersey in 1875 and by 1877 had acquired a former synagogue on Washington Street for use as the nation's first electrical machinery plant. Armed with good dynamos and a very thorough knowledge of chemistry, Weston took up the challenge of electric lighting a year before Edison.

Many readers of the Indicator will recognize Weston as the inventor of the Normal Cell (the first standard unit of a volt) and founder of the Weston Instrument Company, one of the world's foremost electrical instrumentation manufacturers. Both of these achievements were in the future.

Although his first commercial successes would be with outdoor arc lights, Weston also worked to develop an incandescent light for indoor use. His first light bulb filaments were made by squeezing a mixture of carbon dust and tar through a narrow aperture. But when these fibers proved non-homogeneous, Weston thought back to his days as a photographic chemist and resolved to try celluloid.

Celluloid is made by combining nitrated cellulose with camphor under high heat and pressure. Because it is highly flammable, a stable form was required for use as a filament. Weston reasoned that since the starting material had been oxidized, treatment with a reducing agent would de-nitrify and convert the celluloid back into cellulose. In September of 1882, he patented a process where celluloid was immersed in baths containing hydrated ammonium sulphide, ferrous chloride, or ferrous sulphate. According to the inventor, the resulting material was non-flammable, dense, flexible, and tough.

Filaments were cut from sheets of this material, which Weston named "Tamidine". The filaments were heated to remove the dissolved gasses, carbonized, and finally had the ends plated in copper.

Unlike Weston who was a trained scientist, and Edison who was a highly disciplined researcher, William Sawyer was a journalist and part time inventor of telegraph equipment. Despite limited financing, poor theoretical understanding, and a drinking problem, Sawyer did manage to produce a working light bulb with a carbon filament. But he and his backers rushed their bulbs into production without first taking the time to refine their product or their production techniques. They were forced to quit the project by June of 1878.

Sawyer did create one process that was vital to the production of carbon filaments, he made them "self repair." Gently heating the filaments in a hydrocarbon atmosphere caused the weak spots and surface pockmarks to heat up and glow brightly. Carbon was deposited on these spots until the entire filament had a uniform cross section. Weston made the same discovery at about the same time but Sawyer was first to patent the process.

Meanwhile, back at Menlo Park, Edison had not been idle. Once bamboo was found to be an effective filament, another search was made for the optimal species. First, specimens of all tropical grass species that could be obtained in the United States were tried. Agents were then sent to Cuba and South America to hunt for tropical grasses. William H. Moore was sent to Japan and China to obtain more exotic varieties of bamboo. After an exhaustive search, a contract was signed with a Japanese grower near Kyoto. Before the end of the filament search, some 6000 species of bamboo had been tried.

Trained scientists shook their heads over Edison's bamboo search and his detractors have pointed to the effort as a monumental waste of time. They missed an important point, even if the search failed to generate a single usable filament, it did generate huge amounts of publicity. Edison made a point of being on the pier whenever one of his filament hunters returned home, then with the press watching, he loudly questioned the man about his results. Edison was also an avid reader of Jules Verne's novels and the worldwide search through mountains and jungles was like living out one of Verne's plots.

And the Japanese filaments did work well. By 1880, Edison was producing bulbs that could last up to 1500 hours.

Even as the last of Edison's filament hunters were returning to New Jersey, the industrialist Hiram Maxim (later famous for his machine guns) was manufacturing bulbs with Tamidine filaments. Patent royalties from these filaments proved immensely valuable to Weston. Lasting up to 2000 hours, Tamidine quickly became a serious competitive challenge for bamboo and other plant fibers. Until the introduction of tungsten filaments, many of the world's light bulbs were made with this material.

In 1906, General Electric introduced incandescent bulbs with tungsten filaments.

Of the twenty or so inventors who had worked on incandescent lights before Edison, most are remembered only in the better history books. Edward Weston may have had the better filament but lacked Edison's impressive financial backing and favorable press. Although he was awarded the contracts for lighting Newark's streets and later the Brooklyn Bridge, Weston eventually dropped out of the lighting business and turned his attention to electrical measuring instruments. The Weston Instrument Company was founded in 1888. Their factory at the corner of Newark's Plane and Orange Streets turned out thousands of instruments. Weston's patent portfolio included advances in electroplating, electrical meters, fuses, batteries, and motors. The growing fame of Weston's Newark research laboratory is said to have goaded Edison into abandoning Menlo Park and constructing the huge research facilities in West Orange, New Jersey.

In recent years, the story of the light bulb has attracted scholarly attention and even a Smithsonian Exhibition. For readers interested in learning more, I recommend *Edison's Electric Light: Biography of an Invention* by Robert Douglas Friedel and *Edison, A Life of Invention* by Paul Israel.

## New York Meetings

[www.newyorkacs.org](http://www.newyorkacs.org)

### INORGANIC CHEMISTRY SUBSECTION — JOINT MEETING WITH THE CHEMICAL SCIENCES SECTION OF THE NEW YORK ACADEMY OF SCIENCES

#### Crystallographic Studies of Nickel Regulatory Protein NikR

**Speaker:** Catherine L. Drennan  
Department of Chemistry  
Massachusetts Institute of  
Technology  
Cambridge, MA

Nickel uptake in *Escherichia coli* occurs via an ABC transporter that is transcriptionally controlled by a metal-responsive repressor called NikR. To understand how Ni activates NikR for transcriptional repression, we have determined several structures of NikR in different states. NikR is the only known metal-responsive member of the ribbon-helix-helix (RHH) family of transcription factors, and its structure displays an interesting quaternary arrangement: two dimeric RHH DNA binding domains separated by a regulatory domain responsible for nickel binding and tetramerization. The presence of this regulatory domain between the DNA binding domains explains the observation that the NikR operator has a relatively large binding site spacing compared to other RHH-responsive operators. The regulatory domain of NikR contains a nickel binding site with a novel square-planar arrangement of three histidines and one cysteine. Differences between the apo-NikR and nickel-bound

structures suggest mechanisms of DNA-binding activation upon nickel binding, and contribute to our understanding of intracellular metalloregulation.

**Date:** Friday, June 3, 2005  
**Time:** 3:00-5:00 PM  
with reception to follow.  
**Place:** New York Academy of Sciences  
2 East 63rd Street  
New York, NY



**Dr. Catherine L. Drennan**  
Department of Chemistry  
Massachusetts Institute of Technology

#### Poster Session

CALL FOR POSTERS highlighting Inorganic Chemistry in the New York Metropolitan Area

All faculty, students and postdoctoral researchers are invited to submit poster presentation abstracts **by Friday, May 27, 2005** to the web site <http://gibney9.chem.columbia.edu:8080/NYAS/form.php>

For more information and registration, contact the New York Academy of Sciences at (212)838-0230 or [conference@nyas.org](mailto:conference@nyas.org) or on the web at [www.nyas.org](http://www.nyas.org).

## CHEMICAL MARKETING & ECONOMICS GROUP (CM&E)

### Solid Imaging - "Printing" in 3D

**Speaker:** Abraham N. Reichental  
President & CEO  
3D Systems Corp.  
Valencia, CA

**Date:** Tuesday, June 7, 2005  
**[Note: change in date]**

**Times:** Cocktails 11:30 AM  
Luncheon 12 noon  
Presentation 1:15 PM

**Place:** The Chemists' Club  
40 West 45th Street  
New York City

**Fees:** \$35 discount price for Members  
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## FIFTY YEAR MEMBERS LUNCHEON

The New York Section extends special congratulations to its 50 year ACS members. As guests of the New York Section, along with their spouses, they are being honored at a special luncheon at which the official ACS 50 Year Member Certificates are presented.

**Date:** Friday, May 20, 2005  
**Time:** 12:00 Noon  
**Place:** Anthony's Restaurant  
222-02 Union Turnpike  
Bayside, NY 11364

### New York Local Section 2005 50-Year Members

Dr. Samuel Nicholas Acerbo  
William Charles Barringer  
Dr. Reuben L. Baumgarten  
Dr. Louis S. Campisi  
George John Carbone  
Sister Marguerite M. Caso  
Robert Chodosch  
Dr. Charles Henry Doering  
Peter James Franco  
Dr. Gerhart Friedlander  
John Joseph Garbarini  
Ralph Joseph Gigi  
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## SECTIONWIDE CONFERENCE AWARDEES



Awardees at the Annual Section Conference: Appearing from left to right with 2005 New York Section Chair, Dr. James Canary — Dr. Robert Beer (Outstanding Service Award), Dr. Vijaya Korlipara (Past Chair Service Award), Dr. Canary, Dr. Grace Borowitz (Appreciation Award for URS Photography Service), Dr. Rashid Shaikh (Salute to Excellence Award to the New York Academy of Science), Mrs. Jean Delfiner (Salute to Excellence Award), Mr. Richard Goodman (Nichols Foundation High School Chemistry Teacher Award), Mrs. Joan Laredo-Liddell (Salute to Excellence Award). Congratulations to all!

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## HUDSON-BERGEN CHEMICAL SOCIETY

### Research Symposium and Student Award Night

Presenters received certificates and books (courtesy of McGraw-Hill). Students majoring in Chemistry with the highest GPA from colleges in the area received certificates and books (courtesy of Wiley).



In the photo (from the left): Dr. Chris Devine (FDU), Mrs. Mary Eustace (Westchester Forensic Laboratory, speaker at the meeting), Dr. Mihaela Leonida (FDU), Senghane Dieng (FDU student), Stephen Chung (FDU Student, award recipient), Yuegao (golden) Huang (FDU student).

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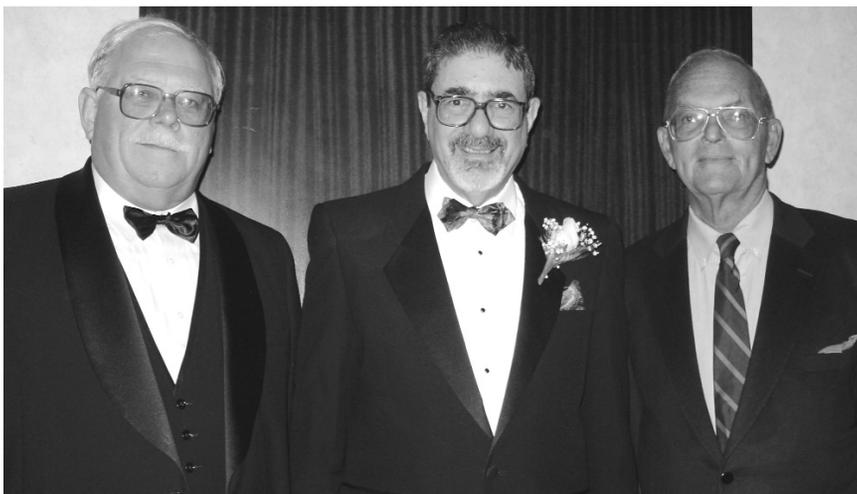
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## NICHOLS AWARD



David Nichols (Nichols Foundation), Richard N. Zare (Medalist), Walter Nichols (Nichols Foundation).

James Canary (NYU, Chair ACS-NY 2005), Bill Carroll (ACS President), Jill Rehmann (Chair 2006), Richard and Susan Zare.



John J. Brauman (Stanford), W. Carl Lineberger (U. Colorado), Paul L. Houston (Cornell), Richard N. Zare (Nichols Medalist, Stanford), Mark A. Johnson (Yale).

## North Jersey Meetings

<http://www.njacs.org>

### EXECUTIVE COMMITTEE AND SECTION MEETING

There will be no Executive Committee Meeting in June.



### TEACHER AFFILIATES

#### Executive Committee Meeting

**Date:** Monday, June 13, 2005

**Time:** 4:30 PM

**Place:** Dave Lee's House  
Succasunna, NJ

Contact: Diane Krone at [kroned@optonline.net](mailto:kroned@optonline.net) or (201) 385-4810 for directions



### SUMMARY OF NORTH JERSEY ACTIVITIES — 2004 ANNUAL REPORT

Every year the North Jersey Section files an annual report with the ACS, which highlights the activities of the section. Here is a summary of our activities which appeared in the 2004 annual report.

The North Jersey Section has continued its tradition of excellent programming, which meets the needs of our members during 2004. We have several active topical groups. With several major pharmaceutical sites in the section, we offer a wide range of programs that interest not only ACS members, but nonmembers as well. For example, The North Jersey Chromatography Group (NJCG) held an August Symposium "Fundamentals of MS and MS/MS for Chromatographers" in August. Attendance was over 80 people for this program, designed to expand the chromatographer's skill set. In addition, a joint meeting was held with the Regulatory and Quality Topical group "Defendable Chromatographic Data and Regulatory Risk", a topic which attracted many pharmaceutical professionals including non-chemists.

The Garden State Thermal Analysis

Association held a symposium at EAS, and also keeps members informed of continuing education opportunities and employment opportunities. Our drug Metabolism Group sponsored two symposia; The 2004 Spring symposium which focused on the role of reactive metabolites in idiosyncratic drug toxicity. The 2004 Fall symposium focused on the role of drug-metabolizing enzymes in pharmaceutical R&D and covered the latest update on cytochrome P450s (CYPs), UGTs, and FMOs. Approximately 250 attendees from the pharmaceutical/biotech companies and universities in the tri-state area gathered for each of the semi-annual events. Our Small Chemical Business Group offered seminars on topics which included compliance and regulatory issues, environmental issues and public relations.

Our Metro Women Chemist's committee sponsored a section member to attend a symposium at the ACS spring meeting on emotional intelligence. YCC programming included a picnic and a symposium on Forensic Chemistry held at Rutgers Univ., which attracted about 100 students. The symposium, "Crime Solving Through Chemistry" was held in conjunction with the Rutgers Chemistry Society. The audience was composed of undergraduate and graduate students, chemistry professors, and industry professionals.

Our Teacher Affiliates Group has several high quality ongoing programs in addition to the new ones mentioned in the previous section. Chem Tag and Chem Central meetings are held in North Jersey and Central Jersey. During meetings, teachers perform demos, ask and answer questions, swap lab activities, exchange ideas that work for them and any other activity that helps them to become better in the classroom. The Teacher Affiliates Group and ChemTAG/Chem Central, outgrowths of TAG, are recognized by the State of New Jersey Department of Education as Professional Development Providers. Teachers who attend workshops sponsored by these groups receive credit for professional development. There are 145 members of the Teacher Affiliates Group. 15 members are also ACS members, and 45 are new members. The increase in membership can be attributed directly to the workshops programs instituted this year. 5 of our members presented workshops during the National

*(continued on page 14)*

## NORTH JERSEY ACTIVITIES

(continued from page 13)

Science Teacher's Convention in Atlanta in April, 2004, and we presented 7 workshops at BCCE 2004, held at Iowa State University. TAG is also a sponsor of the annual New Jersey Chemistry Olympics, a competition for exceptional high school students.

High school teams work on projects for a three month preparation period before the finals competition. Projects include a research paper, molecular model building, applications of chemistry, demonstrations, a nomenclature test, Internet search, spectrophotometric analysis, microscale experiments, environmental analysis, and web page design. The goal of the program, now in its 20th year, are to provide a high quality, challenging, personally fulfilling educational experience, to encourage the study of chemistry, and to improve the quality of chemistry education by the introduction of high-level problem solving and laboratory experiences. The NJ Chemistry Olympics Program received a salute to excellence award in 2004.

We have exceptional programs and we have exceptional students! The North Jersey section was proud to have one of our students, Fan Zhang, be one of the 4 member US team that won silver medals at the 36th International Chemistry Olympiad in Germany. Fan attends Bergen Academy, his teacher is David Ostfeld.

The NJACS education committee has worked hard to be sure that teacher's efforts are rewarded. The Edward J. Merrill award was presented to Fran Zakutansky, from Pascack Valley HS at the New Jersey Science Convention. The Harvey J. Russell award was presented to Judy Gross. The Sr. Marian Jose Smith Excellence in Chemical Education Award, funded by Hoffmann-LaRoche, was presented to Prof. Richard Mendelsohn from Rutgers University. Prof. Mendelsohn received the prize on the recommendation of several of his former students, who credited his enthusiasm and interest in the lab with inspiring them.

Diane Krone, and executive committee and TAG member, won the Radio Shack Award for Academic Excellence in Math, Science and Computer Science. Volunteers are the backbone of our section. Val Kuck was

awarded the ACS National award for Volunteer Service to the ACS. Val was also recognized with a Salute to Excellence award for her work as National Chemistry Week coordinator reaching out to the public. Maureen Chan was awarded the Burton C. Belden Distinguished Service Award, in recognition of her brilliantly successful work, which over many years, significantly contributed to the welfare of the section.

Pro Bono awards were given to Ms. Lucja Orzechowski, Ms. Leslie Romanyshyn, Dr. Bishambar Dayal, and Mr. Edward Konsevic.

National ACS awards were also presented to other section members. Toni Watt received the James Bryant Conant Award for HS teaching. Toni teaches at Plainfield HS and Watchung Hills Regional HS. William Greenlee, of the Schering Plough Research Institute, Kenilworth, NJ received the Alfred Burger award in Medicinal Chemistry.

Another executive committee and section member, Anita Brandolini, received a silver award from the Parent's Choice Foundation, for her book 'Fizz, Bubble and Flash!'. She presented a workshop about her book at the Liberty Science Center, during National Chemistry Week.

To encourage new members of the section to become involved, a letter is being sent out entitling them to a free dinner at one of the section or topical group meetings. A summer picnic was held for all executive committee members and their families, so we could all get to know each other in a social setting.



### 2005 ACS SPRING MEETING IN SAN DIEGO — COUNCILOR REPORT

For the 2005 ACS Spring Meeting in San Diego, North Jersey had full representation at the Council meeting. Representing the section were the following Councilors and Alternate Councilors: Anita Brandolini, Maureen Chan, Alan Cooper, Jacqueline Erickson, Susan Fahrenholtz, Stan Hall, George Heinze, Bettyann Howson, Allene Johnson, Diane Krone, Valerie Kuck, Cecilia Marzabadi, Les McQuire, Bill Suits, and Stephen Waller.

Prior to the Council meeting, Councilors participate in various committees. Some of the Committees with North Jersey Councilors include are Budget and Finance, Committee on Economic and Professional Affairs, Local Section Activities Committee, Membership Affairs Committee, Nominations and Elections, SOCED, amongst others. Below are a few highlights from some committee meetings.

Maureen Chan participated in the Budget and Finance (B&F) Committee meeting and Communications Subcommittee of B&F. At the 2005 San Diego meeting, the B&F Committee reviewed the 2004 ACS financial performance. Results were good with a larger than expected net contribution from continuing operations. This resulted mainly from strong earnings from information services, strengthened investment gains and careful control of discretionary spending. The committee also reviewed the 2005 budget and the results of a financial planning conference held on January 24-26, 2005 (these are summarized by the chair of B&F, Judith Benham in C&EN, April 11, 2005, p.41).

The Communications subcommittee reviewed the B&F website ([chemistry.org/committee/budget](http://chemistry.org/committee/budget)) and prepared for presentations made at the meeting to councilor caucuses. We are anxious to provide as much information as possible to ACS members on the finances of the Society and urge members to go to the web site. Specific questions on finances can be sent to [b\\_feedback@acs.org](mailto:b_feedback@acs.org).

Allene Johnson serves an Associate to the Society Committee on Education (SOCED), and has been asked to serve as a judge for Chemluminary Awards for Kids in Chemistry programs and HS programs, in addition to serving as a judge for the Best Minority Affairs Program. Also, SOCED was informed that the High School Club has been approved and also that there is a new Local Award for a HS teacher sponsored by the Division of Chem Ed.

George Heinze and Jacqueline Erickson participated in the Membership Affairs Committee (MAC) meeting and in their respective subcommittees. MAC spent much of the time discussing the subcommittee

(continued on page 16)

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## 2005 ACS SPRING MEETING

(continued from page 15)

tee structure and a strategic plan for the committee. In addition, there was discussion on the membership categories for the ACS and whether or not student affiliates should be considered student members. Recruitment and retention of ACS members was another big topic of discussion, it was announced that Membership in the American Chemical Society was 158,127 as of year-end 2004. Compared to the previous year, this represents less than a 1% decrease. Based on this decrease, MAC would like to encourage all ACS members to participate in the 2005 Member-Get-A-Member program, 365 in 2005.

At the Council meeting, reports were given by the President, President-Elect, Immediate Past President, Chair of the Board of Directors, and the Executive Director & CEO of the ACS. Reports were also given by committees.

The nominees for 2006 President-Elect were introduced to the councilors and each nominee gave a short talk about her/himself and position statement. The Council chose Catherine T. Hunt and John W. Kozarich as the two candidates for President-Elect. George Heinze, a North Jersey Councilor, will appear on the ballot as a petition candidate.

The Committee on Nominations and Elections also announced the results of the election of nominees for candidates to represent District III (which includes North Jersey) on the Board of Directors for the term 2006-2008. Nominees for District III included: Catherine C. Fenselau, Edward J. Grabowski, Madeleine M. Joullié, and Willie E. May. By written ballot the Council selected Catherine C. Fenselau and Madeleine M. Joullié as District III candidates. Ballots will be mailed on or before October 10 to all members in District III for election of a Director.

The Committee on Nominations and Elections announced the selection of the following candidates for Directors-at-Large for a 2006-2008 term: James D. Burke, Edwin A. Chandross, C. Gordon McCarty, and Frankie Wood-Black. The election of two Directors-at-Large will be conducted in the fall, with ballots mailed to the Council on or before October 10.

The Council voted to establish an Ethics Committee to coordinate the ethics-related activities of the Society and to serve as an educational resource and clearinghouse. The general consensus was that ACS should take a leadership role in ethics for chemists and the scientific community.

Council approved the recommendation from the Society Committee on Budget and Finance that 2006 dues be set at the fully escalated rate of \$127.

Finally, a special discussion item was put on the Council agenda for this meeting. ACS President William F. Carroll presented an overview of Chemistry Enterprise 2015, posing the question, "Where will our students come from in the next ten years, and where will they go?" Councilors then participated in a lively discussion of this issue. The issue was framed as follows: Currently the U.S. has a strong university system and U.S. graduate education in science is widely recognized as the best in the world, but problems loom on the horizon. In addition, a variety of factors in the nation's academic infrastructure are likely to produce change in the training and careers of new chemists. The discussion at Council intensified awareness of this issue and possibilities for solutions. Of special note to the North Jersey Section, was the discussion related to pre-college teachers. It appears that there are a number of chemists who are becoming pre-college educators. They need a strong mentoring program. Mentors should include both experienced teachers and experienced chemists. ACS needs to provide resources that explain the qualifications for becoming a certified teacher. We need to create teachers who are both enthusiastic and know their subject. At one point, Bill Suits asked Councilors who were high school teachers to stand. Half of those standing were from North Jersey, which indicates the strong support for High School teachers in this section.

If any North Jersey members would like more information on these topics or would like to provide feedback on this report, please contact the Chair at [jacqueline.a.erickson@gsk.com](mailto:jacqueline.a.erickson@gsk.com).

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### Chair Elect

Diane Krone  
Rob Goodnow

### Councilors

Alan Cooper  
Val Kuck  
Jackie Erickson  
Anne Kelly  
Steve Waller  
John Penna  
Bill Suits  
Bobbi Gorman  
Dorit Noether  
Joe Potentza  
John Sowa  
Guodong Chen

Any member of the North Jersey Section may be nominated by petition. The nomination must be signed by a minimum of 10 members of the North Jersey Section in good standing. The nominee must be willing to serve if elected. The petition must be postmarked **no later than June 15, 2005** and sent to the Section Secretary, Bettyann Howson, 49 Hillside Avenue, Madison, NJ 07940-2612.



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## SUE FAHRENHOLTZ WINS STANLEY C. ISRAEL AWARD

Susan Fahrenholtz has won the Stanley C. Israel Award for Advancing Diversity in the Chemical Sciences. This is a new regional award, sponsored by the ACS Committee on Minority Affairs, which recognizes individuals or institutions which have significantly stimulated or fostered activities that promote inclusiveness within the region. Sue was nominated by the North Jersey section has a leader in promoting diversity, primarily through her excellent leadership of the section's Project SEED program, which is the largest in the nation. Congratulations, Sue!

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## NATIONAL CHEMISTRY OLYMPIAD

The high school students listed below are semi-finalists in the U.S. National Chemistry Olympiad for the North Jersey Section.

**George Lan**  
New Providence HS  
Maria Mango

**John Cobb**  
Ridgewood HS  
J. Guy Morin

**Yushen Qian**  
Monroe Twp. HS  
John D. Roberts

**Zhao Fan**  
Parsippany Hills HS  
Claire Pompeii

**Alex Zowla**  
East Brunswick HS  
Paul Kimmel

**Angela Ying**  
East Brunswick HS  
Paul Kimmel

**Amit Sharma**  
Highland Park HS  
Keisha Stephen

**Aaron Potechin**  
Millburn HS  
Neil Gargiulo

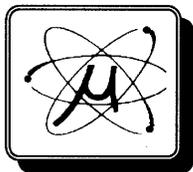
**Christopher Kennedy**  
Bergen Academy HS  
David Ostfeld

**Jacob Sanders**  
Bergen Academy HS  
David Ostfeld

Each year the ACS seeks to identify the top 20 high school chemistry students in the country. From this group, four best students

are chosen to represent the United States in the International Chemistry Olympiad competition, which will take place in Taipei, Taiwan on July 16-25.

To arrive at the top 20, the ACS conducts a massive screening of teacher-nominated high school students throughout the U.S. by having a 60 question - 2 hour test administered by a coordinator in each section. Such a local section test was given to 106 high school students at Fairleigh Dickinson University (Florham Campus) on March 30. In the North Jersey Section, 10 students, listed above with their teacher and high school, earned scores which allowed them to move on to the second, semi-finalist, level. The latter took two written and one laboratory rigorous tests at FDU (Florham) on April 18, 2005. From the results of the latter tests, ACS will locate and invite the top 20 high school chemistry students in the country to attend a three week course covering many phases of chemistry at the Air Force Academy, Colorado Springs, during June 5-19, 2005.



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## PHOTOS FROM THE COUNCIL MEETING



Jeanette Brown (left), recipient of the ACS Award for Encouraging Disadvantaged Students into Careers in the Chemical Sciences; Prof. Gerraldine Richmond (center), recipient of the Dreyfus Award for Encouraging Women into Careers in the Chemical Sciences, and Dr. Mark J. Cardillo, executive director of the Camille and Henry Dreyfus Foundation which sponsors both award.



(Left to right): Anita Bradolini, Les McQuire and Allene Johnson



(Left to right): Bill Suits, George Heinz and Susan Fahrenholtz.

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## Others

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### ASSOCIATION OF CONSULTING CHEMISTS & CHEMICAL ENGINEERS

#### Transforming Projects into Breakthroughs

Speaker: Douglas Berger  
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As managers and consultants, the interest is in deploying a management discipline for achieving breakthroughs. The talk will describe a set of principles and a process for accomplishing breakthrough results. This will be illustrated with specific examples across several industries.

Douglas Berger is the founder of INNOVATE, a management consulting firm specializing in large-scale enterprise innovation and breakthrough. His experience includes information technology, consumer products, pharmaceutical, mining and natural resources, and chemical industries.

Doug began his career in software development, leading a number of advanced technology developments. He was Director, Worldwide Information Technology, for Burroughs Corporation (now Unisys). He joined Data General mini-computers as Technical Director, Emerging Markets. At Data General he co-led initiatives into alternate channels of distribution, personal computing and large commercial accounts.

He has an MBA from Carnegie-Mellon University and a Bachelors degree in

Physics from the University of Rochester.

Date: **Tuesday, June 28, 2005**

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Dinner 6:30 PM  
Presentation 7:30 PM

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### CHEMICAL HERITAGE FOUNDATION

#### Othmer Gold Medal Awarded to James D. Watson

The Chemical Heritage Foundation has selected James D. Watson, co-discoverer of the structure of DNA, to receive the 2005 Othmer Gold Medal. The award ceremony and the annual Othmer Gold Medal Luncheon will headline Heritage Day 2005, a full day of honors and awards for achievement in chemistry and the molecular sciences, which will take place at CHF in Philadelphia on Thursday, June 9, 2005.

"Nobel laureate, writer, leader, innovator, iconoclast, and extraordinary man of science, James Watson fulfilled the alchemists' dream," said Arnold Thackray, president of CHF. "All of mankind is indebted to Jim. His scientific imagination and intellectual drive have opened the way to countless new therapies and the possibility of longer, healthful lives."

In 1953 Watson and his colleague Francis Crick successfully proposed the double-helical structure for DNA, a feat considered by many to be the greatest achievement of science in the 20th century. For this work, Watson and Crick, together with Maurice Wilkins, were awarded the 1962 Nobel Prize in Physiology or Medicine. Watson was a driving force behind setting up the Human

Genome Project, a major factor in his receipt of the 1993 Copley Medal from the Royal Society. All through his career, he has found time to share his insights, writing important texts for those in the sciences and also popular works, some of them best sellers, that describe his life and work for those with no technical background.

Born in Chicago, Illinois, in 1928, Watson received a B.S. in 1947 from the University of Chicago and a Ph.D. in 1950 from Indiana University; both degrees were in zoology. Following a National Research Fellowship in Copenhagen and a National Foundation for Infantile Paralysis Fellowship at the University of Cambridge, England, he spent two years at the California Institute of Technology. He joined the faculty of Harvard

University in 1955 and became professor in 1961, moving in 1976 to New York to become full-time director of Cold Spring Harbor Laboratory. In 1988 he was appointed associate director for human genome research at the National Institutes of Health (NIH), and in 1989 he was appointed director of the NIH's National Center for Human Genome Research. In 1992 Watson returned to Cold Spring Harbor, after successfully launching a worldwide effort to map and sequence the human genome.

In 1977 Watson received the Presidential Medal of Freedom. He has also received honorary degrees from many universities, including the University of Cambridge (1993) and the University of Oxford (1995).



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CHE 606	3 Cr.	Advanced Physical Chemistry	Tues.	5:10 PM - 7:00 PM
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This directory will be given to our 12,000 members for their use. This issue has excellent advertising value because it is kept and referenced for the full year. For key numbers, see "Products and Services Directory" on page \_\_. If you wish to be in next year's Guide, please contact Vince Gale as noted above.

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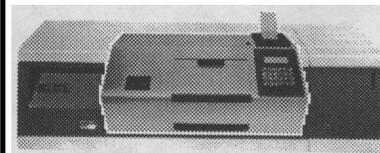
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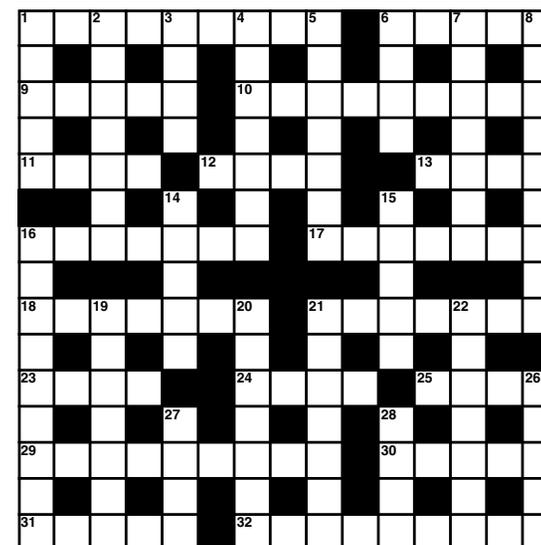
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## Puzzle



### ACROSS

- "The Behavior of Organisms" author
- Thymus or thyroid, say
- It gets a reaction
- Element used in catalytic converters
- Thin, horny, digital plate
- Killer whale
- Physician for whom a syndrome is named
- Banting helped isolate it
- \_\_\_\_\_-Barr virus
- Type of passive transport
- Kingdom with divisions
- Third-best electricity conductor

- RAM unit
- Prefix meaning outer
- Body + axon + dendrites
- Sort of reaction
- Result of injecting foreign DNA

### DOWN

- Meninges protectee
- One in a million of Arthropoda
- Greek's ninth
- Kidney filtering and excretory unit
- Discharge
- Bacteriologist for whom a staining method is named
- Animal fat
- Recessiveness opposite
- Phylum, \_\_\_\_, order
- Substance analysis
- Kind of chemistry
- "Plasmodium" disease
- Treated one
- Kneecap
- Sensible, in a way
- Lightning aftermath
- Sign shine, perhaps
- It increases with velocity

**Solution on page 39.**

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