

THE NUCLEUS

January 2010

Vol. LXXXVIII, No. 5

Monthly Meeting

*Christine P. Bellon, Ph.D., J.D.,
to speak at Emmanuel College*

National Chemistry Week

*Reports by Christine Jaworek-Lopes
and Dora Carrico-Moniz*

2010 Chair's Statement

By John McKew

Book Review

*"Molecules and Medicine"
reviewed by Dennis Sardella*



2010 Chair's Statement

By John McKew

It has been a rewarding year as the Chair-Elect of the Northeastern Section of the American Chemical Society. As my year as the Chair-Elect draws to a close, I look forward to beginning my tenure as the Chair. Some of the highlights of the last year are summarized below.

- Together the section assembled a diverse group of speakers who presented exciting science of interest to section members.
- The section also helped expand the popular annual "Advances in Chemical Sciences" Symposium to a biannual series, with spring and fall symposia.

This year has also offered me insight into the breadth of programs that are active within the NESACS. These pro-



grams include some that cascade from the National ACS, including:

- Project SEED
- National Chemistry Week

Our section also has a long history of unique programming that includes:

- The German exchange program, soon to be a model for other local sections
- Teaching awards, both local and national
- The Esselen award for Chemistry in the Public Interest.

In 2009 I've enjoyed getting to know the dedicated volunteers who help to bring the events mentioned above, and many others, to the community. Thank you for giving your time and energy to support the NESACS.

I would like to take this opportunity to thank the outgoing Chair of the section, Dr. Joseph Billo, for doing an excellent job in serving the Section. As many of you know, this is the second time Joe has served as the Chair of the Section, and his dedication and service to the Section are invaluable.

In closing, the NESACS board has many long-serving volunteers, but we are constantly searching for new faces and ideas to allow us to continue to serve the ever-changing demographics of the Section. In the coming year, we will prepare to host the 2010 Fall National ACS Meeting in Boston, as well as create programming around the International Year of Chemistry in 2011. Come to our monthly meetings. Visit our website at www.nesacs.org. Please join in and help us create the next round of exciting programming for the Section! ◇

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Cover: *January speaker, Christine P. Bellon, Ph.D., J.D., Vice-President of Intellectual Property & Legal Affairs, Hydra Biosciences, Cambridge, MA. (Photo courtesy of Christine Bellon)*

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This Month in Chemical History

Harold Goldwhite, California State University, Los Angeles
hgoldwh@calstatela.edu

In my previous column (December 2009 Nucleus) I discussed the discoveries of the first two transuranium elements neptunium and plutonium, elements number 93 and 94, by McMillan, Seaborg and their colleagues at U.C. Berkeley. The source material came from a pamphlet "Nuclear Milestones," which includes speeches given by Seaborg while he was Chairman of the U.S. Atomic Energy Commission from 1961 – 1971. In this column I continue the transuranium story with the next two elements, numbers 95 and 96, as presented in a speech given in 1969 – at the Mendeleev Centennial at the Robert A. Welch Foundation Conference in Houston, Texas.

The discoveries of these elements came from experiments at the Metallurgical Laboratory in the New Chemistry Building at the University of Chicago, a key laboratory in the work

that led to the first atomic bombs. (By the way, if you want to read a comprehensive and absorbing account of the Manhattan Project, I strongly recommend Richard Rhodes' "The Making of the Atomic Bomb," published in New York by Simon & Schuster in 1987 and available in paperback). By 1944, Seaborg had moved to Chicago and his co-workers included Albert Ghiorso, Ralph A. James, and Leon O. Morgan. They began their work by bombarding plutonium 239 with deuterons; plutonium was now available in quantity – that is to say milligrams rather than the micrograms on which its original discovery was based – from the Clinton Laboratories in Tennessee. These experiments did not yield positive results. Similarly, bombarding plutonium 239 with neutrons, though it gave valuable experience to the team, did not yield new transura-

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nium isotopes.

By now the chemistry of neptunium and plutonium had suggested to the team that the new elements they sought should be regarded as a group, the actinides, with affinities to the lanthanides, the rare-earth elements. The first positive indications came in early 1944, as a result of bombarding plutonium 239 with high energy alpha particles (helium ions). The target material was dissolved, oxidized, and co-precipitated with insoluble lanthanum fluoride. Alpha decay was recorded from this material that was distinct from plutonium's known alpha decay. Both the chemistry and the alpha decay indicated production of element 95 or 96. While re-reading the notebooks of the group Seaborg came across the entry by Ralph James dated June 15, 1944: "Time out to get married!" James was back at work on June 19. As the work progressed, it became more and more likely that the new activity was due to the isotope of mass 242 of element 96.

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Monthly Meeting

The 902nd Meeting of the Northeastern Section of the American Chemical Society

Wednesday – January 14, 2010

Emmanuel College, 400 The Fenway, Boston, MA 02115

4:30 pm Board Meeting

5:30 pm Social Hour

6:30 pm Dinner

7:45 pm Evening Meeting

Dr. John McKew, 2010 NESACS Chair, presiding

Speaker: Christine P. Bellon, Vice President of Intellectual Property & Legal Affairs, Hydra Biosciences, 790 Memorial Drive, Cambridge, MA 02139

Title: From the Bench to the Bar: The Not-So-Smooth Transition from Research Chemist to Corporate Attorney

Dinner reservations should be made no later than noon, Thursday, January 7, 2010. Please call or fax Marilou Cashman at 800-872-2054 or e-mail at [Mcash0953\(at\)aol.com](mailto:Mcash0953(at)aol.com). Please specify vegetarian. Reservations not cancelled at least 24 hours in advance must be paid. Members, \$30; Non-members, \$35; Retirees, \$20; Students, \$10.

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Directions:

(http://www.emmanuel.edu/Tools_Navigation/Maps_and_Directions.html)

Via MBTA Subway

Option 1: Take the MBTA's Green Line "Riverside" Branch/D Train to Fenway stop. The campus is a short walk across Park Drive.

Option 2: Take the MBTA's Green Line Huntington Branch/E Train to Museum stop. The campus is a short walk up The Fenway, just beyond the Isabella Stewart Gardner Museum and Simmons College.

From the West/Massachusetts Turnpike

Head east on Massachusetts Turnpike (I-90). Take Route 128 (I-95) south for approximately one mile. Take Route 9 east for six miles. Take a left onto Brookline Avenue (Brook House Condominiums will be on right and a gas station will be in front of you). Take a left onto the Riverway/Jamaica Way. Stay in the second lane from the right. Proceed through the intersection at Brookline Avenue and turn right into Emmanuel College.

OR

Head east on the Massachusetts Turnpike (I-90). Take exit 18, Allston, Cambridge (left exit). Stay in right lane after toll. Bear right toward Double Tree Guest Suites, getting in far right lane. At traffic light, take right toward Downtown Boston, Storrow Drive. Follow Storrow Drive to Fenway 1S exit. Stay in right lane on exit ramp; bear right toward Boylston Street, Outbound, Riverway 1. After the Boylston Street split, get in the left lane and bear left at the first traffic light onto Park Drive. Follow Park Drive, staying in left the lane, until the Exxon Station. Proceed through the lights, crossing over Brookline Ave. Bear a sharp left, through two lights, looping back towards Brookline Ave. Proceed through intersection at Brookline Avenue and turn right into Emmanuel College.

Biography



Christine P. Bellon, Ph.D., J.D., is Vice President of Intellectual Property & Legal Affairs for Hydra Biosciences and is responsible for all legal matters for the company. Dr. Bellon was previously Assistant General Counsel, Intellectual Property, for Infinity Pharmaceuticals, where she focused on the company's intellectual property strategy and patent portfolio. Prior to joining Infinity, Dr. Bellon was Patent Counsel at Wyeth, where she was responsible for the company's small molecule Cardiovascular and Metabolic Disease patent portfolio and the company's structural biology patent portfolio. Prior to Wyeth, Dr. Bellon was an attorney in the Boston office of Fish & Richardson P.C., where her practice focused on patent prosecution and client counseling in the areas of pharmaceuticals, chemicals, polymers, and biotechnology.

Dr. Bellon graduated from Yale University with honors, with a B.S. in Chemistry. She received a Ph.D. in Organic Chemistry from the Massachusetts Institute of Technology, where she did research in ligand-accelerated catalysis and asymmetric synthesis under the direction of K. Barry Sharpless. Dr. Bellon holds a J.D. degree from Columbia Law School. ◊

Announcement

Northeastern Section Young Chemist Committee (NSYCC) Career Symposium and Fair,

February 15, 2010
at Emmanuel College

The NSYCC will host a Career Symposium and Fair on February 15, 2010 at Emmanuel College, Boston, MA. This free event will allow local, young chemists to attend workshops and lectures on the skills necessary for obtaining a job, the environment to discuss employment with representatives from companies, and provide the opportunity to network with other chemists. The event will begin at 8:30 AM in the Maureen Murphy Wilkens Science Center at Emmanuel College, with six presentations given by scientific career consultants and representatives from both traditional and non-traditional chemistry occu-

pations. The symposium will offer sound advice for whatever path in chemistry, engineering, and technology you are planning to pursue. The morning lectures will be followed by lunch where the participants will have an opportunity to socialize and make new contacts. The Career Fair portion of the event will begin at 1 PM and will also include interviewing and C.V. workshops. This all-day event is free for young chemists, but **participants must register.**

Information on registering can be found at www.nsycc.org or by contacting the NSYCC Chair, Raeanne Napoleon, raeanne@nsycc.org.

Travel Grants-in-Aid

The Education Committee has awarded Grants-in-Aid of \$350 each to four undergraduates at colleges and universities within the Northeastern Section to enable each to attend the ACS National Meeting in San Francisco, California to present a paper at the Undergraduate Research Poster Session in the Division of Chemical Education on Monday, March 22, 2010. Matching funds have been committed by the institutions to support the students' travel. The recipients are also required to participate in the Northeast Student Chemistry Research Conference (NSCRC) in April 2010.

The awardees, their research supervisors, and the titles of the papers are as follows:

- Vy Nguyen, Emmanuel College, (Prof. Ryvkin), *Effects of the Tryptophan Residues Modifications on the Structure and Activity of Copper-Containing Enzyme Lysyl Oxidase*
- Jin Xin, Massachusetts Institute of Technology, (Prof. Alice Ting), *Site-Specific Targeting of Small Molecules for Live Cell and Super-Resolution Imaging*
- Thaddaeus Webster, University of New Hampshire, (Prof. Ihab Farag), *Enhancing Algae Lipid and Biodiesel Production by Temperature Stressing*
- John Sirois, University of Massachusetts Dartmouth, (Prof. Donald Boerth), *Nucleophilic Displacement Reactions in Hindered Allylic Systems*

Applications for the travel stipend are accepted from students majoring in chemistry, biochemistry, chemical engineering, or molecular biology who are in good standing with at least junior status, and are currently engaged in undergraduate research. Abstracts for the Undergraduate Research Poster Session were required to be submitted by electronic transmission to the ACS National Headquarters by October 19, 2009 (11:59 pm EST). ◇

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Book Review

Molecules and Medicine, E.J. Corey, Barbara Czako and László Kürti
(Wiley Interscience, 2007) 253 pp., 978-0-22749-7; \$31.00 paperback)

Reviewed by Dennis J. Sardella

Department of Chemistry, Merkert Chemistry Center, Boston College, Chestnut Hill, MA 02467

Although he undoubtedly meant it in a different context, when Shakespeare wrote, "Let us not to the marriage of true minds admit impediments," he might almost have had in mind chemistry and medicine. Not that the two Fields are opposed, but that for much of their history, the two branches of knowledge ran on unconnected tracks, seeming to have little relationship to one another. Physicians prescribed medications based on their efficacy, established from trial and error, often knowing little more than their chemical composition, if that, but with no idea of how they acted in the body. Chemists, on the other hand, made enormous strides in deciphering the structures of, and finding elegant ways to synthesize, an impressive array of highly elaborate molecules, some of which exhibited remarkable medicinal properties, but they were unable to account for these properties in molecular terms. This disconnect between chemistry and physiology constituted a formidable barrier that has begun to be surmounted only in recent decades, as medicine and biology have become increasingly molecular sciences and as chemists and biochemists have been able to move away from focusing on individual molecules and to begin tackling ever more complex systems of interacting molecules in biological systems. *Molecules and Medicine* is a fascinating introduction to the convergence of these historically disparate disciplines, and to the emergence of the science of molecular medicine.

Molecules and Medicine is organized into six parts. The first part, written with the non-molecularly literate reader in mind, presents a compactly, clearly and densely written introduction to the principles of molecular structure, beginning with basic ideas about bond formation, moving quickly through bond and molecular polarity,

hydrogen bonding and solvation, molecular interactions, functional groups, aromaticity, isomerism, molecular shape, and concluding with a discussion of protein structure and the ways in which it will be depicted in the book. Having thus primed the reader with the necessary basic vocabulary and concepts, the book moves into the remaining five sections, each of which is organized by disease types and devoted to a different category of medicinal agents.

The second section of *Molecules and Medicine*, entitled "Inflammatory, Metabolic and Cardiovascular Diseases," consists of four subsections devoted, respectively, to anti-inflammatory agents, anti-asthmatic and anti-allergic agents, anti-diabetic and cholesterol-lowering agents, and cardiovascular agents. Each subsection

highlights several important and widely-prescribed medications, e.g. Naproxen (Aleve™), Loratidine (Claritin™), Atorvastatin (Lipitor™) and Clopidogrel Bisulfate (Plavix™), to choose one from each class. Each drug description includes information on its year of discovery, year of introduction, its main uses, how widely it is used, and what is known about its mode of action. The section also includes some brief but illuminating background discussions ("How Do Antiinflammatory Drugs Work?," "Other Eicosanoids in Inflammation," and "An Overview of Inflammation.") The authors follow a similar pattern in the remaining four subsections, with Part III featuring sections on reproductive medicine, osteoporosis, and glaucoma and antiulcer agents, Part IV covering immunosup-

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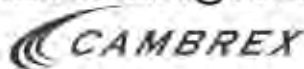
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National Chemistry Week 2009 Report

The Northeastern Section Celebrates Chemistry – It's Elemental

By Christine Jaworek-Lopes

In anticipation of National Chemistry Week (NCW) 2009, a volunteer preparation day was held at Emmanuel College on Saturday, October 3, 2009. More than 30 individuals attended this event, which allowed volunteers to practice the hands-on activities and demonstrations in advance of the October celebration. Staff members from the Museum of Science-Boston and the Boston Children's Museum were on hand to choose which activities worked best for their respective venues.

On Sunday, October 18, 2009, the Northeastern Section of the American Chemical Society sponsored a National Chemistry Week 2008 Kick-Off Event at the Museum of Science-Boston (MoS). Volunteers ensured that the more than 500 visitors to the day-long event enjoyed a number of hands-on activities. Among the highlights of the day were the two Phyllis A. Brauner Memorial lectures, presented by Dr. Bassam Shakhshiri, Professor of Chemistry at the University of Wisconsin-Madison. These captivating lectures were enjoyed by children and adults alike. Approximately 350 individuals attended these lectures.

587 students attended the High School Science Series event at the MoS-Boston on October 22, 2009. The students were from: Abington HS, Arlington HS, Bishop Guertin HS, Needham Home Schoolers, Old Rochester Regional HS, Pomfret School, St. Joseph HS, Woodward School for Girls, Advocates for Home Education in MA, Frontier Regional HS, Haverhill HS, JD O'Bryant HS, Snowden International, Odyssey HS, and Malden HS. These students participated in a number of hands-on activities and demonstrations related to the year's theme. In addition, the students attended a lecture-demonstration given by David Sittenfeld, MoS-Boston, and Dr. Catherine Drennan, MIT, regarding X-ray crystallography.

Each teacher attending this event received a Merck Index.

In addition, an NCW event was held at the Boston Children's Museum on Saturday, October 24, 2009. Approximately 550 individuals participated in NCW hands-on activities and demonstrations.

The activities and demonstrations that were performed throughout the week included determining the starch content in foods.

Children grades K-12 were able to participate in the national poster competition. The winning poster from the NESACS was submitted by Samantha Tse from Belmont High School. Children grades K-12 had the option of participating in two puzzle contests. The puzzles were designed by Dr. Christopher Morse. Winners to this contest will be published in a future issue of the *Nucleus*.

The events would not have been possible without the help of more than 100 volunteers throughout the week from: ACS volunteers, Beyond Benign, Boston University, Emmanuel College, Gordon College, Malden High School, Northeastern University, Phyllis A Brauner committee members, Stonehill College, Suffolk University, and Tufts University. All volunteers received an NCW 2009 t-shirt designed by Sarah Walker from Billerica High School.

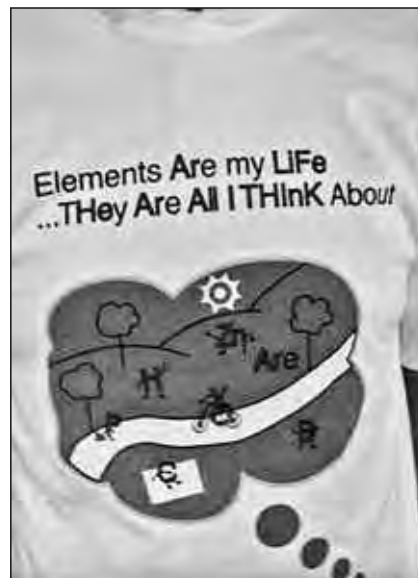
Special thanks to all of our volunteers, Boston Children's Museum, Alissa Daniels, Catherine Drennan, Patrick Drane, Meghan Moriarty, Museum of Science-Boston, Nina Nolan, Northeastern Section of the American Chemical Society, David Sittenfeld, Dr. Bassam Shakhshiri, and the Phyllis A. Brauner Memorial Lecture Committee.

The theme for NCW 2010 is "Behind the Scenes with Chemistry" to be celebrated from October 17-24, 2010. ◇



Dr. Catherine Drennan speaking at the High School Science Series event.

Photo by: Suzy Drury

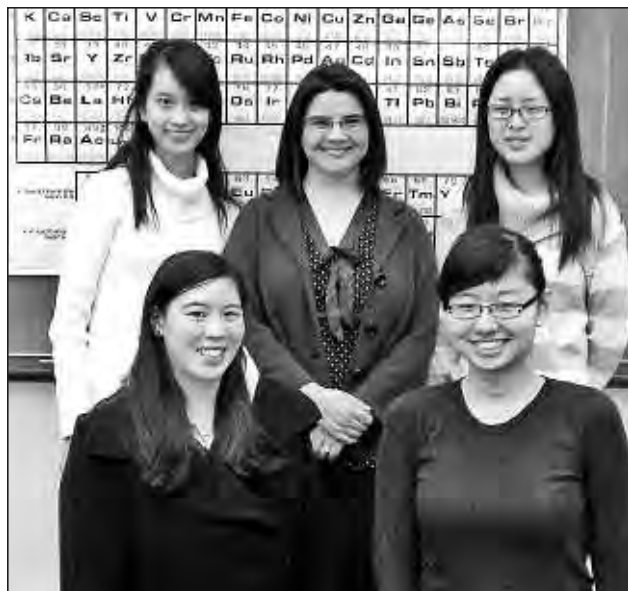


Winning t-shirt design by Sarah Walker. Photo by: Christine Jaworek-Lopes

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Wellesley College Celebrates National Chemistry Week

By Dora Carrico-Moniz, Department of Chemistry, Wellesley College, Wellesley, MA



The Mole Day Chemistry Event took place at Wellesley College on Thursday, October 22, 2009 as part of the 20th anniversary of National Chemistry Week Activities. The event was organized by the Wellesley College Chemistry Society composed of chemistry major Alice Kwan (president, top row left), chemistry major Allison Yee (vice-president, bottom row left), neuroscience major Weiya Mu (treasurer, bottom row right), chemistry major Catherine Kim (secretary, top row right) and chemistry Professor Dora Carrico-Moniz (faculty advisor, top row center).

The chemistry-themed event was attended by a large number of students from different years and classes, faculty, children and staff. The event was designed to create awareness about the importance of the chemistry field and to promote the students' interest in science by hosting a series of chemistry-related activities.



The Mole Day celebration included fun interactive chemistry demonstrations by Professor Paul Reisberg, preparation of homemade liquid nitrogen ice cream, and arts and crafts where students could create their own moles.



The Wellesley College Chemistry Society's mission is to foster students' interest in chemistry and science in general and to encourage students to become more involved in both the academic and social aspects of the chemistry community. As part of this effort, the Chemistry Society hosted a chemistry community dinner in October featuring guest speaker chemistry Professor and former Dean Nancy H. Kolodny, to share her professional and personal experiences as a successful female scientist.

Other activities planned by the Wellesley Chemistry Society for the rest of the academic year include a field trip to the Museum of Science in Boston, an interdepartmental Ping-Pong tournament to foster interaction among students and faculty in different science fields, and invited talks by chemists with different careers in chemistry to expose students to a wide range of possible professions in science. ◇

January Historical Events in Chemistry

by Leopold May, The Catholic University of America, Washington, DC

January 1, 1998

Rhodia was established from the merger of Rhône-Poulenc's divisions of chemicals, fibers and polymers on this date. It was originally founded as the Société Chimique des Usines du Rhône in 1895.

January 3, 1871

Henry Bradley, Binghamton, NY, was granted the first patent on oleo-margarine (U.S. Patent No. 110,626) on this date.

January 5, 1943

George W. Carver died on this day. He isolated and synthesized over 400 products from peanuts and sweet potatoes.

January 9, 1922

H. Gobind Khorana, first to synthesize an artificial gene, was born on this date. He did research on the interpretation of the genetic code and the protein synthesis function. In 1968, he shared the Nobel Prize in Physiology or Medicine with Marshall W. Nirenberg and Robert

W. Holley for their interpretation of the genetic code and its function in protein synthesis.

January 12, 1579

Jan Baptist Van Helmont, born on this date, was an alchemist who proposed two basic elements, air and water. He was a founder of pneumatic chemistry and coined the term "gas."

January 14, 1910

One hundred years ago on this date, Jacob Volhard died. He synthesized organic compounds, including creatine, brominated organic acids, and thiophene compounds. He was born on June 4, 1834.

January 15, 1785

Two hundred and twenty-five years ago, William Prout was born on this date. He suggested that all atomic weights were multiples of the weight of hydrogen (Prout's Hypothesis) and identified hydrochloric acid in the stomach.

January 16, 1817

Thomas Antisell, the first president of the Chemical Society of Washington, was born on this day.

January 17, 1910

One hundred years ago on this date, Frederick W. G. Kohlrausch died. He was a researcher on electrical conductivity, dilution of strong electrolytes and conductivity (Kohlrausch's equation). October 14, 1840 was his birthdate.

January 19, 1885

One hundred and twenty-five years ago, Harry L. Fisher, who was an inventor in field of rubber technology and synthetic rubber, was born.

January 22, 1917

William D. McElroy, who discovered the enzyme that makes fireflies glow (while he was at Johns Hopkins University, where he served as Chairman of the Biology Department), was born on this day. He was also the head of the National Science Foundation from 1969 to 1972.

January 23, 1929

John C. Polanyi, who did research using infrared chemiluminescence to follow excited-state reaction products, was born on this day. He shared the Nobel Prize with Dudley R. Herschbach and Yuan T. Lee in 1986 for their contributions concerning the dynamics of chemical elementary processes.

January 24, 1935

Beer was first sold in cans on this day.

January 25, 1917

Ilya Prigogine, a researcher in irreversible processes, was born on this date. He was awarded the Nobel Prize in Chemistry in 1977 for his contributions to non-equilibrium thermodynamics, particularly the theory of dissipative structures.

January 29, 1838

Edward Morley was born on this day. He performed ether drift experi-

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October Meeting

Joe Billo receives the Hill Award and 50-Year Members Honored

The 899th NESACS meeting was held on October 15, 2009 at the Royal Sonesta Hotel in Cambridge, MA. The October meeting in recent years has centered around the presentation of the Henry A. Hill Memorial Award for Outstanding Contribution to the Northeastern Section and recognition of the section's 50-year members of ACS. This was the thirtieth Hill Award, and the award was presented to the 2009 NESACS Chair, E. Joseph Billo. Previous Hill Award winners have been Henry A. Hill (1980), Edward R. Atkinson (1981), Robert D. Eddy (1982), Arnet L. Powell (1983), Phyllis A. Brauner (1984), G. Richard Handrick and Janet S. Perkins (1984), Arno H. A. Heyn (1986), Sr. Magdalen Julie Wallace (1987), Ester A. H. Hopkins (1988), Wallace J. Gleekman (1989), Jim Piper (1990), Valerie Wilcox (1991), Ernest I. Becker (1992), Arlene W. and Truman S. Light (1993), William O. Foye (1994), Michael E. Strem (1995), Alfred Viola (1996), Mary T. Burgess, Michaeline F. Chen and David M. Howell (1997), John L. Neumeyer (1998) and Morton Hoffman (1999). Since 2000 the recipients have been Catherine E. Costello

Historical Events

Continued from page 10

ments with Albert A. Mickelson and made extremely accurate determinations of the combining weights of hydrogen and oxygen.

January 30, 1891

Harold Booth, who was a researcher in inorganic chemistry, particularly with fluoride gases, was born on this date.

Additional historical events can be found at Dr. May's website, faculty.cua.edu/may/history.htm. ♦



(l-r) Dorothy Phillips (Waters Associates, Inc.), Chair of the NESACS Awards Committee; E. Joseph Billo (Boston College), second from left, NESACS Chair and recipient of the 2009 Henry A. Hill Award for Outstanding Contribution to the Northeastern Section; Joanne Billo; Anthony Cromwell Hill, son of Henry Hill. Photo caption (Photo by Morton Z. Hoffman):

(2000), Myron S. Simon (2001), Michael J. Hearn (2002), Doris I. Lewis (2003), Donald O. Rickter (2004), Charles E. Kolb (2005), Dorothy J. Phillips (2006), Ruth Tanner (2007) and Michael Singer (2008).

The Hill Award program began with Anthony Cromwell Hill, Henry Hill's son, remembering his father's struggles and successes as an African-American chemist trying to start his career in the 1930's and 1940's in Chicago and Boston. The new chair of the NESACS Awards Committee, Dorothy Phillips, then presented the Hill Award to Dr. Billo. In his award acceptance speech, Dr. Billo amused the audience with his explanation that he won the award because Mike Dube had recently resigned as chair of the Award Committee which allowed Dr. Billo to hand-pick the committee that selected him for the award.

Another major part of the evening was the recognition of 50-year members of the American Chemical Society. In attendance were 60-year member Esther Hopkins (BU Trustee, Legal Council for the Mass DEP, NESACS Trustee) and 50-year members Harold Edelstein (Brooklyn Polytechnic, Ph.D., Director of R&D for

Fisher Scientific), Margaret M. O'Connell (Regis College, Fordham College, M.S., chemistry teacher at Brockton HS), James Piper (Emory, Ph.D., Professor at Simmons College, NESACS Treasurer), Harold Schonhorn (Brooklyn Polytechnic, Ph.D., labmate of Dr. Edelstein), Robert E. Snedeker (Princeton, Ph.D., Scott Paper, V.P. Merrimack Paper, Lowell), Michael Strem (U. Pittsburgh, Ph.D., founder of Strem Chemical, NESACS Trustee), and Leverett J. Zompa (Boston College, Ph.D., taught at UMass Boston and was also provost for a while who was burned in effigy by the students!). Also honored but not in attendance were 50-year members Maurice L. Arel, William W. Bannister, Sewall P. Bronstein, James G. Cassani, Jr., Harvey M. Cohen, Robert M. Coquette, William R. Cuming, William H. Dalzell, John Gergely, Robert F. Goodwin, Terry E. Haas, Frederick T. Hatch, H. S. Holappa, Barry L. Karger, Kenneth H. Lothrop, Gerald J. Neville, Demetrius G. Orphanos, Richard N. Stillwell, Marcia P. Stone, Leopold Strauss, Raymond L. Taylor, James E. Tillotson and Norwin Wolff.

After the award ceremonies, Alexis
continued on page 16

Chemical History

Continued from page 4

In September, after receiving 200 milligrams of plutonium 239, deutron bombardment of this “macro” sample was undertaken and eventually yielded definitive evidence of the production of an isotope of element number 95. Then long-term bombardment of plutonium 239 with neutrons gave clear evidence of the production of isotopes of both elements 95 and 96.

Workers at Los Alamos carried out mass spectrographic examinations of irradiated plutonium samples from Chicago and identified an isotope of element 95 of mass 241. This turned out to have a half-life of 13 years. Further irradiation of plutonium at Berkeley with higher energy alpha particles produced two isotopes of element 96, of masses 240 and 242.

The announcement to the world of the production of two new elements, planned for presentation at an ACS symposium at Northwestern University in November 1945, was actually anticipated on a “Quiz Kids” radio broadcast a little earlier in the same month! Seaborg was a guest on the program and was asked by a participant if any new elements had been discovered. Seaborg replied: “...Recently there have been two new elements discovered – elements with atomic numbers 95 and 96 – out at the Metallurgical Laboratory here in Chicago. So now you’ll have to tell your teachers to change the 92 elements in your schoolbook to 96 elements.”

There remained the question of naming the new elements. Morgan referred to them as “pandemonium” and “delirium,” but those names were not deemed acceptable to the community of science. At a talk given at the ACS meeting in April 1946, the group presented the names. Element 95 was called “americium” following the model of the lanthanide europium. To honor the great pioneers of radioactivity, element 96 was called “curium,” again following the lanthanide example of gadolinium which was named for its discoverer Johan Gadolin. ◇

Book Review

Continued from page 7

pressive agents, antibiotics, antiviral agents, antifungal agents and anti-malarial and antiparasitic agents, Part V surveying drugs used to treat malignant disease, and Part VI devoted to drugs that act on the nervous system.

Each section also includes, as appropriate, background topics, including, “An Overview of Metabolic Syndrome,” “Information Flow into the Cell by Chemical Signaling,” “A Brief Survey of the Immune System,” “On Viruses and Viral Diseases,” “Parasitic Diseases: a Focus on Malaria,” “An Overview of Cancer,” and “The Brain, Neurotransmission, and Molecular Neurotransmitters,” and concludes with a helpful bibliography to serve as a jumping-off point for the reader who wishes to explore further. The book is copiously illustrated with colorful molecular and other diagrams and flow charts to accompany the text, helpfully color-coded to help draw attention to significant molecular features. Finally, it concludes with a fairly comprehensive glossary, which along with all the other features, makes *Molecules and Medicine* an invaluable and enjoyable resource for an introduction to molecular medicine.

One might ask what the target audience is for *Molecules and Medicine*, and in what context might it be used. It is clearly not for the casual non-scientist. While it is well-written and nicely illustrated, the information density is high and the text is replete with technical terms and abbreviations that may require considerable effort to understand. However, for a chemist, physician, advanced undergraduate or graduate student, or post-doctoral fellow interested in gaining an insight into what is currently known about the molecular details of how drugs actually function in the body, *Molecules and Medicine* is a marvelous resource.

It can be read from front to back, but this is not obligatory, as the reader can simply begin at whichever section seems most attractive.

The marriage of chemistry and medicine has clearly come a long way from its birth in the days of Pauling’s famous 1956 paper in which he used electrophoresis to show that the cause of sickle cell anemia was associated with an alteration in the molecular structure of hemoglobin (later shown to be due to replacement of a single amino acid residue). Together with the elucidation of the structure of DNA, it illustrated how powerful the synergistic combination of chemical and medical researchers in close communication could be. Pauling’s prescient statement, in a 1945 lecture in Rome, that “I believe that chemistry can be applied effectively to medical problems, and that through this application we may look forward to significant progress in the field of medicine, as it is transformed from its present empirical form into the science of molecular medicine,” may have been at that time more an expression of personal faith than an extrapolation based on a secure foundation of emerging scientific fact. *Molecules and Medicine* is an eloquent and impressive indication of the progress that is rapidly making that dream into a reality, and it deserves a place on the shelf of any biochemist, biologist, chemist or physician. ◇

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National Chemistry Week 2009

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Cassie Lopes experimenting with graphite.
Photo by Jessica Barnes



Professor Bassam Shakhshiri, University of Wisconsin-Madison during his presentation of the Phyllis A. Brauner Memorial Lecture. Photo by Suzy Drury



Winning poster submitted by Samantha Tse from Belmont High School.
Photo by: Christine Jaworek-Lopes



Visitors to the MoS on October 18, 2009.
Photo by Jessica Barnes



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October Meeting

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Borisy, formerly CEO of Combina-toRx, completed the evening with an address entitled "Pursuing Scientific Vision as an Entrepreneur." Alex talked about his early academic career starting at the U. of Chicago and his evolution into an entrepreneur in Stuart Schrieber's labs at Harvard. At Harvard, Alex moved beyond his interest in scientific research during the period where Professor Schrieber was heavily involved with the start ups of Vertex and Ariad Pharmaceuticals. This ulti-

mately led to his founding of Combina-toRx in 2000.

In the future, it is planned to record the monthly meetings and offer the talks as podcasts on the NESACS website for the benefit of members who cannot attend the meetings. Unfortunately, your editor left the audio recorder on his desk as he rushed out to attend the October Board Meeting, resulting in this very brief synopsis of the evening presentation. The November Norris Award presentation has been recorded. Barring technical difficulties the podcast will be forthcoming. MPF ◇

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Calendar

Check the NESACS home page for late Calendar additions:
<http://www.NESACS.org>

Note also the Chemistry Department web pages for travel directions and updates.

These include:

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Jan 11 & 12

Visiting O'Malley Scholar
Professor William DeGrado (Univ. Penn.)
TBD
Boston College, Merkert 130 4:00 pm

Jan 13

Inorganic Chemistry Seminar Series
Claudia Turro (Ohio State)
MIT, Room 6-120 4:15 pm

Jan 14 & 15

Merck-Pfister Lecture in Organic Chemistry
Takuzo Aida (University of Tokyo)
MIT, Room 6-120 4:00 pm

Jan 18

Prof. Tomislav Rovis (Colorado State Univ.)
"Ring-Forming Strategies in Asymmetric Catalysis"
Boston College, Merkert 130
4:00 pm

Jan 20

Harvard/MIT Inorganic Chemistry Seminar Series
Maurice Brookhart, University of North Carolina
MIT, Room 6-120
4:15 pm

Jan 25

Prof. John Hart (Univ. Texas Health Science Center, San Antonio)
TBD
Brandeis Univ., Gerstenzang 122
3:45 pm

Jan 26

Prof. Ramesh Jasti (Boston University)
"Bridging Organic Synthesis and Nanoscience"
Boston College, Merkert 130
4:00 pm

Jan 27

Robert Crabtree (Yale)
MIT, Room 6-120
4:15 pm

Jan 28

Mary Jane Schultz (Tufts University)
TBA
Harvard, Pfizer Lecture Hall
4:00 pm

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