ACS of Western New York

Double Bond

The Newsletter of the Western New York Section of the American Chemical Society

Volume 81 ***November 2009***

LOCAL SECTION ELECTIONS

This issue of *The Double Bond* includes your ballot for executive board elections with terms beginning in 2010, as well as brief biographical statements from the candidates. Please turn to page 13 and help out in your local chemistry community by returning your ballot promptly.

Hurry! The voting deadline is November 30, 2009.

ELEMENTS OF EXCELLENCE

ACS Volunteers Recognized at ChemLuminary Awards Event

The 11th Annual ChemLuminary Awards celebration was held in conjunction with the ACS National Meeting in Washington, DC, on August 18, at the Capital Hilton Hotel. Approximately 400 chemists came together to recognize 105 local sections, 8 regional meetings, and five divisions that received accolades for their tireless efforts and work in promoting chemistry and the chemical sciences in local areas.

The night's celebration started with a social hour and poster session where all award finalists displayed materials from their events. ACS President Tom Lane opened the event with welcoming remarks and the presentation of 44 awards that included the ACS Volunteer Service Award to Sr. Mary Virginia Orna of the College of New Rochelle, and the Helen M. Free Award for Public Outreach to David A. Katz of Pima Community College. A celebration of dancing followed until midnight.

A list of local sections, divisions, and regional meetings that were honored on August 18 can be found at portal.acs.org/portal/Navigate?nodeid=1332

All Local Section Award nominations are submitted by self-nomination via Annual Reports. For outstanding events or activities sponsored during 2009, self-nominations must be submitted by February 15, 2010.

NATIONAL CHEMISTRY WEEK, 2009

By Philip Sheridan

On October 24, the student members of SCACS at Canisius College performed three chemical demonstration shows to celebrate National Chemistry week. Each show consisted of 13 separate demonstrations highlighting this year's NCW theme, "Chemistry, It's Elemental". The demonstrations included igniting H_2 and O_2 balloons, burning magnesium metal, reacting sodium metal with water, genie in a bottle, elephant toothpaste, whoosh bottle, and others. To make each show interactive, audience members, especially children, were encouraged to ask and respond to questions. Prizes, such as NanoMole dolls, Erlenmeyer flasks and periodic table pens were given to the participants.

More than 100 people attended the three shows. Following each show, members of SCACS conducted a raffle of various chemistry related items from the ACS store. These items included beaker mugs, mole dolls, periodic tables and periodic table beach towels. As an additional fundraiser for SCACS liquid nitrogen ice cream was sold.

Mike Brignone ('11) prepares to ignite "the big one"

(more NCW photos on page 14)

WNYACS LOCAL SECTION ELECTIONS

Ballots must be emailed or postmarked by
November 30, 2009

Ballot for 2010 Officers of the Western New York Section of the American Chemical Society

Chair (vote for 1)
Valerie A. Frerichs

Chair-Elect (vote for 1)
Jeffery M. Rose

Vice-chair (vote for 1)
Ronny Priefer

Treasurer (vote for 1)
Andrew J. Poss

Councilor (vote for 1)
David Nalewajek

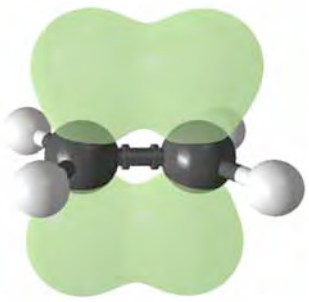
Member-at-Large (vote for 1)
Mwita V. Phelps

Please SELECT and COPY the above ballot text to an email and type X's beside the names of the candidates you wish to vote for.

Forward the email to: greggt@canisius.edu *by the* ***Voting Deadline: November 30, 2009.***

To vote on paper, print and detach the above ballot, mark your votes with an ***X*** *and send the ballot to:*

Dr. Timothy Gregg
Dept. of Chemistry and Biochemistry
Canisius College
2001 Main St.
Buffalo, NY 14208



CANDIDATE BIOGRAPHIES

For Chair:

Valerie A. Frerichs has been a member of the University at Buffalo (UB) community since 1995, when she first enrolled as a graduate student. From 2000 – 2005 she worked in the School of Pharmacy and Pharmaceutical Sciences as a Scientific Research Laboratory Manager and Senior Research Scientist developing custom analytical methods for clinical studies. Valerie has been the Associate Director for the Department of Chemistry's General Chemistry Laboratory since 2005. This position includes co-directing the first-year teaching laboratory program of approximately 4600 students annually. Other ongoing projects center on the development of authentic research teaching laboratories, dissemination of contextual laboratory activities for secondary chemistry, and implementation and assessment of educational technology for General Chemistry at UB.

For Chair-Elect:

Jeffrey M. Rose is a Buffalo native. He attended Canisius College and graduated *Summa Cum Laude* in 2003 with a B.S. in chemistry. While at Canisius, Jeff served as an organic chemistry teaching assistant for several semesters. In addition, he helped lead an active ACS Student Affiliates Chapter through a two-year presidency. For his graduate studies, Jeff attended Cornell University and worked in the research group of Prof. Geoffrey W. Coates. His research was focused on the development of new polyolefin architectures through the design of late-metal catalysts. While at Cornell, Jeff was honored in 2004 with the *Bayer Teaching Excellence Award* and in 2008 with the *Tunis Wentink Prize* for outstanding graduate student. Jeff was also involved in Cornell's West Campus Residential Initiative through his role as a Graduate Resident Fellow for the Alice H. Cook House. Jeff graduated from Cornell with his Ph.D. in June 2008. He currently works as a Division Chemist at the DuPont Yerkes Site in Tonawanda.

For Vice-Chair:

Ronny Priefer received his Doctorate in Chemistry at McGill University in 2003. From 2003-2004 he worked in the medicinal chemistry group at Neurochem Inc. in Montreal focusing on Alzheimer's and epilepsy. From 2004-2005 he was employed as a contract research scientist at Starks Associates in Buffalo until starting at Niagara University in the fall of 2005 as Assistant Professor in Organic Chemistry. Early this year he was promoted to Associate Professor. His research focuses on total synthesis, thin film self-assembly multilayers, development of new antimicrobial agents, Type II Diabetes, cubane derivatives, and new synthetic organic methodologies. He has appeared on local television programs, and a recent PBS special; and is the founder/director of the Niagara University Scientific Outreach for Chemistry (NUSOC).

For Councilor:

David Nalewajek

David Nalewajek is currently a Senior Principal Scientist at Honeywell International (formerly AlliedSignal). He received his B.S. in chemistry from Canisius College in 1974 and his Ph.D. from the State University of New York at Buffalo in 1978. His postdoctoral was spent at AT&T Bell Laboratories where he researched the design and synthesis of multidimensional superconductors. His current research interests are directed towards the development of environmentally acceptable CFC replacement molecules. He currently holds 61 U.S. Patents. Dave has been active in community outreach activities since his return to WNY in 1980, serving as lecturer/demonstrator at the Buffalo Museum of Science and at local elementary schools. Within the WNY-ACS organization, he has held positions of member-at-large, vice-chair, chair-elect and chair. He has served as councilor for this Section since 1992. In addition, Dave has served three terms as chair of the Schoellkopf committee and was the recipient of the Schoellkopf award in 2003. Dave is currently chair for National Chemistry Week where he has served as chair/co-chair since its inception.

For Treasurer:

Andrew J. Poss is a Senior Project Leader at Honeywell International, Inc. He received his BS (1978) and PhD (1984) in organic chemistry from the University of Rochester. He next joined the faculty of the State University of New York at Buffalo as an Assistant Professor of Chemistry. Since 1989, Andy has been employed at Honeywell where he is currently developing new fluorine-based products. He has authored the book entitled "Library Handbook for Organic Chemists" as well as numerous papers, posters and presentations.

For Member-at-Large:

Mwita V. Phelps is a Division Chemist at the DuPont Yerkes Site in Tonawanda, NY. He spent three years working in the pharmaceutical industry at GlaxoSmithKline before joining DuPont in 2008. Mwita is a Buffalo native and has been a member of the American Chemical Society for more than ten years. He earned a B.S. degree in chemistry in 1997 from the University of Buffalo. Following his undergraduate studies he accepted an industrial position with Ecology & Environment, a local chemical company located in Lancaster, NY. After one year in industry he decided to pursue graduate studies at Buffalo State College, where he completed an M.A. in chemistry in 2000. At Buff State his research was focused on synthetic organometallic chemistry, and he was awarded the Wilson Greatbatch Teaching Assistant Award.

For his doctoral studies, Mwita attended Penn State and worked in the research group of Harry R. Allcock. His research was focused on the development of polyphosphazenes, an inorganic-organic polymer system with biomedical applications. While at Penn State, Mwita was the recipient of several awards including the Dr. Lendon N. Pridgen Fellowship, sponsored by GlaxoSmithKline-NOBCChE, a Dalalian Graduate Fellowship, and an Alfred P. Sloan Fellowship. Mwita graduated with a Ph.D. in chemistry in 2005.

Mwita has a strong interest in programs that encourage high school students to pursue careers in physical science. During the summer of 2002 and 2003 he was a chemistry instructor for the Pre-Freshman Engineering Program, a course designed to help students transition from high school chemistry to first year college chemistry. He delivered the keynote address for minority high school students at the 2006 Penn State Annual Awards Convocation. In 2008, Mwita served as a judge for grades 9 & 10 chemistry presentations in the 29th annual George Washington Carver Science Fair, held at Temple University.

Chris Mekelburg ('10) freezes a racquetball

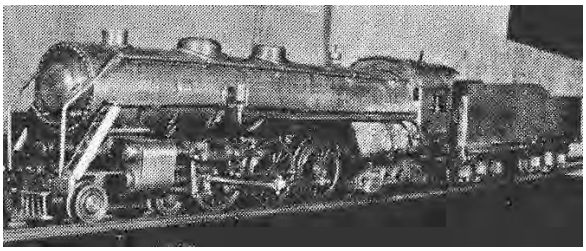
Erin Gatrone ('10) serves up some slime!

60 YEARS AGO IN *THE DOUBLE BOND*

The following excerpt appeared in the November, 1939 Double Bond

The average American is brought up within hearing distance of a railroad, so the sound of a locomotive whistle is familiar to most of us. As a result of our familiarity with the iron horse and its puffing, snorting ways, many of us, at some period of our youth, have aspired to be locomotive engineers, and ride the high iron with a couple of hundred tons of hot, pulsing steel responsive to our wills.

For the majority such ambitions are soon relegated to the limbo of boyhood's half-forgotten dreams, and only stir in our memories when we stop at a grade crossing as the limited rushes by or when, in that drowsy period just preceding slumber, we hear the wail of a far away whistle. There is, however, a small group of men, who have never ceased wanting to "run an engine", and although failing to achieve their desire, have made it their hobby, and it is this hobby of "Live Steam" of which I write.



The construction and operation of miniature steam locomotives probably was attempted soon after the "Rocket" came in first at the Rainhill locomotive races in 1829. "Live Steam" as a recognized hobby in the United States commenced in 1932, when a few lone hands in the vicinity of Boston, Mass. organized an informal group called the "Brotherhood of Live Steamers". To the best of my recollection, this group consisted of several professional men, a broker, a manufacturer of fine tools, an engineering student at MIT, a garage owner, and a railroad employee or two.

An invitation to join was extended to all lone hands in North America building or proposing to build engines, and, as this news was rapidly relayed via grape-vine, in a short time about fifty enthusiasts suddenly realized that there were other queer people who harbored hallucinations that one could build a baby steam locomotive in the basement work shop, given a reasonable tool equipment, plenty of patience and a tolerant household. Not only was it possible to build an engine, but miracle of miracles, after completion if you laid a track on the top of the fence posts in the back yard, and coupled on a flat car behind the engine, at the expense of almost unlimited patience, burnt fingers, a vigorous vocabulary and going without dinner, you could actually ride behind your own locomotive.

The construction of a locomotive such as your true live steamer deigns to operate is a project of considerable magnitude extending over a year or two. A simple job without any frills will consume six to eight hundred hours of spare time while some of the more elaborate engines, equipped with all the blobs and gadgets, steam driven feed pumps, boosters, working air brakes and the like, may easily take several thousand hours and extend over four or five years.

At this stage the average builder, having waited about two years for the event, takes his engine out of doors, sets it on the track, puts a tin can of water and a cigar box of coal on the fiat car in lieu of a tender, and endeavors to build a fire to generate the first live steam. Some means of inducing an artificial draft must be provided. (A kind friend on the business end of a tire pump forces a jet of air up the smoke stack ad infinitum). With the boiler filled, a few pieces of glowing charcoal are shoveled in the fire box, more charcoal added, then some high grade coal or petroleum coke broken up to pea size (all the while the friend pumping furiously) until finally, if good fortune abideth, sufficient pressure of steam develops to work the engine's own blower whereupon the slave at the tire pump collapses and the fireman continues to stoke up until the safety valve pops and the throttle can be opened gently. If all is well, a few spasmodic quivers are followed by a spout of oily water and steam out of the smoke stack and the engine suddenly comes to life. This is the climax of the hobby.

From this point, there remains to install the necessary trimmings on the engine, cab, bell, headlight, cowcatcher, etc., and to construct a tender, with coal bunker, water tank, hand force pump for supplying water to the boiler and if sufficient ambition remains, to paint the engine. The design of these little engines is almost entirely empirical and practical. The guiding principal seems to be that natural laws are not subject to proportionality or more simply Nature cannot be scaled. Consequently, full sized practice is followed in principle only, not in details. There is very little literature on the subject, and except for articles in contemporary journals devoted to model making, few references and instructions can be found. It is truly a personal hobby. The engines serve no useful purpose except to give pleasure to their owners while building and operating them. There are no rules except natural laws and no competitive urge except to do a good job. It is a strange hobby; if one is interested, it can become fascinating to the extent of investing several hundred dollars in tools and the consumption of practically all of one's spare time. If one is not interested, he thinks "Live Steamers" are queer people who play with little locomotives.

Editor's note: To form your own opinion about the hobby today, Google "Brotherhood of Live Steamers" and surf around a bit...

THIS MONTH IN CHEMICAL HISTORY

By Harold Goldwhite

In my previous column I discussed the discoveries of the first two transuranium elements nerptunium 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.

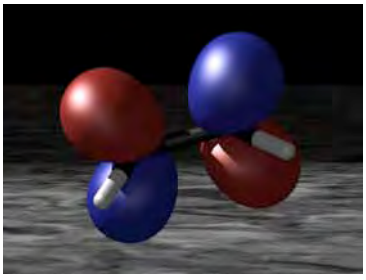
The discoveries of these elements came from experiments at the Metallurgical Laboratory in the New Chemistry Building at the University of Chicago, a key laboratory in the work that led to the first atomic bombs. (By the way, if you want to read a comprehensive and absorbing account of the Manhattan 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 giving valuable experience to the team, did not yield new transuranium 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 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. In September, after receiving 200 milligrams of plutonium 239, deuteron 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 Bekeley 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 named for its discoverer Johan Gadolin.



WNYACS Officers & Staff

ISSUE COPY DEADLINE: FIRST OF MONTH PRIOR TO PUBLICATION

The Western New York Section of the American Chemical Society (ACS) and its editors assume no responsibility for the statements and opinions advanced by the contributors. Views expressed in the editorials are those of the authors and do not necessarily represent the official position of the Western New York Section of the American Chemical Society. All materials to appear in the next issue of *Double Bond* must be received by the editor, in care of the Dept. of Chemistry and Biochemistry, Canisius College, 2001 Main Street, Buffalo, New York 14208, by the FIRST day of the month. Notice for change of address should be made through ACS Member and Subscriber Services at (800) 333-9511, mailto:service@acs.org or the website: portal.acs.org/portal/PublicWebSite/contact/WPCP_007970.

The NF=B Double Bond (aka *Double Bond*) is published from September through June by the WNY Section of the ACS. Contact information: email: dblbond@canisius.edu; website: membership.acs.org/W/WNY. Member subscriptions are included in the annual National ACS dues. Permission to reprint is granted for this publication.