



American Chemical Society  
Division of the History of Chemistry

## **Program and Abstracts**

230<sup>th</sup> ACS National Meeting  
Washington, D. C.  
August 28-September 1, 2005

J. S. Jeffers, Program Chair

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## ***DIVISION OF THE HISTORY OF CHEMISTRY***

**Final Program, 230th ACS National Meeting, in Washington, DC, Aug 28-Sept 1, 2005**

J. S. Jeffers, *Program Chair*

### **SOCIAL EVENTS:**

**HIST Certificate of Appreciation to C&E News, Rudy Baum, Editor: Mon**

**Edelstein Award Luncheon: Tue**

**Special Piano Concert, Victoria Bragin, Chemist, Winner, Van Cliburn**

**International Piano Competition for Outstanding Amateurs in 2002: Tue**

### **SUNDAY MORNING**

Washington DC Convention Center -- 146B

#### **Transitions in the U. S. Chemical Profession in the 20th Century: Crises, Turning Points and their Resolutions**

A Presidential Symposium Initiated and Supported by William F. Carroll, 2005 President of the American Chemical Society and the ACS Division of the History of Chemistry

Jeffrey I. Seeman, *Organizer*

**9:30** — Introductory Remarks, HIST Chair **J. I. Seeman**.

**9:40** — Overview and Challenges, ACS President **W. F. Carroll**

**9:55** —**1.** Compelled to change: War, nationalism, and the development of the U.S. synthetic organic chemicals industry, 1910-1930. **K. Steen**

**10:25** —**2.** War, technological momentum, and professional development: Comparative perspectives on the German and American trajectories in chemistry, 1914-1950. **J. A. Johnson**

**10:55** —**3.** Integration of catalysis and polymer science into the American chemical community in the post World War II era. **J. Smith**

**11:25** —**4.** How has the ACS changed over the past 100 years, facing its own challenges and its own opportunities, to today. **F. Walworth**

### **SUNDAY AFTERNOON**

Renaissance Hotel – Room 5

## Landmark Chemistry Books of the 20th Century: A Symposium in Honor of the Fifth Anniversary of the Bolton Society

### Session 1

*Cosponsored with Bolton Society*  
J. J. Bohning, *Organizer, Presiding*

**1:55** — Introductory Remarks.

**2:00** —1. Collecting classics in science. **R. K. Smeltzer**

**2:30** —2. Linus Pauling, *The Nature of the Chemical Bond*. **C. J. Giunta**

**3:10** — Intermission.

**3:20** —3. Sienko and Plane: The first modern chemistry text. **J. L. Ealy Jr.**

**3:50** —4. Two books that launched a discipline. **F. B. Culp**

**4:20** —5. G. N. Lewis and the quantification of 20th century chemical thermodynamics: A tribute to the text "Thermodynamics and the Free Energy of Chemical Substances" by G. N. Lewis and M. Randall. **W. B. Jensen**

## Division of Business Development and Management: the First 50 Years

*Cosponsored with HIST*

### MONDAY MORNING

Renaissance Hotel – Room 5

## Landmark Chemistry Books of the 20th Century: A Symposium in Honor of the Fifth Anniversary of the Bolton Society

### Session 2

*Cosponsored with Bolton Society*  
J. J. Bohning, *Organizer, Presiding*

**8:30** —6. Morrison and Boyd's influence on the teaching of organic chemistry. **R. A. Egolf**

**9:00** —7. Teaching organic reaction mechanisms in classic textbooks. **N. Heindel**

**9:30** —8. Louis Hammett and "Physical Organic Chemistry": Setting a research agenda; naming a subdiscipline. **L. Gortler**

**10:10** — Intermission.

**10:20 —9.** Textbooks of stereochemistry - an author's perspective. **E. L. Eliel**

**10:50 —10.** G. N. Lewis and the third chemical revolution: A tribute to the 1923 monograph "Valence and the Structure of Atoms and Molecules" by G. N. Lewis. **W. B. Jensen**

### **HIST Certificate of Appreciation to *Chemical & Engineering News***

**11:30 —** Finding the Historical Perspective in News of the Chemical Enterprise, *C&EN* Editor **R. Baum**

### **MONDAY AFTERNOON**

Renaissance Hotel – Room 5

### **Minority Chemists: Telling our Stories - Award Symposium honoring Jeannette E. Brown**

*Cosponsored with CHED, CMA, and WCC*  
R. A. Egolf, *Organizer, Presiding*

**1:45 —** Introductory Remarks.

**1:50 —11.** African-American chemists of the past: telling their stories to today's students. **J. M. Hayes**, P. L. Perez

**2:30 —12.** Beyond Small Numbers: Voices of African American PhD Chemists. **W. Pearson Jr.**

**3:10 —** Intermission.

**3:25 —13.** Celebrating a scientific career: Challenges, opportunities, and successes. **M. E. M. Tolbert**

**4:05 —14.** Lives of African American woman chemists and the history of the African American Women Chemist Project. **J. E. Brown**

### **MONDAY EVENING**

Convention Center – Hall A

### **Sci-Mix**

J. S. Jeffers, *Organizer*

**8:00 - 10:00**

2. See previous listings.

## **TUESDAY MORNING**

Renaissance Hotel – West A Ballroom

### **Edelstein Award Symposium honoring William B. Jensen**

D. A. Davenport, *Organizer, Presiding*

**8:30** — Introductory Remarks.

**8:40 —15.** Chemistry on display: William H. Chandler, the Lehigh University museum of chemistry, and the Great White Way. **J. J. Bohning**

**9:05 —16.** Distaff side in chemistry. **M. V. Orna**

**9:30 —17.** Following in the footsteps of Mendeleev and William Jensen. **H. A. Bent**

**9:55** — Intermission.

**10:10 —18.** Chemical Heritage Foundation Institute: An innovation in promoting chemical history. **R. Lukens**, R. D. Hicks

**10:35 —19.** Contrasting mentors for foreign chemistry students in Germany in the nineteenth century: Liebig, Wöhler, and Bunsen. **P. R. Jones**

**11:00 —20.** An illustrated tour of the Oesper Collections in the history of chemistry. **W. B. Jensen**

**12:00** — Edelstein Award Luncheon (ticketed event)

### **Chemical Safety Past and Future, 1900 to 2015**

*Cosponsored with HIST*

## **TUESDAY AFTERNOON**

Renaissance Hotel -- West A Ballroom

### **General Papers**

J. S. Jeffers, *Organizer, Presiding*

**2:00 —21.** Chemistry and commerce: F. B. Power and the Wellcome Chemical Research Laboratories. **J. Parascandola**

**2:30 —22.** Chinese chemistry in context: some observations on the early introduction of chemical nomenclature in China. **B. Ramsay**

**3:00** — Intermission.

**3:15 —23.** Immigrants, patriots & chemical patentees in the National Inventors Hall of Fame. **H. M. Peters, S. Peters**

**3:45 —24.** McCarthyism comes to chemistry: The case of Max Tischler. **M. D. Saltzman**

**4:15 —25.** Teaching history of chemistry under the Gordon Rule. **D. F. Martin**

### **Chemical Safety Past and Future, 1900 to 2015 (2)**

*Cosponsored with HIST*

## **TUESDAY EVENING**

Convention Center -- Room 146 A/B

### **5:30—Special Piano Concert, Victoria Bragin, Chemist, Winner, Van Cliburn International Piano Competition for Outstanding Amateurs in 2002**

Commentary on the musical compositions of chemist-composer, Alexander Borodin

Beethoven, Sonata in E-flat, Op. 31, No. 3

Borodin, "Au Covent" from "Petite Suite"

Borodin, Scherzo in A-flat

Chopin, Sonata No. 3 in B Minor

## **Abstracts**

### **PRES 1.**

#### **COMPELLED TO CHANGE: WAR, NATIONALISM, AND THE DEVELOPMENT OF THE U.S. SYNTHETIC ORGANIC CHEMICALS INDUSTRY, 1910-1930.**

**Kathryn Steen**, Department of History and Politics, Drexel University, Philadelphia, PA 19104

Germany dominated the world's market in synthetic dyes and pharmaceuticals in the decades before World War I, but the war severed the supply of German chemicals to the United States, and Americans responded by building their own industry. The chemical shortages and intense anti-German sentiment created political support for promotional government policies, such as tariffs and the confiscation of German chemical subsidiaries and patents in the United States. But a key challenge lay in building a sufficiently large and trained pool of American chemists to compete with the powerful and experienced German industry.

### **PRES 2.**

#### **WAR, TECHNOLOGICAL MOMENTUM, AND PROFESSIONAL DEVELOPMENT: COMPARATIVE PERSPECTIVES ON THE GERMAN AND AMERICAN TRAJECTORIES IN CHEMISTRY, 1914-1950.** **Jeffrey A. Johnson**, Department of History, Villanova University, Villanova, PA 19085

The German chemical profession entered the First World War in 1914 as the acknowledged world leader in many aspects of professional, disciplinary, institutional, and industrial development, exemplified by its dominance of coal-tar chemistry; the Americans, in contrast, were struggling to catch up. By 1950, following a tumultuous period of two world wars accompanied by economic and political crises, the situations were essentially reversed, with the Americans now the global leaders in critical areas from chemical physics to petrochemicals. This paper will trace and compare the professional and disciplinary trajectories along which chemistry in each nation developed during this period, indicating the crucial factors that shaped success or relative decline in each case. These factors include the effects of the technological and economic exigencies of war and its consequences, along with technological momentum, which tended to promote development along lines favored by previous successes in academic-industrial cooperation.

### **PRES 3.**

#### **THE INTEGRATION OF CATALYSIS AND POLYMER SCIENCE INTO THE AMERICAN CHEMICAL COMMUNITY IN THE POST WORLD WAR II ERA.**

**John Smith**, Department of History, Lehigh University, Bethlehem, PA 18015

After World War II the growth of the American chemical industry was largely driven by the development of polymeric materials made from petrochemicals. Both polymers and petrochemicals generally were manufactured using catalytic processes. In the prewar era polymer technology and catalysis had emerged in corporate research laboratories. My paper examines the development of larger networks of polymer and catalysis knowledge. These networks included professional meetings and associations, specialized journals, and incorporation into academic teaching and research.

### **PRES 4.**

#### **HOW HAS THE ACS CHANGED OVER THE PAST 100 YEARS, FACING ITS OWN CHALLENGES AND ITS OWN OPPORTUNITIES, TO TODAY.** **Frank**

**Walworth**, American Chemical Society, Washington, DC 20036

No abstract

### **HIST 1.**

**COLLECTING CLASSICS IN SCIENCE.** **Ronald K. Smeltzer**, Retired, 162 Cedar Lane, Princeton, NJ 08540, rksmeltzer@worldnet.att.net, Phone: 609-924-4789

Landmark discoveries and events in science during the twentieth century were documented by forms of publication such as technical monographs, serial issues, authors' separates, conference proceedings, dissertations and theses, institutional reports, and classified documents. Examples from among these many types of documents will be described to illustrate their significance and the question of whether or not the topic of this symposium will be relevant for the twenty-first century will be considered.



## HIST 2.

**LINUS PAULING, *THE NATURE OF THE CHEMICAL BOND*.** Carmen J. Giunta, Department of Chemistry, Le Moyne College, 1419 Salt Springs Rd, Syracuse, NY 13214-1399, Fax: 315-445-4540, giunta@lemoyne.edu, Phone: 315-445-4128

*The Nature of the Chemical Bond* (1939) is surely one of the most influential of Linus Pauling's many influential publications. The book is a creative and lucid synthesis of quantum mechanics and chemical concepts of bonding by a scientist steeped in both fields. An important reason for the book's influence is that it made results from the abstract world of quantum mechanics relevant to practicing chemists and chemistry students. The basis of the book in a series of papers Pauling published in the early 1930s will be examined. Several examples of the book's influence on the practice of chemistry and on chemical education will be traced.

## HIST 3.

**SIENKO AND PLANE: THE FIRST MODERN CHEMISTRY TEXT.** James L. Ealy Jr., Department of Education, Cedar Crest College, 100 College Drive, Allentown, PA 18104, jlealy@cedarcrest.edu, Phone: 610.606.4666 x3701

Many modern chemistry texts still follow the basic format of Sienko and Plane. This text, with its straight forward and practical approach to first year chemistry caused more than a few students to reconsider chemistry as a major. However, for many of us, this text opened the door to our future. Especially interesting were the many levels of problems located at the end of each chapter. Many faculty, now about to retire, bought this text for their first year chemistry class and in 6 or 7 years used it in their own first and subsequent years of teaching freshman chemistry.

## HIST 4.

**TWO BOOKS THAT LAUNCHED A DISCIPLINE.** F. Bartow Culp, Mellon Library of Chemistry, Purdue University, 504 West State Street, West Lafayette, IN 47907-2058, bculp@purdue.edu, Phone: 765-494-2865

Whence arises a new chemical discipline? How does a new field of study first organize itself and then continue to grow? In the case of "chemical literature", as it was then called, we can establish its birth as occurring in the first quarter of the 20th century. The first book to treat chemical literature as a separate topic of study was a slim volume self-published in 1919 by Marion Sparks, the Chemistry Librarian at the University of Illinois. However, the most influential text in this field appeared a few years later in 1924. "Chemical Publications, their Nature and Use", by M. G. Mellon, would go through five editions over 60 years, and track the development of the field from "Olsen's Chemical Annual" to structure-searchable online databases. We will present an account of these books and how they mirrored the changes in the field they helped to create.

## HIST 5.

**G. N. LEWIS AND THE QUANTIFICATION OF 20TH CENTURY CHEMICAL THERMODYNAMICS: A TRIBUTE TO THE TEXT "THERMODYNAMICS AND THE FREE ENERGY OF CHEMICAL SUBSTANCES" BY G. N. LEWIS AND M. RANDALL.** William B. Jensen, Department of Chemistry, University of Cincinnati, Cincinnati, OH 45221-0172, jensenwb@email.uc.edu, Phone: 513-556-9308

The talk will trace the origins, content, and impact of the seminal 1923 text "Thermodynamics and the Free Energy of Chemical Substances" by the American chemists G. N. Lewis and M. Randall.

## HIST 6.

**MORRISON AND BOYD'S INFLUENCE ON THE TEACHING OF ORGANIC CHEMISTRY.** Roger A. Ego, Pennsylvania State University, Lehigh Valley Campus, 8380 Mohr Lane, Fogelsville, PA 18051-9999, Fax: 610 285-5220, rae4@psu.edu, Phone: 610 285-5110

The publication of the first edition of Morrison and Boyd's Organic Chemistry in 1959 brought important changes to the teaching of this subject, which influenced the education of a new generation of chemists. This paper will examine how this textbook differed from its predecessors and how it evolved through its subsequent editions. Its influences on later organic textbooks will also be discussed.

## HIST 7.

**TEACHING ORGANIC REACTION MECHANISMS IN CLASSIC TEXTBOOKS.**

Ned Heindel, Department of Chemistry, Lehigh University, 6 East Packer Avenue, Bethlehem, PA 18015, Fax: (610) 758-3461, ndh0@lehigh.edu, Phone: (610) 758-3464

The mechanism approach using curly arrows to understand organic reactions is ubiquitous in today's textbooks and can even be found in many general chemistry texts. It was not that many years ago that organic chemistry was taught as a facts-based, rote memory, "preps and props" pedagogy. Historically, chemistry had to develop reliable structures and accurate

rate measurements before mechanism theory could be advanced. Tarbell and Tarbell claim that this platform for mechanism teaching was built in the period 1876-1913. An analysis of the milestone textbooks allows one to trace reaction mechanisms from a tentative explanatory aid to the major theme in the mastery of new chemistry. The textbook contributions of Lorschmidt (1861), Remsen (1885), Conant (1928), Whitmore (1937), Alexander (1950), Noller (1951), Cram/Hammond (1959), Gould (1959), Morrison/Boyd (1959), Roberts/Casario (1964) and many others will be treated to show the evolution of the curly arrow method in teaching organic chemistry.

#### **HIST 8.**

**LOUIS HAMMETT AND "PHYSICAL ORGANIC CHEMISTRY": SETTING A RESEARCH AGENDA; NAMING A SUBDISCIPLINE.** Leon Gortler, Brooklyn College, Department of Chemistry, 2900 Bedford Avenue, Brooklyn, NY 11210-2889, lgortler@brooklyn.cuny.edu, Phone: 1-718-338-0062

Louis Hammett published "Physical Organic Chemistry" in 1940. The book provided a corporate title for those applying physical chemistry to organic chemistry, it reviewed the important literature, and the topics covered set a research agenda for the next twenty years. This talk will discuss the book and the author/literature index that we have prepared, the impact of the book on the chemical community, and the training and research that prepared Hammett to write the book.

#### **HIST 9.**

**TEXTBOOKS OF STEREOCHEMISTRY - AN AUTHOR'S PERSPECTIVE.** Ernest L. Eliel, Department of Chemistry, University of North Carolina at Chapel Hill, CB#3290, Chapel Hill, NC 27599-3290, Fax: (919) 962-2388, eliel@email.unc.edu, Phone: (919) 962-6198

The second half of the 19th century marked both the beginning of, and intensive activity in, the area of stereochemistry; this activity diminished in the first half of the 20th though several German textbooks were published. But there was only one comprehensive English language chapter (Shriner and Adams, 1942). In 1962 I filled this void with "Stereochemistry of Carbon Compounds" (McGraw-Hill). The book was well received; over 40,000 copies were sold and many chemists studied the subject from it. By the 1970's, new and rapid developments in the field (conformational analysis, nmr applications, ORD/CD, efficient enantioselective syntheses) called for an updating, but this update was not completed until 1994 when "Stereochemistry of Organic Compounds" (Wiley) was published with the coauthorship of Samuel H. Wilen. The talk will detail the gestation of these books and the problems encountered in writing them.

#### **HIST 10.**

**G. N. LEWIS AND THE THIRD CHEMICAL REVOLUTION: A TRIBUTE TO THE 1923 MONOGRAPH "VALENCE AND THE STRUCTURE OF ATOMS AND MOLECULES" BY G. N. LEWIS.** William B. Jensen, Department of Chemistry, University of Cincinnati, Cincinnati, OH 45221-0172, jensenwb@email.uc.edu, Phone: 513-556-9308

The talk will discuss the origins, content, and impact of the seminal 1923 monograph "Valence and the Structure of Atoms and Molecules" by the American chemist, G. N. Lewis.

#### **HIST 11.**

**AFRICAN-AMERICAN CHEMISTS OF THE PAST: TELLING THEIR STORIES TO TODAY'S STUDENTS.** Janan M. Hayes, Science Division, Merced College, 3600 M Street, Merced, CA 95348, Fax: 209-384-6362, hayes.j@mccd.edu, Phone: 916-331-6886, and Patricia L. Perez, Chemistry Department, Mt. San Antonio College

When talking to students about historically significant African-American chemists, one finds that the first person to be recognized is George Washington Carver and then maybe Percy Julian. But who else? In this symposium a number of current African-American chemists have shared their stories. We will share the stories of a few who are no longer with us but whose chemical contributions can be used as significant teaching tools. Those to be discussed include: Norbert Rillieux (1806-1897), who invented a process that reduced the time, cost, and safety risks involved in the production of sugar; Madame C. J. Walker (1867-1919), who developed a line of hair products and cosmetics and thus moved from being the daughter of ex-slaves to washerwoman to millionaire; and Lloyd A. Hall (1894-1971), an industrial chemist, who came up with flash-dried salt crystals for meat preservation, with antioxidants to prevent spoilage of fats and oils in bakery products, with the use of ethylene oxide to control the growth of molds and bacteria in spices and cereals.

#### **HIST 12.**

**BEYOND SMALL NUMBERS: VOICES OF AFRICAN AMERICAN PHD CHEMISTS.** Willie Pearson Jr., School of History, Technology and Society, Georgia Institute of Technology, 685 Cherry Street, DM Smith Bldg., Room 109, Atlanta, GA 30332, Fax: 404-894-0535, willie.pearsonjr@hts.gatech.edu, Phone: 404-385-2265

Little is known about the actual experiences of African American PhD chemists. This presentation explores the group's historical presence in the chemistry community, their family backgrounds, educational experiences, professional activities, and attitudes towards race and science. The presentation provides insight into the factors that affect the careers of African American PhD chemists and gives voice to the many men and women who overcame discrimination, prejudice, and racism to build successful careers.

#### **HIST 13.**

**CELEBRATING A SCIENTIFIC CAREER: CHALLENGES, OPPORTUNITIES, AND SUCCESSES. Margaret E.M. Tolbert**, Office of Integrative Activities/Office of the Director, National Science Foundation, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230, Fax: 703-292-9040, mtolbert@nsf.gov, Phone: 703-292-8040

Twenty-five years of experience in increasingly responsible executive appointments in academia, the private sector, a national laboratory, and the Federal government have resulted in my designation as the first African American female in several positions. Included among these firsts are the first African American and first female Director of the U.S. Department of Energy's New Brunswick Laboratory; first African American female member of the Board of Directors, Birmingham Branch of the Federal Reserve System; and first female Director, Carver Research Foundation-Tuskegee University. My career path and contributions to the scientific community will be presented, along with national and international (e.g., Ghana, Liberia, Libya, South Africa, Senegal, Austria, and Belgium) programs and activities in which I have had major roles. The discussion will focus on sharing information and encouraging others to choose science and mathematics careers. Challenges, opportunities, and successes encountered in my life and career will be included.

#### **HIST 14.**

**LIVES OF AFRICAN AMERICAN WOMAN CHEMISTS AND THE HISTORY OF THE AFRICAN AMERICAN WOMEN CHEMIST PROJECT. Jeannette E. Brown**, Center for Pre-College Programs, New Jersey Institute of Technology, University Heights, Newark, NJ 07102, Fax: 973-642-1847, jbrown@njit.edu, Phone: 973-596-5795

African American women in science have always labored under the "double bind" of being a woman and a minority in science. To date, limited knowledge exists on the educational experiences of African American Women Chemists. We will discuss the establishment of a project to extend the current knowledge base about African American women in chemistry. A look at the history of chemistry reveals much information about white male and even white female chemists. The available information about African American women chemists is harder to find; it is usually listed under African American women scientists. The motivation for this research is to help African American students understand that it is possible to succeed in chemistry now because some of these women succeeded against more impossible odds. We will illustrate this talk by discussing our history and the role of mentors in our career. We will talk about some of the students that we mentored during our career and end by discussing a new program that is being established in the North Jersey Section to increase the number of African Americans who pursue a career in chemistry, chemical education or chemical engineering. This paper will also detail the progress towards developing curriculum and a web site for the History of African American Women Chemist Project.

#### **HIST 15.**

**CHEMISTRY ON DISPLAY: WILLIAM H. CHANDLER, THE LEHIGH UNIVERSITY MUSEUM OF CHEMISTRY, AND THE GREAT WHITE WAY. James J. Bohning**, Department of Chemistry, Lehigh University, 6 E. Packer Ave, Bethlehem, PA 18015, Fax: 610-758-6536, jjba@lehigh.edu, Phone: 610-758-3582

At the Columbia Exposition in Chicago in 1893, American Chemical Society president Harvey W. Wiley lamented that it was difficult to put chemistry on display, citing how easy it was for the manufacturers of consumer goods and heavy equipment to do so. Yet, Wiley explained, by its very nature chemistry was unobtrusively included in virtually every exhibit on the Great White Way. Wiley's remarks notwithstanding, there were chemical exhibits at the Fair, in part the result of the chemical collections housed in different university museums. Lehigh University chemistry professor William H. Chandler had spent years building a museum of chemistry on the Lehigh campus before he mounted the Lehigh exhibit in Chicago. But as chemistry grew in the twentieth century, museum space was coveted by research professors, and today only remnants remain of Chandler's vast collection, a fate that also befell many other university collections.

#### **HIST 16.**

**DISTAFF SIDE IN CHEMISTRY. Mary Virginia Orna**, Publications Coordinator Office, Journal of Chemical Education, 16 Hemlock Place, New Rochelle, NY 10805, Fax: 914-654-5387, mvorna@cnr.edu, Phone: 914-654-5302

When Ralph Oesper wrote his famous book, "The Human Side of Scientists," of the 133 entries, there was only one woman. There is no need to guess who that woman was – Marie Curie is often the only woman that students hear of as they come through elementary and high school. Marie Curie certainly deserves her fame, but there are many other women, sung, unsung, and virtually invisible, who have contributed enormously to the body of scientific knowledge and to our general well

being. This paper is an extension of Oesper's book in that it includes the achievements of many women chemists, several of whom have been awarded the Nobel Prize and other high honors.

#### **HIST 17.**

**FOLLOWING IN THE FOOTSTEPS OF MENDELEEV AND WILLIAM JENSEN.** Henry A. Bent, 5816 Solway Street, Pittsburgh, PA 15217, Phone: 412-521-6641

Reported are leading results of an experiment suggested by observations regarding Chemical Periodicity of Mendeleev and William Jensen: What happens if helium is placed above beryllium in the Periodic Tables? Results include hitherto unnoticed Laws of Triads, Correspondence Principles, Meta-Trends, Atom Analogies, and Chemical Routes to the Left Step Periodic Table. Jointly, the results help to dispel misconceptions engendered by the Conventional Periodic Table and suggest a set of scientifically and pedagogically sound natural Group labels.

#### **HIST 18.**

**CHEMICAL HERITAGE FOUNDATION INSTITUTE: AN INNOVATION IN PROMOTING CHEMICAL HISTORY.** Rob Lukens and Robert D. Hicks, Chemical Heritage Foundation, 315 Chestnut Street, Philadelphia, PA 19106, Fax: 215-925-6195, RobL@chemheritage.org, Phone: 215-925-2178 ex.306

The Chemical Heritage Foundation in Philadelphia collects the vast material heritage of chemical and molecular sciences. CHF's collections include instruments and tools, fine art and works on paper, recorded and transcribed oral histories of chemists, and archives of institutions and people, including Nobel Laureates. CHF also maintains one of the most important collections of books on early chemistry in the world. Edelstein Award winner William Jensen has provided CHF with invaluable consultation in collections areas.

CHF is creating an institute to act as its public face for promoting an understanding of the history of the chemical sciences through its collections. As CHF's major outreach component, the institute will showcase CHF's rich collections of chemistry's material culture by producing exhibits, web-based resources, workshops, publications, and even television programs. This presentation will outline its physical space, staffing, and outreach, with a particular focus on its outreach and exhibit themes.

#### **HIST 19.**

**CONTRASTING MENTORS FOR FOREIGN CHEMISTRY STUDENTS IN GERMANY IN THE NINETEENTH CENTURY: LIEBIG, WÖHLER, AND BUNSEN.** Paul R. Jones, Department of Chemistry, University of Michigan, 930 N. University, Ann Arbor, MI 48109-1055, Fax: 734-647-4865, prjones@umich.edu, Phone: 734-668-2418

American and British students who undertook research projects in German universities from the 1830s to the 1890s found their mentors or Doktorväter to be individualistic in their treatment of the students. Some insight into contrasting mentors can be gleaned from a variety of sources, including the dissertations themselves, correspondence, and continued contact following the return of students to their homelands. Three of the most prominent German professors of that period — Liebig, Wöhler, and Bunsen — are chosen as representative examples.

#### **HIST 20.**

**AN ILLUSTRATED TOUR OF THE OESPER COLLECTIONS IN THE HISTORY OF CHEMISTRY.** William B. Jensen, Department of Chemistry, University of Cincinnati, Cincinnati, OH 45221-0172, jensenwb@email.uc.edu, Phone: 513-556-9308

This heavily illustrated talk will outline the author's experiences over the last 15 years in building a major scholarly collection in the history of chemistry, including the Oesper Book and Journal Collection, the Oesper Print and Portrait Collection, and the Oesper Chemical Apparatus Museum.

#### **HIST 21.**

**CHEMISTRY AND COMMERCE: F. B. POWER AND THE WELLCOME CHEMICAL RESEARCH LABORATORIES.** John Parascandola, 11503 Patapsco Drive, Rockville, MD 20852, jparascandola@verizon.net, Phone: 301-984-2527

This paper examines the background and scientific contributions of Frederick B. Power, his friendship with Sir Henry Wellcome, and his service as Director of the Wellcome Chemical Research Laboratories (1896-1914). After heading the pharmacy program at the University of Wisconsin and serving as director of the chemical laboratories of a New Jersey firm, Power accepted an invitation in 1896 from his friend and former classmate Henry Wellcome to direct the chemical laboratory that Wellcome was setting up in his London-based pharmaceutical company. There Power was able to continue basic research in plant chemistry. He published over 125 scientific papers on plants, isolating and identifying their chemical constituents. Power was one of a group of distinguished scientists assembled by Wellcome at a time when research in the pharmaceutical industry was in its infancy. Power and his colleagues helped lend legitimacy to the idea of a scientific career in industry.

#### **HIST 22.**

**CHINESE CHEMISTRY IN CONTEXT: SOME OBSERVATIONS ON THE EARLY INTRODUCTION OF CHEMICAL NOMENCLATURE IN CHINA.** Bert Ramsay, Department of Chemistry, Eastern Michigan University, Ypsilanti, MI 48197, bramsay1@emich.edu, Phone: 734-483-6795

The introduction of modern chemistry into China in the middle of the 19th century posed some interesting challenges to Chinese chemical nomenclature. Foremost was the impracticality of converting the Western alphabetical chemical nomenclature to pictographic writing. The representation of chemical elements as Chinese characters was the most interesting challenge. A rather heuristically unique system evolved and was in place by the end of the 19th century, before the appearance of the first periodic table in China in 1901. The results of the first attempts at organic chemical nomenclature were in many respects more systematic than the current system. (No background in Chinese is required for participation in this presentation.)

#### **HIST 23.**

**IMMIGRANTS, PATRIOTS & CHEMICAL PATENTEES IN THE NATIONAL INVENTORS HALL OF FAME.** Howard M. Peters, Peters Verny Jones Schmitt & Aston, LPP, 425 Sherman Avenue Suite 230, Palo Alto, CA 94306, Fax: 650-324-1678, peters4pa@aol.com, Phone: 650-324-1677, and Sally Peters, PARC Inc., 3333 Cayote Hill Road, Palo Alto, CA 94304, Fax: 650-812-4028, speters@parc.xerox.com, Phone: 650-812-4994

Innovation and invention as well as immigration and outsourcing have been part of our heritage in chemistry for over 300 years. This paper reports on the initial findings of matching immigration records and names (and their stories) from the DAR Patriot Index ([www.dar.org](http://www.dar.org)) and other records with the US patentees in the National Inventors Hall of Fame (NIHF)([www.invent.org](http://www.invent.org)). The Revolutionary War patriots (1776-1783) were mainly white, male residents as found in the DAR Index or in the records of the SAR ([www.sar.org](http://www.sar.org)). The early US patentees are mostly educated, white, male residents as is found in the U.S. patent resources ([www.uspto.gov](http://www.uspto.gov)). Early immigrants came mainly from Europe. Recent immigrant inventors are examined. NIHF inductees reported will include: Charles Goodyear (rubber vulcanization), Thomas Edison (electric light), Leo Baekeland (plastic), Elijah McCoy (lubrication), George Washington Carver (peanut products), Percy Julian (glucoma medication), Lloyd Hall (food preservation), Carl Djerassi (contraceptives), Garrett Morgan (gas mask), Gertrude Elion (immune suppressant drugs), Glenn Seaborg (nuclear energy),etc.

#### **HIST 24.**

**MCCARTHYISM COMES TO CHEMISTRY: THE CASE OF MAX TISCHLER.**

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When we think of the McCarthy era in terms of how it impacted the lives of such persons as J. Robert Oppenheimer and Linus Pauling, we forget that many other scientists were also victims of this era. Among these scientists was Max Tischler (1906-1989). Max Tischler was a brilliant organic chemist who had overcome the prevailing anti-Semitism of the 1930's and 40's and had an illustrious career at Merck and Company from 1937-1970. He was, at the time of his retirement, Senior Vice President for Research and Development. In 1953 when his loyalty was questioned, he was Director of Development Research. This paper will briefly discuss Max Tischler the chemist and how he was accused of being a security risk. In Tischler's case the outcome turned out to be a happy one and his career was saved. How this happened will also be discussed. The implications of what happened to Max Tischler perhaps would not be repeated today, but it is a cautionary lesson in how an innocent person can become swept up in political hysteria.

#### **HIST 25.**

**TEACHING HISTORY OF CHEMISTRY UNDER THE GORDON RULE.** Dean F. Martin, Department of Chemistry, University of South Florida, 4202 E. Fowler Avenue, SCA 400, Tampa, FL 33620, Fax: 813-974-8756, dmartin@mail.cas.usf.edu, Phone: 813:974-2374

A course, "Historical Perspectives in Chemistry", taught at the University of South Florida, has become a so-called Gordon-Rule course, named after a law initiated by former state Senator Gordon. It requires written assignments amounting to 6000 words as a means of improving the writing skills of students. The general theme of our five 1200-word assignments is "My Favorite Chemist". The approach used sidesteps the possibility that students will acquire their theme from an internet or other source and avoids receiving 6000-word papers at the end of a semester with little opportunity for feedback during the term. The approach emphasizes the use of literature sources and provides a useful insight into the chemist a student has selected.