

---

# THE OCTAGON

---



Volume 87, No. 1, January 2004

Lehigh Valley Section of the American Chemical Society

---

## *In This Issue:*

January Meeting Announcement	1	Treasurer's Report	4-5
February Meeting Announcement	2	Women Chemists Committee Update	6
LVACS Officers	2	Spring Regional Meeting Announcement	6
Spring Meeting Schedule	2	Chemistry Question of the Month	6
November Meeting Minutes	3-4	This Month in Chemical History	7
Advertising/Article Policy	4	ACS Webcasts Announced	7

---

## *769<sup>th</sup> LVACS Meeting:*

**Date:** Tuesday January 27,

**Location:** Albright College

**Reception:** 5:30 Campus Center South Lounge

**Dinner:** 6:30 Campus Center South Lounge

**Meeting:** 7:45 Merner-Pfeiffer Hall of Science Rm 217

**Talk:** 8:00 Merner-Pfeiffer Hall of Science Rm 217

**Menu:** Assorted Bread Sticks w/ Butter, Pear Salad with Spring Greens, Chicken Marsala\*, OR Orange Roughy with Tomato Fennel Sauce\*, Wild Rice with Pine Nuts, Stir Fry Vegetables, Chocolate/Raspberry Mousse Parfait

**Cost:** Members \$20.00

**Contact:** Nancy Kerper by 4:00 P.M. Tuesday January 20, 2004 (610) 921-7720 or [nkerper@alb.edu](mailto:nkerper@alb.edu) please specify a choice of entree.

**Directions:** On the web at:

<http://www.albright.edu/about/directions.html>

**Speaker:** Curt Hare Ph.D., Professor Emeritus, University of Miami; Research Professor, Franklin and Marshall College.

Curt Hare earned his Bachelor of Science degree in chemistry at the Pennsylvania State University and his Doctor of Philosophy at Michigan State University. Between tours of academics he served in Korea as a lieutenant in the Signal Corps of the 24th Infantry Division. Upon completion of his doctorate Dr. Hare accepted a National Science Foundation post-doctoral fellowship at the Institute for Physical Chemistry, University of Copenhagen. After this research in Denmark, he accepted an assistant professorship at the State University of New York, Buffalo. Quickly trading snow for sand, Dr. Hare moved to the University of Miami where he was associate chair of the department for several years. He is currently an emeritus professor. For ten years, Dr. Hare was the vice president of TransChemical Corporation, and he was also a past president of the Manatee Sulfur Company. Curt has received numerous awards

including Professor of the Year (several times), Provost Excellence in Teaching Award, and the Freshman Teaching Award.

Dr. Hare is an active member of the American Chemical Society, serving as section chair and local chair. He has been active in research and is author or coauthor of 23 peer reviewed publications and two book chapters on spectroscopy and its applications to chemistry. His research and industrial interests include water pollution, air pollution, cancer chemotherapeutics, mineral resources, chemical marketing, chemical industry economics, industrial chemical training, and recycling of waste plastic by conversion to fuel. He has been energetic in the area of chemical education including: 1) an interdisciplinary science program (Project SUCCEED) designed to enhance the abilities of middle school teachers and students funded by the Department of Education and the National Science Foundation and 2) a cooperative program for minority students between the University of Miami and Miami-Dade Community College sponsored by the Howard Hughes Medical Institute and the National Institutes of Health.

**Talk:** "Organics in Your Water"

**Abstract:** We are probably all aware of the environmental problems associated with pesticides and chlorinated organic molecules. These anthropogenic molecules are now in a general decline but remain on the EPA's priority pollutant list. The interest of environmental groups, particularly the Greens of Europe, is now focused on pharmaceuticals and personal care products (PPCP's). Little attention has been paid until now about the environmental fate of the caffeine in your cup of coffee or the ibuprofen for your headache let alone the female birth control pills, perfumes, antibiotics and other chemical products. The molecules that we wash down the sink and flush down the toilet are now appearing in our streams and may have a future impact on our water supplies.

\*\*\*Due to the short interval between the January and February meetings information for the February meeting has been included in this issue of the Octagon.\*\*\*

### **770<sup>th</sup> LVACS Meeting:**

**Date:** Wednesday, February 18

**Location:** Kutztown University

**Reception:** 5:15 Viewpoints Dining Room in the South Dining Hall on the South Campus

**Dinner:** 6:00 Viewpoints Dining Room

**Meeting:** 7:15 Viewpoints Dining Room

**Talk:** 7:30 Viewpoints Dining Room

**Menu:** Chicken Marsala including rice pilaf, hot vegetable, salad, rolls, coffee and tea, and dessert.

**Cost:** \$13.25

**Contact:** Please contact Donna Moore, Dept Physical Science Secretary (610) 683-4447, provide name and affiliation. Deadline for reservations is Feb 11, 4:00 PM.

**Directions:** can be found on the LVACS website A campus map is available. <http://www.esu.edu/lvacs/images/Kutzcampusmap.pdf>

**Speaker:** Dr. Phyllis Leber, Dr. E. Paul and Frances H. Reiff Professor of Chemistry, Department of Chemistry Franklin & Marshall College, Lancaster, PA

Phyllis A. Leber received a B.S. in Chemistry from Albright College in 1976 and a Ph.D. from the University of New Mexico in 1981. After a one-year visiting appointment at Pomona College, she joined the faculty at Franklin and Marshall College in 1982. Her research interests include probing the mechanistic variables affecting [1,3] sigmatropic rearrangements and elucidating the biochemical role of plant cholinesterase.

**Talk:** "A Chemical Odyssey"

**Abstract:** A retrospective of my research experience in academe, this talk will address some of the issues that have been germane to my professional career: women in chemistry, undergraduate research, physical organic chemistry. Although the details of this presentation are necessarily unique to my own work, I will also attempt to state some general principles common to academic research.

### **LVACS Officers - 2004:**

**Chair:** Steve Weiner

Chemistry Department, Muhlenberg College  
2400 Chew Street, Allentown, PA 18104

[sweiner@muhberg.edu](mailto:sweiner@muhberg.edu) 484-664-3665

**Chair Elect:** Tara Baney

Merck & Co., Inc. West Point, PA 19486

[tara\\_baney@merck.com](mailto:tara_baney@merck.com) 215-652-7486

**Immediate Past Chair:** Paul Bouis

Mallinckrodt Baker Inc., Phillipsburg, NJ 08865

[paul.bouis@tycohealthcare.com](mailto:paul.bouis@tycohealthcare.com) 908-859-9443

**Secretary:** David C. Skee

Mallinckrodt Baker Inc., Phillipsburg, NJ 08865

[david.skee@tycohealthcare.com](mailto:david.skee@tycohealthcare.com)

**Treasurer:** John Freeman

522 Raub St., Easton PA 18042

[jcf2@rcn.com](mailto:jcf2@rcn.com) 610-923-3587

**Councilor:** Carol Baker Libby

Moravian College, Allentown, PA 18018

[cblliby@cs.moravian.edu](mailto:cblliby@cs.moravian.edu) 610-861-1629

**Councilor:** Pamela D. Kistler

Cedar Crest College, Allentown, PA 18104

[pdkistle@cedarcrest.edu](mailto:pdkistle@cedarcrest.edu)

610-437-4471 x 3507

**Alternate-Councilor:** Roger Egolf

Penn State LV Campus, Allentown, PA 18051

[rae4@psu.edu](mailto:rae4@psu.edu) 610-285-5110

**Alternate-Councilor**

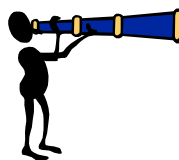
**(Octagon Editor & Webmaster):**

T-Michelle Jones-Wilson

East Stroudsburg University

East Stroudsburg, PA 18301

[mjwilson@po-box.esu.edu](mailto:mjwilson@po-box.esu.edu) 570-422-3446



*Look For LVACS on the  
web at [www.esu.edu/lvacs](http://www.esu.edu/lvacs)*

### **2004 Spring Meeting Schedule**

**January 27-** Albright College

**February 18 -** Kutztown University

**March -** Cedar Crest College - *Winery Tour and Spouses Night*

**April 22 -** Moravian College - *Student Awards Night - Student Poster Session*

**May -** DeSales University - *High School Teacher's Night*

---

## November Meeting Minutes:

The 768th meeting of the LVACS was called to order by Chair Paul Bouis at 7:45 PM on Wednesday, November 19, 2003. East Stroudsburg University hosted the meeting on their campus. The dinner was held at P&J's Café, run by the Hotel, Restaurant, Tourism, and Hospitality Management Program at the University. The meal was excellent, as per an informal poll, and the students were applauded for their efforts prior to moving to the main meeting hall. National news includes Madeleine Jacobs named new Executive Director and CEO of the ACS, effective 01-Jan-2004. She will continue as Editor-in-Chief of *Chemical & Engineering News*. William F. Carroll, Jr. has been chosen president-elect of ACS for 2004. He will serve as ACS president in 2005 and as a member of the ACS Board of Directors from 2004 to 2006. In addition, the following National election results were posted on [www.chemistry.org](http://www.chemistry.org): District I Director, Anne T. O'Brien; District V Director, Judith L. Benham; Director-at-Large, Dennis Chamot; and Director-at-Large, Nancy P. Jackson. Paul noted that this was his last meeting as Chair, and expressed his appreciation to the section. He announced that the executive committee met prior to the meeting, and reminded the section that we have three committees searching for volunteers. Carol Libby is heading the Women Chemist's Committee, and will have an email announcement in January or February 2004. Chris Hamman is heading the Publicity Committee; please see the October minutes for details. Additional information will be provided in future Octagons. The Education Committee is also in need of volunteers, and anyone interested can contact Paul, Steve Weiner, or Tara Baney. Ballots for the election were brought unopened to the meeting, and Paul requested to those in attendance who not vote do so prior to the talk. The results will be announced after the talk. John Freeman announced that our National allotment was \$8719.00; details of the budget will be posted in the January Octagon.

Next, Paul shared some information he received from National explaining the lack of women nominees for the 55 major ACS awards. There were only six women nominees in 2001, seven in 2002, and eight in 2003. A program to promote women nominees can be found at [www.chemistry.org](http://www.chemistry.org). The October 2003 minutes were approved. The Question of the month was answered: "Who coined the term 'gas'?" The answer is Van Helmont, and note that the word 'gas' also comes from the Latin *chaos*, dated 1779.

Michelle Jones-Wilson introduced our speaker for the evening, Dr. John Elwood. The title of Dr. Elwood's talk was "Now We See the Past, Darkly." Dr. Elwood began with incredible pictures of various solar bodies. Neptune is about 4 – 5 light hours away, Pluto is about 5 light hours away as well, but the picture from Pluto was not as clear since it was just a telescope shot (from the Hubble Telescope). The closest star,  $\alpha$ -centaur, is about 5 – 10 light years away, and our galaxy, the Milky Way, is about 100,000 light years across. Dr. Elwood showed us the patterned clustering of other galaxies, many millions of light years away and hundreds-of-thousands light years across. He told us the universe is homogeneous, isotropic, and dynamic, and explained in detail using the Doppler Effect. The universe is also expanding and noisy. Hubble made these conclusions in the early part of the 20<sup>th</sup> century; his expansion parameter ( $H_0 = 70 \text{ km/s}\cdot\text{Mpc}$ ) assists physicists in explaining that our universe is moving away (expanding); inflating is proportional to how far away an object is. The concern is this inflation implies at some point deflation will occur. Dr. Elwood explained the noise of the universe through cosmic microwave background radiation (CMBR,  $T = 2.75 \text{ K}$ ). We were shown "heat map" pictorials of the universe's radiation, and noted the extreme uniformity of the pattern. Most thermal objects cool when they expand; indicating much earlier in time the universe was smaller and hotter.

Dr. Elwood described in detail direct evidence for 'dark matter.' The ultimate destiny of our expanding universe depends on how much matter it contains and whether that will be enough to one day stops the expansion. When astronomers count up all the visible matter, the answer is clearly no, but as in all science, this is not a clear black and white answer. Observations reveal that vast halos of invisible matter surround galaxies and galaxy clusters. This dark matter adds up to about ten times more mass than the visible stars, gas, and dust seen in galaxies. Astronomers have yet to determine what constitutes this dark matter, but some have named MACHOS (MASSive Compact Halo Objects) could exist in huge numbers in vast halos surrounding galaxies. MACHOS do not account for all the dark matter, and more research is needed to find other sources of dark matter.

Dr. Elwood also gave some indirect evidence for dark matter, as well as evidence that our universe is flat or slightly open, indicating ever-continuing expansion at a continually decreasing rate. Therefore, about 5-10% of matter is baryonic (normal), 30-50% is dark matter, and 50-70% is considered "dark energy". Dark energy in simplistic concepts are repulsive gravity, Quintessence, and causes the expansion of the universe to speed up rather than slow down as is typically theorized. Dr. Elwood concluded by describing the Type IA Supernova (1998) and how this evidence is leading towards a flat, ever-expanding universe.

After his talk, Dr. Elwood answered many questions, and was presented with a gift to express the section's appreciation. Prior to adjournment, the election results were announced. Officers for 2004 are as follows:

Immediate Past-Chair	Paul A. Bouis
Chair	Steven Weiner
Chair-Elect	Tara S. Baney
Secretary	David C. Skee
Treasurer	John Freeman
Councilors	Pamela Kister & Carol Libby
Alternate Councilors	Michelle Jones-Wilson & Roger Egolf

Lastly, Steve Weiner presented Paul with a gift of appreciation from the section for his enthusiasm and extensive service to the LVACS. The section hopes to continue to benefit from Paul's expertise.

The meeting was adjourned at approximately 9:00 PM.

Secretary's note: As I am not well-informed on this topic, I would like to recommend the following article for additional information, <http://physicsweb.org/article/world/13/11/8>

Respectfully Submitted, Tara S. Baney, Secretary, LVACS, 26-November-2003

### ***Advertising/Article Policy***

All articles of interest to LVACS members including local news and meeting details will be printed on a priority basis over ad copy. All ads for job openings and seminars with free admission of interest to LVACS members will be printed free as space is available. All ads for goods or services available at a cost will be printed for a fee. Please contact the editor for the fee structure. The editor reserves the right to reject inappropriate copy. All article copy must be submitted 5 weeks prior to the meeting date. Electronic format (word perfect, html, simple text) is preferred but not required. MS word format is acceptable. Information can be emailed, posted or faxed to the editor. Images can be submitted electronically in either gif, jpg, tiff, or bmp format. Images submitted as hardcopy may be scanned and compressed for insertion. The editor reserves the right to make minor changes to copy in the interest of space prior to publication. Significant changes will be communicated to the author before print.

### ***Article/Copy Submission Guidelines:***

Please address all correspondence concerning this publication to the editor.

T. Michelle Jones-Wilson  
 East Stroudsburg University  
 Dept. of Chemistry  
 200 Prospect Street  
 East Stroudsburg, PA 18301

Phone: 570-422-3446; Email: [mjwilson@po-box.esu.edu](mailto:mjwilson@po-box.esu.edu); Fax: 570-422-3908

Applications for membership in the American Chemical Society should be sent to the LVACS Secretary. This publication, founded in 1918 is devoted to the interests of the Lehigh Valley Section of the American Chemical Society. It is published eight times each year (January through May and September through November) and provided free to members of the local section: subscription fee to non members is \$10 yearly.

---

### ***Treasurer's Report*** - John Freeman, Treasurer.

The section's 2004 budget and a review of the previous years budget is presented on the following page. Please direct any comments on the budget or suggestions to the officers of the section. If you see a need in the section, we would love to help meet the need financially. Over the course of the next few years there is a planned deficit that is bringing our reserves down to a more appropriate level. It is hoped that by the end of this time we should have internal support structures in some of the programs for them to be self-sustaining. As always, one of the easiest ways to help our budget is to receive the Octagon on-line; if you do not already, this saves us approximately \$0.75 per issue per person. This does not seem like much, but the many small savings of individuals make a large impact on the budget. Again comments on the budget and how we should be spending our resources are much appreciated.

Income		Budget 2004	Budget2003	2003 actual
1	Annual ACS Allotment	\$ 8,719.00	\$ 8,538.00	\$ 8,538.00
2	Local ACS Section Dues	\$ 2,400.00	\$ 2,400.00	\$ 2,154.00
3	Donations, Contributions	a	\$ -	\$ -
4	Octagon Income (Advertising)	b	\$ -	\$ -
5	Meal Income	\$ 3,600.00	\$ 4,200.00	\$ 3,221.29
6	Interest, Dividends	\$ 200.00	\$ 500.00	\$ 1,180.00
7	Councilor Travel Rebate	\$ 3,000.00	\$ 3,000.00	\$2,741.86
	Total Income	\$ 17,919.00	\$ 18,638.00	\$ 17,835.15
Expense Categories		Budget 2004	Budget 2003	2003 actual
1	Administrations Expenses			
	Bank/Investment charges	\$ 60.00	\$ 60.00	\$ 60.00
	Executive Committee	-	\$ -	\$ -
	Membership Committee	-	\$ -	\$ -
	Office Supplies	\$ 25.00	\$ 25.00	-
	Program Committee	-	\$ -	\$ -
	Public Outreach <sup>c</sup>	\$ 200.00	\$ -	\$ -
	Subtotal	\$ 285.00	\$ 85.00	\$ 60.00
2	Subsidies to Subsections - TEACHEM	-	\$ -	
3	Continuing Ed. - Leadership Training	\$ 500.00	\$ 500.00	\$ 317.00
4	Local Meeting Speaker Expenses	\$ 200.00	\$ 200.00	\$ 193.28
5	Meal Expenses	\$ 5,000.00	\$ 5,000.00	\$ 4,617.08
6	Octagon			
	Office supplies and printing	\$ 2,200.00	\$ 2,400.00	\$ 2,155.44
	Postage	\$ 2,000.00	\$ 2,400.00	\$ 1,971.70
	Editors Fee	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00
	Subtotal	\$ 8,200.00	\$ 8,800.00	\$ 8,127.14
	Awards - 50 year		\$ 50.00	\$ -
	Distinguished service Award		\$ -	\$ -
	Foundation in chemistry Scholarship	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00
	Organic Scholarship	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00
	Past Chair	\$ 100.00	\$ -	\$ 22.23
	Student Awards <sup>d</sup>		\$ 650.00	\$ -
	Subtotal	\$ 2,100.00	\$ 2,700.00	\$ 2,022.23
	Travel - Councilors	\$ 4,000.00	\$ 4,000.00	\$ 3,848.23
	Officers		\$ -	\$ -
	Subtotal	\$ 4,000.00	\$ 4,000.00	\$ 3,848.23
	Other Expenses			
	Chemistry Olympiad	\$ 200.00	\$ 200.00	\$ 211.31
	PJAS	-	\$ 200.00	\$ -
	Reading/Berks Science Fair	\$ 200.00	\$ 250.00	-
	Miscellaneous	\$ 250.00	\$ 25.00	\$ 276.63
		\$ 650.00	\$ 675.00	\$ 487.94
	Total Expenses <sup>e</sup>	\$ 20,935.00	\$ 21,960.00	\$ 19,539.62
	DIFFERENCE <sup>f</sup>	\$ (3,016.00)	\$ (3,322.00)	\$ (1,704.47)

<sup>a</sup> There are no budgeted contributions but they would be appreciated particularly those to the scholarship fund

<sup>b</sup> If you are have control over an advertising budget please contact John Freeman or the octagon editor (Michele Jones Wilson) for rates. Adds for employment are free.

<sup>c</sup> Includes women's chemist committee and education committee both recently activated

<sup>d</sup> Student awards are now provided by the Merck Corporation.

<sup>e</sup> 51.33 is not accounted for in the described categories

<sup>f</sup> Books are not yet closed by January Octagon due date.

## *What Do Local Women Chemists Committees Do?*

Many ACS local sections have Women Chemists Committees (WCC). In general their mission is to attract, develop and promote women in the chemical sciences. Some meet every month, others only once a year. The specific programming in each section varies, depending on the interests in different communities. Here's a list of some local WCC's activities: events to interest girls and young women in science careers, for example:

- z Expanding Your Horizons (workshops that encourage girls to study math and science) and school visits using Kids & Chemistry materials from the ACS
- z networking events to meet other chemists and share information about local career opportunities
- z seminars on personal and professional skills development (motivation, self-confidence, time-management, leadership)
- z awards to recognize achievements of local women scientists
- z celebrations during March, National Women's History Month
- z joint programming with other local women's professional organizations, for example AWIS (Association for Women in Science) chapters
- z technical programs and poster sessions featuring research by women chemists
- z panel discussions for women undergraduate and graduate students covering career perspectives such as academia vs. industry vs. government, balancing career and family, etc.
- z support groups to discuss personal experiences
- z tours of industrial or academic labs or fun places like a brewery or garden with a staff scientist as guide to discuss the chemistry involved.

We would like to form a Lehigh Valley ACS WCC. If you are interested in participating, contact Carol Libby, [cllibby@cs.moravain.edu](mailto:cllibby@cs.moravain.edu) or 610-861-5272.

### *Start Planning for Spring Regional Meetings*

Online abstracts are open from January 14 through March 31, 2004 for the two regional meetings taking place this spring. Advance registration will also take place during that period. Take advantage of the opportunity to see your work online in Chemical Abstracts Services, as all papers accepted will become part of the CAS databases. To submit an abstract or register, visit the Regional Meetings website at [www.acs.org/meetings/regional](http://www.acs.org/meetings/regional) and click on the meeting of choice.

The Central Regional Meeting (CRM) leads off the season June 2 – 4 at the University Place Executive Conference Center & Hotel on the campus of IUPUI. Featured symposia include the Chemistry of Auto Racing, Proteomics, Nanotechnology, Forensics, Chemistry and Art, and Chemistry in Interstellar space. The meeting will also offer an ambitious 3-day program for precollege teachers. Visit their website to get more details on the exciting programming they have in store: <http://membership.acs.org/c/cerm2004/> or contact General Chair David Malik at [malik@chem.iupui.edu](mailto:malik@chem.iupui.edu) or Program Chair Robert Pribush at [rpribush@butler.edu](mailto:rpribush@butler.edu).

Immediately following CRM is the joint Northwest/Rocky Mountain Regional Meeting (NORM/RMRM). Mark your calendar for June 6 – 9. NORM/RMRM will take place on the campus of the Utah State University, Logan, surrounded by the majestic mountains of that rugged western state. Symposia topics include Field-Effect Transistors Beyond Silicon; High Energy Materials, Metalloenzymes, New Frontiers in Chemical Bonding, Monitoring Air Pollutants, and Recent Advances in Drug Discovery. Visit their website for the details of the many topics to be presented at <http://www.chem.usu.edu/~alexandrova/ACS.php> or contact General Chair Steve Scheiner at [scheiner@cc.usu.edu](mailto:scheiner@cc.usu.edu) or Program Chair Alex Boldyrev at [boldyrev@cc.usu.edu](mailto:boldyrev@cc.usu.edu) for more information.

### *Question of the Month:*

**Who was the early (c.1000) alchemist whose vehement rejection of transmutation provided a foundation for the “modern” interpretation of alchemy by western renaissance alchemists (c. 1200)?**

*Come to the January Meeting for the Answer*

## ***This Month in Chemical History***

Harold Goldwhite, California State Univ., Los Angeles

[hgoldwh@calstatela.edu](mailto:hgoldwh@calstatela.edu)

*Prepared for SCALACS, the Journal of the Southern California, Orange County, and San Geronio Sections of the American Chemical Society*

In my last column I mentioned the importance that historians of chemistry accord textbooks of chemistry as embodying the accepted views, the paradigms, of the science of their eras. I focused some attention on a text published by Macmillan in New York in 1905, "Outlines of Inorganic Chemistry" authored by Frank Austin Gooch, Professor of Chemistry in Yale University, and Claude Frederick Walker, teacher of chemistry in the High School of Commerce of New York City. The discussion of the atom in that century-old textbook illustrated both recent discoveries, like that of the electron by J.J. Thomson, and a suspicion of the actual physical reality of atoms. In this month's column I will conclude my examination of this interesting textbook, which reveals clearly the state of chemical knowledge expected of students of 1905.

The mole concept is still well in the future for these students. The discussion of stoichiometry is couched instead in terms of equivalent weights or chemical equivalents as the text names the concept. Some of my readers may nod familiarly at this. In my high-school days that's how I learned to explore stoichiometry. I presume that my textbooks were a little out of date! Heat energy changes are expressed in calories and the rule of Dulong and Petit is given in terms of a constant of 6 as the product of the equivalent weight of an element, a small integer or fraction, and the specific heat. Note the omission of the atomic mass in this equation.

The chapter on molecules reflects the ambiguities of the discussion of atoms that I described in my previous column. The authors tiptoe around the question of whether molecules have a real physical existence. They stress that the molecular symbols of compounds, which we would call their molecular formulas, indicate the composition of a molecule of the compound. But while molecular symbols can generally be derived for gaseous compounds, in general no such conclusions can be drawn for pure solids or pure liquids. This leads to a discussion of valence and the introduction of graphic molecular symbols – graphic molecular formulas we would say. Here, too, the authors adopt a non-committal tone. "The symbol H-O-H is a molecular symbol representing the constitution and molecular weight of water in the gaseous condition. We have no right to assume that the molecule of water in the liquid condition or in the solid condition is represented by the symbol H<sub>2</sub>O. On the contrary we have evidence in certain physical relations which goes to show that the molecule weight of liquid water at 0°C may correspond to the symbol (H<sub>2</sub>O)<sub>4</sub>."

Recalling that this text was written before Werner enunciated his coordination theory it is not surprising that the discussion of coordination compounds is in terms of Jorgensen's chain theory. For example the "double" fluoride of aluminium (yes: the European spelling is preferred in 1905) and sodium, 3NaF·AlF<sub>3</sub> is written as (NaF=F-)<sub>3</sub>Al and the hydrate of aluminium chloride, AlCl<sub>3</sub>·6H<sub>2</sub>O, "from which no water may be expelled without hydrolytic decomposition of the salt" is shown as Al(OH<sub>2</sub>OH<sub>2</sub>Cl)<sub>3</sub> in which the Cl is separated from the Al by an OO chain.

In no way do I want to suggest, in this look back at an excellent text of 100 years ago, that we are somehow cleverer than its authors. This is an up-to-date book for 1905 with mention of such recently discovered phenomena as radioactivity. "The observation of Becquerel that compounds of uranium emit rays of peculiar properties has led to the discovery, by Mme. Curie, of the element radium, and to the announcement of other unconfirmed elements of similar character, such as polonium by Mme. Curie, actinium by Debierne, and carolinium by Baskerville."

Those of us who write textbooks should hope that readers of 100 years hence will look at our productions and say to themselves "Yes; they were as perceptive in 2003 as Gooch and Walker were in 1905."

## ***ACS Webcast Short Courses 2004***

Take an ACS Short Course without leaving your lab. Save the expense and inconvenience of travel, while benefiting from proven courses taught by expert instructors. Visit <http://chemistry.org/education/webcast.html> for more information and links to course descriptions. Space is limited, so register soon for the courses you want.

### **ACS Webcast Short Courses 2004 Schedule:**

#### **Basic Statistical Analysis of Laboratory Data**

May 7-June 4, 2004

#### **Effective Technical Writing**

January 30-February 27, 2004

October 18-November 15, 2004

#### **Infrared Spectral Interpretation, I**

2004 Dates To Be Announced

Part 2 will also debut in 2004

#### **Interpretation of Mass Spectra**

April 15-June 3, 2004

September 14-October 28, 2004

#### **Leadership Principles R&D Managers & Scientists 2004**

Dates To Be Announced

#### **Need More Information?**

Visit the ACS Webcast Short Courses homepage or send an e-mail to [shortcourses@acs.org](mailto:shortcourses@acs.org). Don't see the course you are looking for? Let us know what other courses you would like for us to offer.