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# THE OCTAGON

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Lehigh Valley Section, American Chemical Society

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## LVACS Meeting

The next meeting of the LVACS will be held on Tuesday, April 17, 2001 at Northampton Community College. The reception and dinner will be held in Alumni Hall 130 at the Gates Center, North Campus. This is a joint meeting with AIChE (American Institute of Chemical Engineers).

**Reception:** 5:00 – 6:00; fruit, cheeses and crackers will be served

**Dinner:** 6:00

**Business Meeting:** 7:15

**Talk:** 8:00

**Cost:** \$20(students \$10)

**Menu:**

Chicken Marsala or  
Roast Strip Loin of Beef  
Chausser

**Reservations:** Please contact Joan Tomino by noon, Thursday, April 12, 2001.

Call (610) 861-5313 or e-mail [esmith@northampton.edu](mailto:esmith@northampton.edu).

Please specify a choice of entree.

The ability to get another (or that first) job relies not only on your technical skills. Knowledge of the employment outlook for chemical scientists is crucial when seeking new job and career opportunities. Additionally, knowing how to keep yourself marketable is knowing how to keep yourself employable. In this presentation, Ms. Parr will report on recent data collected by the ACS Department of Career Services about chemists' salaries and employment trends and about skills employers are seeking in their employees. Participants will be introduced to the many career resources the ACS makes available to members and student affiliates. Regardless of where you are in your career, there is something for you from Career Services.

### Author

Jean Parr is Head of the ACS Department of Career Services. In this capacity she directs the activities of the Society's employment services and career development programs for ACS members including the Workforce Analysis Program, the Career Resource Center at national and regional ACS meetings, Career Consultant Program, Local Section Career Program, and career related workshops and publications. Additionally, she serves as staff liaison to the ACS Committee on Economic and Professional Affairs and is a member of the Board of Directors of the Commission on Professionals in Science and Technology.

She has been with ACS since 1981, spending the first ten years at the Society in the Department of Government Relations and Science Policy reporting and analyzing science and education policy. From 1991-1997 she managed recruitment, retention and local section programs and services for members, heading up the ACS Department of Membership Activities. She received a BS in Plant Science from the University of Delaware.

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All applications for membership in the  
American Chemical Society should be  
sent to the Secretary at the address  
above. This publication, founded in  
1918, is devoted to the interests of the  
Lehigh Valley Section of the American  
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Local Section; subscription fee to  
non-members is \$1 yearly.

## January Minutes

called to order by Chair Dr. Paul Bouis at 7:35 PM on Wednesday, January 31, 2001. The meeting was hosted by Muhlenberg College on their campus. Dr. Bouis announced that the American Chemical Society is celebrating its 125<sup>th</sup> anniversary this year. The chair pointed out that there were 35 members in 1876 and the current number of members is over 160,000. Dr. Bouis announced the results of the section elections held last October. The next order of business was the approval of the minutes for the October meeting. They were unanimously accepted. Dr. Dan Zeroka, the treasurer, announced that the Merrill Lynch Ready Assets Trust Account contains \$30,020 and the checking account balance is \$6,715. The Merrill Lynch account experienced a +6 % rate of return for the year 2000. Dr. Bouis announced he is working on the annual report for the section that will be sent to National headquarters in mid February. The Foundation in Chemistry Award is in desperate need of an individual who will shepherd this scholarship. If you are interested, please contact any of the executive officers. The final announcement was news about Dr. Andy Gilicinski. His family has grown from two to three children. They recently adopted a third child.

The speaker, Ms. Janice Carlson, was introduced by Dr. Marsha Baar. The title of Ms. Carlson's talk was "Spectroscopy in the World of Art." The talk focused on how analytical chemists have become involved in art conservation and art restoration. The talk focused on Ms. Carlson's work at Winterthur Museum, where she currently heads Winterthur's Analytical Laboratory.

Ms. Carlson opened the talk by articulating the goals that art conservationists attempt to achieve in their profession. She then presented a brief narrative on how scientists have become involved with art restoration and

view on the formation of Winterthur and the analytical laboratory located there.

Ms. Carlson presented several case studies of work accomplished in the laboratory. The first case study involved examining the silver collection at Winterthur. By using energy-dispersive x-ray fluorescence analysis, it was determined that many of the objects within the collection were fakes. Their rationale for determining that objects were fakes is they did not contain either Au or Pb. Older silver objects contain trace amounts of these elements, but newer objects do not. The second case study involved a Pennsylvania German dower chest. It was thought to be a fake but hard proof was needed. Energy-dispersive x-ray fluorescence analysis was used to examine the paint on the chest and the brass handles for the presence of various elements. Scanning electron microscopy (SEM) was used to examine the layers of paint and the way the paint was applied to the chest. Fourier Transform Infrared (FTIR) spectroscopy was used to determine type of glue used. Finally, x-radiography was used to examine drill holes and a nail was removed to examine its appearance. From all of this information, it was determined the object was a fake.

At the end of the talk, Ms. Carlson answered several questions about her work. The chair thanked Ms. Carlson for her talk and the meeting was adjourned at 9:00 PM.

Respectfully submitted,  
Rolf Mayrhofer  
Secretary, LVACS

## Ad/Article Copy Policy

All articles of interest to LVACS members (local news, meeting details) will be printed in a priority basis over ad copy.

All ads for job openings and seminars with free admission that are of interest to members of the LVACS will be printed free of charge on a "space available" basis.

All ads for goods or services which are provided at a cost to the consumer and are of interest to LVACS members will be printed for a fee. To learn the fee structure, please contact the editor.

All article copy must be submitted at least 4 weeks prior to the upcoming meeting, although earlier submission is preferred. The preferred format for copy submission is as a Microsoft Word or Microsoft Works for Windows file, a .gif or .jpg file, or an e-mail. Hard copy may be mailed or faxed to the editor.

### Share Your News with the LVAS

Your news is of interest to the LVACS! If you (or one of your students) gives a presentation or poster at a meeting of note—particularly an ACS meeting—we want to know. Please send a photo, the title of the presentation, and if desired a 200 word abstract to the editor.

Articles about student research projects, of historical interest to the LVACS, book and software reviews are also welcome, as well as URL's of web sites of chemical interest.

## Chemistry in the Valley

by Paul Bouis

the Lehigh Valley. How many columns appear depends in large part on you the reader. If you like the column and, if you help by suggesting topics, facilitating or arranging for visits and interviews for example then this column will thrive. If you do not it will wither and die, because I am just not that creative all by myself.

What are my qualifications for writing this column? Born in France, I learned to write from the nuns (I have the ruler scratches to prove it), and wrote for the sports department at VMI (where by the way, I received a presidential pardon). What is VMI? That's the Virginia Military Institute where females are now enrolled (and it turns out they can get pregnant). I have authored and been the editor for some chemistry and engineering books. Nevertheless, my main qualification is, no one else is doing it.

Chemistry in the Lehigh Valley has a long and storied past. Making of steel and cement was and is chemistry on a huge scale. However, it is no more important in the overall

which is chemistry on the micro scale. One ton of steel, one ton of cement, or one pound of semiconductor devices; which has the greater economic impact? Which has the greater environmental impact? Which has the greater social impact? Yet, all three are vital to the growth and prosperity of each other.

Today the Lehigh Valley Section of the American Chemical Society has over nine hundred dues paying members. You had better believe that in a group that size there are probably a bunch of fascinating, interesting, dramatic and humorous stories—experiments gone awry, the joy of discovery, quick thinking fire fighting techniques. You could share with us, so why don't you? I will incorporate them into this column, and if you do not want to take credit for them, no problem, I will. ☺

You can contact Dr. Bouis with your stories at [pbmbi@earthlink.net](mailto:pbmbi@earthlink.net) or 908-859-9443.

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## February Minutes

of the American Chemical Society in its 125th anniversary year was held on Wednesday, February twenty-first, at Moravian College with approximately 20 in attendance.

The business meeting began with a presentation of plaques in recognition and gratitude to past chairs of the section by Paul Bouis. Recent chairs so recognized were Roger Egolf and Paul Bouis. The second order of business was the announcement that after a recent period of latency, letters have been sent out to area high school teachers regarding the section-sponsored Foundation in Chemistry Scholarship. The chair is looking for volunteers to review applications.

The treasurer reported that the Merrill Lynch ready assets account had a current balance of \$30,253.04 and the section's checking account balance stood at \$6625.53. It was also reported that the Merrill Lynch account experienced a 6% return last year in spite of the woes of the market. It was announced that the next meeting of the section will be March sixteenth at Desales University and will be the High School Teachers' Recognition meeting. The following meeting will be held

ton Community College and will include the yearly college student awards.

The section's annual report will be filed by the revised February twenty-eighth deadline. Finally the National Olympiad will be held March 24th and April 21st at Muhlenberg College.

The speaker for the evening was James B. Foresman of York College, who spoke about "Exploring Chemistry Using Modern Computational Techniques". The slides from his presentation can be viewed at the website [http://goose.ycp.edu/~jfore\\_sma](http://goose.ycp.edu/~jfore_sma).

Dr. Foresman started with an introduction to the possible chemical parameters (from energies of reactions to ultraviolet spectra) that could be calculated with modern computational techniques. These techniques include variational principles based calculations (Hartree-Fock), and the Density Functional Approach. Where in the past these two techniques had often been used in competition, more recently they have been blended in some methods. This blending takes advantage of the fact that as molecular size increases while the Hartree-Fock techniques tend to give energies which are

to undercut the experimentally determined value.

Dr. Foresman then went on to show a number of examples where computational techniques can be used to further understand the chemistry involved or to highlight the differences between different computational methods. As one example he showed a series of calculations of the difference in energy between azulene and naphthalene. Other examples were an examination of reaction pathways of rearrangements involving molecular nitrogen expulsion and some calculations involving the Menschutkin Reaction. To show the computational ability to predict and aid in the interpretation of spectra Dr. Foresman showed calculations involving C-13 chemical shifts of o-nitroaniline and the UV spectrum of a cobalt complex.

Respectfully submitted,  
Dan Blanchard  
Substitute Secretary,  
LVACS

## March Minutes

American Chemical Society in its 125<sup>th</sup> anniversary year was held on Friday, March sixteenth, at Desales University (formerly Allentown College). The business meeting began with a welcome to the high school teachers in attendance for this high school chemistry teachers' appreciation night. The president expressed gratitude for a worthy job well done. He pointed to the recognition local chemistry teachers are receiving in the Morning Call and in the national press.

The second order of business was to advertise the section-sponsored Foundation in Chemistry Scholarship. This scholarship is available to greater Lehigh Valley high school seniors planning to attend college in the Lehigh valley. Applications received so far are minimal for this award of one thousand dollars.

The president also solicited help in finding a willing coordinator for the section's celebration of the 2001 National Chemistry Week. This is an open-ended position which can involve as much or as little as an individual would like to commit.

Dan Blanchard announced a Science Open House to be held at Kutztown University April 28, 2001. Further information can be obtained by contacting Dan. Contrary to last month's assurances, the approval of minutes from the last few meeting was postponed yet again. The treasurer reported that the Merrill Lynch Ready Assets Account currently has a balance of \$30,390.05 and the section's checking account has a balance of \$5,277.95. He also noted that the section has of late

Academy of Sciences Savings Bonds Awards, and \$250 to the Reading-Berks Science and Engineering Fair.

It was announced that the National Olympiad will be held April twenty-first at Muhlenberg College with prescreening March 24th. It was noted that last year there was a student from Emmaus High School who did quite well in this yearly competition.

The final order of business was an announcement of the spring TEACHEM meeting on Wednesday, March 28 at 7:00 PM in Room 8 of Dieruff High School in Allentown, PA. The program for the evening will consist of two parts. The first part will be a discussion of the career opportunities of a chemical technician led by Liz Smith from Northampton Community College and Deb Kantner from Air Products. The second part will be a discussion of the problems and needs facing high school chemistry teachers today, and how TEACHEM can provide programs to help address these areas.

The speaker for the evening was Lance Lenhart of Saucon Valley High School. Mr. Lenhart teaches courses in Ecology, Advanced Ecology and Bioethics. He is also the advisor for the Envirothon team as well as field editor for Rodale Press' Scuba Diving.

The title of his talk was "Chemical Links in Ecological Studies" and he used three examples to demonstrate how his efforts with high school students have uncovered these links. The first was a study of narrow, deep Boeri Lake in the Caribbean. Boeri lake

does not circulate top to bottom and has a lower layer of high salinity. Lenhart and his students were able to confirm that the lake is not meromictic using a probe that measures environmental factors such as pH, dissolved oxygen, and specific conductance. It turns out Boeri Lake is not meromictic due to the regular draining of water through cracks in its bottom.

The second example was a pristine lake about an hour and a half north of Allentown. Monitoring of this lake revealed an increase in pH in a lower layer of the lake. This was conjectured to be the result of sulfate reduction occurring in this lower layer. Monitoring of the lake in November revealed a mixing of the entire lake contents, which corresponded to an algal bloom.

The third example of the connection between chemistry and ecology that was presented involved springs located around the Saucon valley. The pH of the springs, being a result of the rock from which they issue, had a profound influence on the abundance and type of species present. High pH springs from carbonate rocks tend to favor insect-larvae-eating crustaceans while higher pH springs tend to be a safer haven for insects.

With these three examples Mr. Lenhart showed that high school students can participate in important ecological research which ties chemical concepts to biological principles.

Respectfully submitted,  
Dan Blanchard  
Substitute Secretary, LVACS

# THE OCTAGON

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College. Details will be in the next  
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