

THE OCTAGON



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Lehigh Valley Section of the American Chemical Society

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March Meeting Announcement: 802nd LVACS Meeting: Lafayette College

Date: Friday, March 28

Location: Lafayette College

High School Teacher's Night

Reception, Dinner, Meeting and Lecture: Activities begin at 6:00 PM. Campus locations TBA

Menu: TBA

Contact: TBA

Please see <http://www.esu.edu/lvacs/meetings.html> for An update will be posted as soon as the information is made available!

Directions: visit the Lafayette College website at www.lafayette.edu

Speaker: Professor John Chen, Dean Emeritus Lehigh University

Talk: *The World's Energy and Environmental Challenges*

Abstract:

Daily we see headlines, news articles, and commentaries about energy and environmental issues. Political candidates all propose to "address" the problems, What are the facts behind the headlines? What are the fundamental parameters that will determine the future state? Is there truly a problem? Is so, what are some

potential fall-outs? Can conservation and/or alternate energy sources be the answer? We'll try to get a grasp on these questions, and speculate together about conditions that are likely to impact our lives, our professions, our society, and our environment..

Mark you Calendars ! For the April LVACS meeting

April 22 at Moravian College

**Student Awards and Poster Session and Special Guest
Madeline Jacobs, Executive Director of the American**



2007-2008 LVACS Meetings

April 22- Moravian College -
Student Awards and Poster Session
May - East Stroudsburg University

Chem Shorts for Kids -

THE FUNGUS AMONG US

Reprinted with permission from Dr. Kathleen A. Carrado, Chicago Local Section. An archive of all previously published ChemShorts is available online at <http://membership.acs.org/C/Chicago/home.html>.

Kids, our planet is made up of millions of different species which try to live together. Man is a species, just as animals like dogs, cats and fish are. Some species are so small that you can't even see them. Today you'll learn about fungus and microbes ("small life")

First, put a piece of bread and a teaspoon of water into a ziploc plastic bag, seal it, and let it sit at room temperature for 3 or 4 days. You'll notice that the bread is now covered in green mold. Mold is a furry growth of fungus found on the surfaces of decaying food or in moist, warm places. A fungus is a tiny non-flowering plant with no chlorophyll, roots, stems, or leaves. The fungus could have gotten onto the bread by a variety of means, such as transfer from your hands.

Secondly, we'll do a test for microbes that cause feet to smell bad. Feet smell bad when very tiny plants or animals grow on our skin. Have an adult boil 1/2 cup of water. Sprinkle in 4 envelopes of unflavored gelatin and dissolve it. Pour this into a clean mayonnaise jar and set it on its side (let the extra pour out and dispose of it). Put on sneakers without socks and go play outside. After about 3 hours the gelatin should be hard and your feet should be smelly. Take a swab and rub it between all your toes. Carefully brush the gelatin with the cotton tip in long strokes. Close the jar and put it in a warm dark place for 4 days.

Inside your shoes it's dark, warm, and damp. This is perfect for microbes, which will grow and grow. The mayo jar is similar, and the microbes survive by eating the gelatin. You'll see grooves in the gelatin after 4 days showing where the microbes are living and eating. If you open it, you'll smell something much worse than smelly feet. It smells really horrible. Either dispose of the jar intact or, if you want to save it, fill it with hot water and then wash with soap and water. DON'T touch inside the jar at first, and keep washing your hands.

You can collect microbes from many places, such as from the drinking fountain, the cafeteria, or even from fellow classmates at school!

SPICY PERFUME

Kids, how would you like to make your own bottle of perfume? If you don't use it yourself, it would make a nice Mother's Day gift...

You'll need a small baby food jar with a lid, some rubbing alcohol, and 15 whole cloves. Place the cloves in the jar and half fill the jar with the rubbing alcohol. Secure the lid and let the jar sit for seven days. When the time is up, test the perfume using your finger to dab a few drops of the alcohol on your wrist. Let the alcohol evaporate and then smell your wrist. Your skin should have a faint, spicy aroma.

What's happening here? The alcohol dissolves the aromatic oil in the cloves. When the alcohol evaporates from the wrist, the scented oil is left on the skin. Rubbing alcohol is a dilute solution of isopropanol, or isopropyl alcohol, in water. Perfumes are made by dissolving oils from flowers and other aromatic materials in alcohol. See the March 1996 ChemShorts on "Sugar and Spice" for more information on spices. For example, cloves are small, round, dark brown, dried flower-buds grown in places like Zanzibar and Sumatra. The aromatic oil of cloves is called eugenol (C₁₀H₁₂O₂). Cloves, like many spices, are used in cooking and baking to enhance flavors. Cloves are often used when baking a ham, for example. Perhaps some cloves are left over from your Easter ham that can be used for your Mother's Day gift!

Reference: "Chemistry for Every Kid" by Janice VanCleave, NY: Wiley Publ., 1989, p. 172.

The Elementary Education Committee of the ACS Chicago Section presents this column. They hope that it will reach young children and help increase their science literacy. Please share with children and local teachers. Please note: All chemicals and experiments can entail an element of risk, and no experiments should be performed without proper adult supervision.

REVISED ANNOUNCEMENT!

LVACS Scholarship Opportunities Organic Chemistry Scholarship

The Lehigh Valley Section of the American Chemical Society's Scholarship for Organic Chemistry Competition takes place on Saturday April 28, at Moravian College Bethlehem, PA, Collier Hall of Science Dana Lecture Hall (<http://www.moravian.edu/campusMaps/northBuildings/collier.htm>, 9:00AM-10:30AM. The competition entails taking the ACS Organic Chemistry Examination (50%), a letter of recommendation from the student's organic chemistry professor (10%), and an essay on a topic in organic chemistry (40%). The value of the scholarship is \$1000. Additionally the top essay will receive \$100. Details for the letter and the essay follow below. The student should be below the junior level currently enrolled in organic chemistry attending college at an institution in the section. The student also must be a chemistry biochemistry or chemical engineering major. Students should indicate their interest in the scholarship in advance to John Freeman at 522 Raub St Easton PA 18042 , jcf2@rcn.com

Letters of Recommendation: When writing a letter of recommendation on behalf of a student who is applying for Lehigh Valley ACS Scholarship, please speak to the student's skills in lecture and laboratory from Organic Chemistry I and Organic Chemistry II. In addition to performance on written exams and a course grade for Organic Chemistry I, it would be helpful to comment on the student's proficiency in organic lab and his or her participation in recitations. We would also like, if possible, the letter to address the students' quantitative skills by commenting on their performance in quantitative analysis or its local equivalent. Please place your letter of recommendation in a sealed plain envelope and place your signature over the seal. The student will be required to bring the sealed letter to the ACS Organic Chemistry Standardized Exam on April 26, 2008.

Essays:

The student should choose a molecule, a group of molecules or a process in organic chemistry including its synthesis or structural elucidation for a molecule or a representative molecule of a group or a number of examples and mechanism for a process. Judicious use of structures is expected. The essay should address the impact of the molecule or process on society, and the student's personal interest in the process or molecule. The

essay should run approximately 3 pages \pm a quarter page of text not including figures in times new roman 12 point font or equivalent with 1 inch margins on all sides. The students name a brief title and page number should appear in the header of each page. An additional page with references should be included. References should be presented as end notes according to the style of the Journal of Biological chemistry (See <http://www.jbc.org/misc/ifora.shtml>).

The essay will be rated on:

- 20% - Ease of reading, including grammar, spelling, and logical flow of the material.
- 40% - Appropriate depth of coverage on the development of the molecule. We expect to see writing at the level of Chemical and Engineering news or Chemical Reviews.
- 30% - Appropriate depth of coverage on the impact on society and student's interest.
- 10% - Appropriate use of references.
- 5% - Adherence to the formatting rules provided.

A Nobel Biography - Dorothy Crowfoot-Hodgkin Nobel Prize in Chemistry 1964



Dorothy Crowfoot was born in Cairo on May 12th, 1910 where her father, John Winter Crowfoot, was working in the Egyptian Education Service. He moved soon afterwards to the Sudan, where he later became both Director of Education and of Antiquities; Dorothy visited the Sudan as a girl in 1923, and acquired a strong affection for the country. After his retirement from the Sudan in 1926, her father gave most of his time to archaeology, working for some years as Director of the British School of Archaeology in Jerusalem and carrying out excavations on Mount Ophel, at Jerash, Bosra and Samaria.

Her mother, Grace Mary Crowfoot (born Hood) was actively involved in all her father's work, and became an authority in her own right on early weaving techniques. She was also a very good botanist and drew in her spare time the illustrations to the official Flora of the Sudan. Dorothy Crowfoot spent one season between school and university with her parents, excavating at Jerash and drawing mosaic pavements, and she enjoyed the experience so much, that she seriously considered

giving up chemistry for archaeology.

She became interested in chemistry and in crystals at about the age of 10, and this interest was encouraged by Dr. A.F. Joseph, a friend of her parents in the Sudan, who gave her chemicals and helped her during her stay there to analyse ilmenite. Most of her childhood she spent with her sisters at Geldeston in Norfolk, from where she went by day to the Sir John Leman School, Beccles, from 1921-28. One other girl, Norah Pusey, and Dorothy Crowfoot were allowed to join the boys doing chemistry at school, with Miss Deeley as their teacher; by the end of her school career, she had decided to study chemistry and possibly biochemistry at university.

She went to Oxford and Somerville College from 1928-32 and became devoted to Margery Fry, then Principal of the College. For a brief time during her first year, she combined archaeology and chemistry, analysing glass tesserae from Jerash with E.G.J. Hartley. She attended the special course in crystallography and decided, following strong advice from F.M. Brewer, who was then her tutor, to do research in X-ray crystallography. This she began for part II Chemistry, working with H.M. Powell, as his first research student on thallium dialkyl halides, after a brief summer visit to Professor Victor Goldschmidt's laboratory in Heidelberg.

Her going to Cambridge from Oxford to work with J.D. Bernal followed from a chance meeting in a train between Dr. A.F. Joseph and Professor Lowry. Dorothy Crowfoot was very pleased with the idea; she had heard Bernal lecture on metals in Oxford and became, as a result, for a time, unexpectedly interested in metals; the fact that in 1932 he was turning towards sterols, settled her course.

She spent two happy years in Cambridge, making many friends and exploring with Bernal a variety of problems. She was financed by her aunt, Dorothy Hood, who had paid all her college bills, and by a £75 scholarship from Somerville. In 1933, Somerville, gave her a research fellowship, to be held for one year at Cambridge and the second at Oxford. She returned to Somerville and Oxford in 1934 and she has remained there, except for brief intervals, ever since. Most of her working life, she spent as Official Fellow and Tutor in Natural Science at Somerville, responsible mainly for teaching chemistry for the women's colleges. She became a University lecturer and demonstrator in 1946, University Reader in X-ray Crystallography in 1956 and Wolfson Research Professor of the Royal Society in 1960. She worked at first in the Department of Mineralogy and Crystallography where H.L. Bowman was professor. In 1944 the department was divided and Dr. Crowfoot continued in the subdepartment of Chemical Crystallography, with H.M. Powell as Reader under Professor C.N. Hinshelwood.

When she returned to Oxford in 1934, she started to collect money for X-ray apparatus with the help of Sir Robert Robinson. Later she received much research assistance from the Rockefeller and Nuffield Foundations. She continued the research that was begun at Cambridge with Bernal on the sterols and on other biologically interesting molecules, including insulin, at first with one or two research students only. They were housed until 1958 in scattered rooms in the University museum. Their researches on penicillin began in 1942 during the war, and on vitamin B12 in 1948. Her research group grew slowly and has always been a somewhat casual organisation of students and visitors from various universities, working principally on the X-ray analysis of natural products.

Dorothy Hodgkin took part in the meetings in 1946 which led to the foundation of the International Union of Crystallography and she has visited for scientific purposes many countries, including China, the USA and the USSR. She was elected a Fellow of the Royal Society in 1947, a foreign member of the Royal Netherlands Academy of Sciences in 1956, and of the American Academy of Arts and Sciences (Boston) in 1958. In 1937 she married Thomas Hodgkin, son of one historian and grandson of two others, whose main field of interest has been the history and politics of Africa and the Arab world, and who is at present Director of the Institute of African Studies at the University of Ghana, where part of her own working life is also spent. They have three children and three grandchildren. Their elder son is a mathematician, now teaching for a year at the University of Algiers, before taking up a permanent post at the new University of Warwick. Their daughter (like many of her ancestors) is an historian-teaching at girls' secondary school in Zambia. Their younger son has spent a pre-University year in India before going to Newcastle to study Botany, and eventually Agriculture. So at the present moment they are a somewhat dispersed family.

From Nobel Lectures, Chemistry 1963-1970, Elsevier Publishing Company, Amsterdam, 1972

This Month in Chemical History -

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

Since 1903 the Chemical Society of London has been publishing annual reports on the progress of chemistry. This series was possibly based on the example of Berzelius, the great Swedish chemist, who for many years early in the 19th. Century single-handedly compiled his

annual personal review of significant work in chemistry. We are near the beginning of a new year, and I have before me Volume V of the Chemical Society's reports for the year 1908 (published, naturally, in 1909) just 100 years ago. It is striking that this report is economically contained in fewer than 300 pages including both name and subject indexes. I plan to devote this column and the next to an overview of my selections from this report.

But before I get into specifics, let's examine the historical context. The electron was discovered by Thomson only ten years ago. Radioactivity is, if you'll pardon the pun, the hot new research area. Rutherford and his students Geiger and Marsden have just begun their experiments on the interactions between alpha particles and metal foils that will lead to the concept of the nuclear atom. Gilbert N. Lewis is sketching in his notebook at Berkeley his first notions of the octet rule.

In this context the comments by Alexander Finlay on the structures of atoms make fascinating reading. He begins at the beginning: the evolution of the heavier elements from lighter ones as deduced from the spectra of nebulae. "...[These] consist of lines recognizable as those of hydrogen and helium, as well as two other lines not belonging to any known substance. From these four initial substances or protons [note the different meaning of the word from our current usage; hg] all the other elements are regarded as being evolved by the condensation round these protons (themselves formed of corpuscles) of corpuscles so as to form stable systems capable of separate existence. Whatever the internal structure of these atoms may be, they may be regarded as being built up of concentric "rings", or assemblages of corpuscles."

Finlay is here drawing on theoretical speculations of A.C. and A.E. Jessup which led them to propose the existence of two new elements, as yet undiscovered terrestrially, which they called proto-glucinum (glucinum was the generally accepted name for the element we now call beryllium) and proto-boron. These elements occupied the first row of the Jessup's periodic table at the head of Groups 2 and 3.

Turning from the evolution of the elements to the electronic theory in chemistry we see again the early stirrings of what would become a new view of chemical reactivity and reactions. Sir William Ramsay, discoverer of the noble gases, and in 1908 President of the Chemical Society, outlined his views in that year's Presidential Address. "Electrons are atoms of the chemical element electricity; they possess mass; they form compounds with other elements; they are known in the free state, that is, as molecules; they serve as the 'bonds of union' between atom and atom. The electron may be

assigned the symbol E". In Ramsay's view the reaction forming sodium chloride from its elements can be symbolized as $E\text{Na} + \text{Cl} = \text{NaECl}$, with the electron E as the bond of union between the sodium and chlorine. "On solution the electron remains with the chlorine giving chloridion." Arrhenius' views on dissociation into ions of electrolytes in aqueous solution, first enunciated in his thesis some 20 years earlier, are by now widely accepted; but not yet carried over to the structures of ionic solids. That had to wait another decade for the Braggs' X-ray diffraction results.

LVACS Officers - 2008

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Undergraduate Research Poster Session

Sponsored by
The Lehigh Valley Section of The American Chemical Society

April 22, 2008

Moravian College

5:00-6:15 PM

Preceding the 803rd meeting of the Lehigh Valley Section of the ACS
(Meeting details will be published in the April Octagon)

Who may participate?

Undergraduates attending a college or university within the Lehigh Valley section of the ACS. Research may have been done at the student's home institution with a chemistry or chemical engineering faculty member or during a summer research experience elsewhere.

To participate

Submit an abstract by **April 14, 2008**, as a Microsoft Word attachment to an email to cbllibby@cs.moravian.edu. Please indicate "LVACS Poster Session" in the subject line of your email header. Early submission is encouraged.

Abstract format

Times font

TITLE (all capitals)

Authors' names, authors' institutions and addresses

Abstract of research, 150 words maximum

Travel Award

One poster session participant will be chosen to receive a \$250 award to support travel to present research at a national or regional ACS or AIChE meeting.

Other requirements and information

An exciting guest will be attending the poster session and giving the after dinner address: Madeline Jacobs, Executive Director of the American Chemical Society.

Poster presenters must provide their own pins and poster board. Easels will be provided for displaying the posters.

Abstracts will be acknowledged by an email message that will include details about meeting room, set-up time, and the travel award.

If you do not get a response within two days of abstract submission or you have any other

Undergraduate Research



Travel Award

\$250



Sponsored by
The Lehigh Valley Section of The American Chemical Society

Purpose

The prize must be used to help defray expenses associated with presentation of undergraduate research at a national or regional meeting.

Eligibility

Student must present research at the Undergraduate Research Poster Session, to be held at the April 22, 2008, meeting of the Lehigh Valley ACS. Undergraduate Research Poster Session details available at <http://www.esu.edu/lvacs>. The winner will be chosen by lottery.

What the award can be used for

The award must be used between April 6, 2008* and April 21, 2009 to pay for travel, registration, or accommodations associated with attending a national or regional American Chemical Society or American Institute of Chemical Engineers (AIChE) conference to present research carried out as an undergraduate (or the summer after you graduate if you receive your B.A. or B.S. this spring).

Ask your research advisor if you might present at these meetings:

MARM, May 17-21, Bayside, NY <http://www.marmacs.org/2008>, abstract deadline March 15 or other regional American Chemical Society meetings, see <http://www.acs.org>
236th National Meeting of the ACS, Aug. 17-21, 2008, Philadelphia <http://www.acs.org>, abstract deadlines soon, about March 17 2008 (depends on division)
237th National Meeting of the ACS, March 22-26, 2009, Salt Lake City <http://www.acs.org>
AIChE 2008 Annual Meeting, Nov. 16-21, Philadelphia, <http://www.aiche.org/conferences>
AIChE regional student conferences for 2008 and 2009 described at <http://www.aiche.org/Students/Conferences/index.aspx>

*including 235th National Meeting of the ACS and the AIChE Spring 2008 National Meeting, both April 6-10, 2008, New Orleans

This announcement can be found at

<http://www.esu.edu/lvacs/>

American Chemical Society • Women Chemists Committee
Cosponsored Locally with AiChE, the Greater Houston Section,
and the Houston Neptunium Chapter of Iota Sigma Pi



presents

The WCC 2008 Joint Reception and Committee Open Meeting *“Rebuilding Rich Connections”*

Saturday • April 5, 2008

From 5:00pm to 6:30pm at the

New Orleans Marriott on Canal

La Galerie 6
555 Canal Street
New Orleans, LA 70130



Highlights of this event include:

- WCC Chair, Amber Hinkle, will provide a brief update on the status of WCC programs
- Information on events of interest to women at the National ACS Meeting
- Poster display and discussion of innovative programs
- Music played by local chemists in partnership with AiChE



Please join us to share good food and non-alcoholic beverages. This meeting is the perfect opportunity to network with fellow women scientists and engineers from around the country.

All women scientists and engineers are invited to attend to see posters and participate in discussions of innovative programs.