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SCALACS

March 2012

A Joint Publication of the Southern California and
San Gorgonio Sections of the American Chemical Society

Southern California Section
Women Chemists Committee
Dinner Meeting

"Water in the Solar System"
Patricia Beauchamp
Jet Propulsion Laboratory
California Institute of Technology

Thursday, March 1st, 2012
Almansor Court, Alhambra

See Page 3

Southern California Section
Younger Chemists Committee Event

Eagle Rock Brewery Tour
March 11th, 2012

See Page 5

San Gorgonio Section

Section Message

See Page 12

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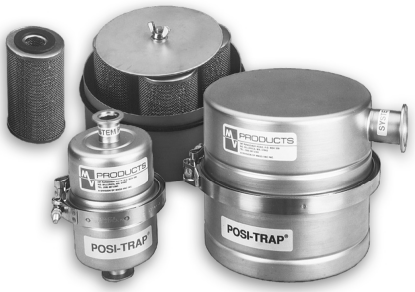

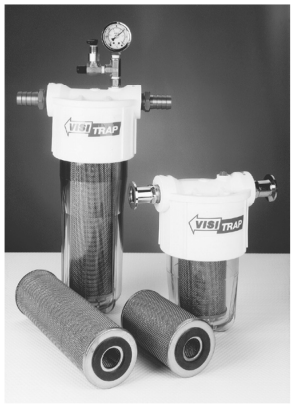

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TABLE OF CONTENTS

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Southern California Section

Chair's Message

Chemistry For Life!

ACS is world-renowned for disseminating reliable information and is constantly finding new and innovative ways to do it. ACS continues to thrive because its members are *dynamic*; they go beyond what is required to advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people. Our local section members such as Senior Chemists chair Henry Abrash are encouraging the next generation to take ownership of chemistry. Pictured above is our newest generation of Chemistry Ambassadors from Verbum Dei High School in Los Angeles. In partnership with the California Science Center and the ACS Mystery of Matter museum collaboration these students are engaging broad audiences about the wonders of chemistry.

ACS members are *collaborative* and one only needs to look as far as our local section leadership for evidence. In 2012 SCALACS committee chairs are planning many exciting activities. WCC chair Veronica Jaramillo is planning our March 1st dinner meeting "Water in the Solar System featuring JPL scientist Dr. Patricia M. Beauchamp. This talk will be an excellent follow-up to International Year of Chemistry and its overall theme of Water. Education chair Michael Morgan is working on reviving our annual meeting for high school chemistry educators. Currently this meeting is planned for the fall of 2012 at Occidental College. YCC chair Derek Marin is planning a tour of the Eagle Rock Brewery and he is working with Chemistry Olympiad chair Jerry Delker to plan our annual Boy Scout Chemistry Merit Badge event. Chemistry for life!

Cheers,

Robert de Groot, Chair
rdegroot@oxy.edu

Southern California Section

Section Dinner Meeting

Thursday, March 1st, 2012

Almansor Court

700 S. Almansor Street
Alhambra, CA 91801
626 570-4600

"Water in the Solar System"

Patricia Beauchamp
Jet Propulsion Laboratory
California Institute of Technology

Check-in: 6:00 pm
Dinner: 7:00 pm
Presentation: 8:00 pm

The Women Chemists Committee of the Southern California Section is sponsoring this event, but all are welcome. It promises to be a great meeting!

Abstract: Water plays two fundamental roles in the solar system. As well as being ubiquitous on Earth, it is a building block of comets, the numerous icy moons in the outer solar system, the gas giant planets and most of the dwarf planets. It is also the critical factor for life as we know it and an understanding of the properties of water on solar system bodies guides their characterization as potential abodes of life.

Biography: Dr. Beauchamp joined the Jet Propulsion Laboratory in Pasadena, California in 1992 after a decade in surface science research at Aerojet Electrosystems Co. She is currently working on developing future Outer Planet Missions and was responsible for coordinating the effort to define the scientific rationale for the next flagship mission to Titan, the instruments needed and how the data could be obtained that would satisfy those requirements. She is also a Co-I and theme lead on the NASA Astrobiology Institute "Titan as a Prebiotic Chemical System". Prior to that she managed the Planetary Instrument Development office and led the Center for In-Situ Exploration and Sample Return (CISSR) in the Engineering and Science Directorate. She was Project Manager for the Miniature Integrated
(Continued on Page 4)

Southern California Section

Dinner Meeting (Continued from Page 3)

Camera Spectrometer, which flew on the New Millennium DS1 mission in 1998 and has held several technical and management positions in the Observational Instruments Division.

Dr. Beauchamp obtained her Ph.D. in Chemistry from Caltech followed by post-doctoral research in Chemical Engineering at Caltech, where she conducted fundamental investigations of chemical reactions on single crystal surfaces. She received her B.S. in Chemistry and B.A. in Mathematics with honors from California State University, Fullerton in 1976. She has received a number of student and professional awards, most recently JPL's highest Explorer award, and is the author or co-author of over forty scientific publications, a patent, and numerous government technical reports.

Cost: There is a choice of entrée of Chicken Dijonaise or Kalbi Top Sirloin with spicy Korean sauce. The cost is $33 including salad, dessert, tax, tip and wine (cash or check at the door).

Reservations: Please call Nancy Paradiso in the Section Office at (310) 327 – 1216 or email office@scalacs.org by Monday, February 27, 2012. *Note: Please honor your reservation. If you make a reservation and do not attend, you will be liable for the cost of the dinner.*

Directions: From Downtown Los Angeles, Take the 10 fwy. East to Garfield exit towards Alhambra (North) to Valley Blvd. go right to Almansor go left. Almansor Court is at the end of Almansor Street on the right hand side.

From San Bernardino Take the 10 fwy. west to Garfield exit towards Alhambra (North) to Valley Blvd. go right to Almansor go left. Almansor Court is at the end of Almansor Street on the right hand side.

From the 210 fwy. (East or West) exit on Fair Oaks go south to Huntington go left to Garfield go left to Valley Blvd. Go left to Almansor go left. Almansor Court is at the end of Almansor Street on the right hand side.

From Orange County 605 fwy. (North) to the 10 fwy. (West) to Garfield exit towards Alhambra (North) to Valley Blvd. go right to Almansor go left. Almansor Court is at the end of Almansor Street on the right hand side.

Southern California Section

Younger Chemists Committee Event

Sunday, March 11, 2:00 pm

Eagle Rock Brewery Tour
3056 Roswell Street
Los Angeles, CA 90065

Come join the YCC for a tour and tasting at the Eagle Rock Brewery. This is a small scale micro brewery dedicated to the production of unique artisanal beers. Opened in 2010, it is the first brewery to set up operations in Los Angeles in over 60 years.

Check-in begins at 2:00 pm but it is recommended you show up earlier as the tap room location is small and seating is limited. The tour begins promptly at 2:30 pm and lasts a minimum of 15 minutes. There is no cost for the tour. A sample flight of their beer is around $7.00 and they have many other guest taps available. You must be 21 years or older to attend. Food is not sold in the tap room. The brewery encourages you to bring your own food or to purchase items from the Flat Iron food truck (http://flatirontruck.com/) that is serving brunch on the day of our tour.

Parking near the brewery is limited as the parking lot is small and not typically available when the food truck is present. Street parking along Roswell St. is available but fills up quickly. If none is available, it is recommended that you park along Fletcher Dr. instead of in the lot across from the brewery as you may be towed.

Reservations: If you are interested in attending or would like more information, **please e-mail Derek Marin at Derek.Marin@DunnEdwards.com before March 5th.** For more information on the brewery please look at their website http://eaglerockbrewery.com/

Southern California Section

Undergraduate Research Conference

The 2012 Southern California Undergraduate Research Conference in Chemistry and Biochemistry will be held at the California State University, Channel Islands on **Saturday, April 7th, 2012**. **Registration opened on February 12th and closes on March 15th**. For registration, abstract submission and meeting information, please contact Blake Gillespie via email at Blake.Gillespie@csuci.edu or go to the website, http://chemistry.csuci.edu/scurccb/index.htm.

Expanding Your Horizons Conference

The Expanding Your Horizons Conference for middle school girls will take place on **March 17, 2012** from 8:45 am to 2:45 pm at Mount St. Mary's College Doheny Campus, Los Angeles.

Expanding Your Horizons is a career day supported by SCALACS and organized by MATH/SCIENCE INTERCHANGE to inform young women about careers in math- and science-related fields. The conference is intended for girls in grades 5-8. There are hands-on workshops for girls as well as parents, teachers and counselors. For more information, please go to www.expandingyourhorizonsla.org. Since this is a conference for girls, women volunteers to help out for the day are very welcome. If you would like to volunteer, please contact Dr. Eleanor Siebert at esiebert@msmc.la.edu.

High School Olympiad

Local competition for the ACS High School Chemistry Olympiad will be **March 14th and 15th** at various high schools around Los Angeles County. Winners of the local exam will be invited to participate in the National Exam on **April 21st** for a chance to be part of the International Olympiad in July in Washington DC. The High School Awards Banquet is **May 18th** at Mount St. Mary's College. Encourage your local high school to participate. Contact the office for registration forms or visit our website at www.scalacs.org. The deadline for registration is March 2nd.

Southern California Section

Outreach Activities

Late April 2011 - Chemists Celebrate Earth Day Activities at the California Science Center. Chemists Celebrate Earth Day 2012 International Year of Chemistry - Environment Activities at the California Science Center, 700 Exposition Park Drive, Los Angeles, CA 90037, website: http://www.californiasciencecenter.org. Join volunteers at the California Science Center for CCED activities. Dates and Times for this event will be listed on the SCALACS website. For more information, or if you would like to volunteer please contact Henry Abrash at: abrash8@aol.com.

Save the Date! Saturday, June 2nd—Chemistry Merit Badge Activity. SCALACS Younger Chemists Committee will have a booth at the Boy Scout Expo at Santa Anita Park Infield. We need volunteers to work with the Scouts on the Chemistry Merit Badge. The show is from 10 am to 3 pm. Contact Gerald Delker at delker@earthlink.net, or (626) 622-7776 or Derek Marin at Derek.Marin@DunnEdwards.com.

Southern California Section

In Memoriam
Dr. Lloyd Noel Ferguson, Sr.,

Dr. Lloyd Noel Ferguson, Sr., a world-renowned chemistry professor, celebrated author and a pioneer in helping eliminate racial barriers for African Americans in the field of chemistry, died on November 30, 2011. He is survived by his wife Charlotte, three children, and seven grandchildren.

Lloyd earned a B.S. degree in chemistry with honors from U.C. Berkeley in 1940 and the Ph.D. in chemistry in 1943 working with Melvin Calvin and Glenn Seaborg. He was the first African American to receive a Ph.D. in chemistry from Berkeley.

When he graduated in 1943 none of the major chemical companies would consider African Americans for employment. Lloyd therefore accepted a position as an assistant professor at North Carolina Agricultural and Technical College in Greensboro, North Carolina, an historically black college (HBCU), where he taught for two years before joining the faculty at Howard University in 1945.

Lloyd came to CSULA in 1965 as a professor in the Department of Chemistry and Biochemistry and was chair of the Department from 1968 to 1971. He led the establishment of Cal State L.A.'s Minority Biomedical Research Support (MBRS) program and served as its director from its inception in 1973 through 1984.

Lloyd received a Guggenheim Fellowship in 1953 to do research at the Carlsberg Laboratory in Copenhagen, Denmark, and at the Swiss Federal Institute of Technology in Zurich, Switzerland. In 1961, NSF supported him for another year of research in Switzerland. He was a visiting professor at the University of Nairobi in Kenya during 1971-72. In 1984-85, the United Negro College Fund supported his visiting professorship at Bennett College, an HBCU for women in Greensboro, North Carolina.

Lloyd was a recipient Cal State L.A.'s 1973-74 Outstanding Professor Award and the CSU Trustees' 1980-81 Outstanding Professor Award. Other distinctions and national awards that Lloyd garnered include the *Chemical Manufacturers Association Award in Chemical Education, and the American Chemical Society Award in Chemical Education.* Howard University honored him with an honorary doctorate in 1970. In 1995, the Department of Chemistry and Biochemistry established the Lloyd Ferguson Distinguished Lecture Series in his honor.

He served as chairman of the American Chemical Society's Division of Chemical Education as well as the Southern California ACS Section, He also
(Continued on Page 9)

In Memoriam, Dr. Lloyd Ferguson (Continued from Page 8)

participated in the formulation of the Support for the ACS's Educationally and Economically Disadvantaged (SEED) program. Lloyd was one of the founders of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE). Each year NOBCChE bestows the "*Lloyd N. Ferguson Young Scientist Award*" to scientists with "technical excellence and documented contributions to their field.

Lloyd was the author of more than 50 scientific journal publications and six books, including three widely-used organic chemistry textbooks: *Electron Structures of Organic Molecules, Textbook of Organic Chemistry,* and *The Modern Structural Theory of Organic Chemistry.* Among the stories that have become a part of chemistry folklore is that while James Meredith was being barred from entering the University of Mississippi, the armed state troops could not keep Ferguson's textbook out—it was being used by the Chemistry Department there.

In Memoriam
Sidney W. Benson

Sidney W. Benson, 93, a chemistry professor who was scientific co-director of USC's Loker Hydrocarbon Research Institute, died December 30th at his home of complications from a stroke.

From 1977 to 1989 Benson oversaw the Hydrocarbon Research Institute with fellow chemistry professor George A. Olah, who won the Nobel Prize in chemistry in 1994.

An expert in thermo-chemistry, Benson made fundamental contributions to the study of complex chemical processes including air pollution, the ozone layer, combustion and explosions.

Benson was born September 26, 1918 in New York. After earning a bachelor's in chemistry, physics and mathematics from Columbia College and a doctorate in physical chemistry from Harvard University, he went to work for Kellex Corporation as a group leader doing research for the Manhattan Project developing the atomic bomb. In 1943, he was recruited to USC by Anton Burg, who built the university's chemistry department into a top-notch research destination in the years after World War II. Benson moved to the Stanford Research Institute as chair of the kinetics department in 1963 and returned to USC in 1976.

He was elected to the National Academy of Sciences in 1981 and took emeritus status in 1989. H wrote hundreds of scientific papers and a well-regarding textbook, "The foundations of Chemical Kinetics".

This Month in Chemical History

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

I continue the story I began in my last column by discussing the scientific work of Henry Cavendish, 1731-1810. His first scientific article, published in Philosophical Transactions in 1766, was “Three Papers, Containing Experiments on Factitious Air”. Some background; the accepted chemical theory of combustion – and many other phenomena of this time was the phlogiston theory of Stahl, based on phlogiston, the matter of fire. Cavendish accepted this idea, as did most of the chemists of the late 18th. century. By factitious air Cavendish refers to “any kind of air [gas] which is contained in other bodies in an unelastic state, and is produced from thence by art”. The first of Cavendish’s airs, an inflammable gas, was hydrogen which he produced by reactions between acids (hydrochloric or sulfuric) and metals (zinc, iron, or tin). He showed the identity of the gas from all these precursors and determined its density, a challenging experiment. The second paper is on Black’s fixed air, our carbon dioxide, produced from calcium or magnesium carbonates by the action of heat or acids. Determinations of density and solubility and of chemical behavior were included. The third paper on airs produced by fermentation or putrefaction identified these as either pure carbon dioxide from, for example, sugar fermented with yeast; or a mixture of gases including carbon dioxide and hydrogen from putrefying meat broth.

This one publication, with its elegant experimentation, careful observation, and accuracy brought Cavendish to the forefront of pneumatic chemistry. His work on the production of hydrogen from metals and acids indicated to Cavendish that hydrogen, one of his inflammable airs, might be pure phlogiston. Despite the work of Lavoisier and others on the oxygen theory of combustion, Cavendish through most of his career was not convinced that the experimental evidence required abandonment of the phlogiston theory.

Further chemistry followed: the most careful analysis of natural waters to date won Cavendish a Copley Medal from the Royal Society in 1766. Cavendish was also conducting experiments and observations in meteorology and devised an improved hygrometer. In his papers “Experiments on Air” published in 1784 and 1785 Cavendish examined the properties of ”phlogisticated air” (nitrogen), the major constituent of *(Continued on Page 11)*

This Month in Chemical History

(Continued from Page 10)

ordinary atmospheric air and made one of his most celebrated observations. To use modern terminology by extended sparking of ordinary air with added oxygen the whole of the nitrogen and oxygen of atmospheric air could be removed – but a bubble remained of about 1/120th part of the whole. In the 1890s Rayleigh and Ramsay recalled this experiment of Cavendish's in their ground-breaking work on the discovery of argon and other noble gases. As referred to in the first of these columns Cavendish also demonstrated that reaction between – again to use modern terminology – oxygen and hydrogen produced water. Others made similar observations at about the same time, including Priestley and Warltire, and James Watt, which led to a controversy about priority. Somewhat later Lavoisier repeated this synthesis of water, and also decomposed water to produce hydrogen, explaining the results in terms of oxygen theory.

While these columns are principally about Cavendish the chemist, it would not be doing justice to this great natural philosopher to omit all reference to his important work in physics. By greatly refining an apparatus devised by Mitchell, which used the torsion of wires to measure small forces, Cavendish directly measured the attractive force between two massive lead spheres which gave him the value of the gravitational constant and, indirectly, a measure of the mass and density of the earth. He published this in 1798. In contrast much of Cavendish's fundamental work on electricity, which included the concept of capacitance and an anticipation of Coulomb's law, remained unpublished until late in the 19th century when Clark Maxwell, among others, undertook the publication of some of Cavendish's unreported work.

Finally a few words about Cavendish the man. There is only one portrait of Cavendish; a sketched likeness taken without his knowledge, it shows him dressed in outdated clothes. Apart from his visits to the meetings of the Royal Society he seems to have had little or no social life, and never married. His cousin, the fifth Duke of Devonshire, warned his wife to stay away from Cavendish's laboratory because "He is not a gentleman – he works!" In his final days Cavendish suffered from a colon inflammation which obstructed the passage of his food; he died at his home in London on February 24, 1810 at the age of 78.

San Gorgonio Section

Inspire or Be Inspired!

I have spent the last month contemplating whether or not to take the giant technological leap of converting to a "smart" phone. Being a scientist, of course, I collected and studied the relevant data. There seemed to be equal support for both choices. The easy choice was to keep using a regular cell phone that allows me to make phone calls and do text messaging. Since I am closing in on retirement, a regular cell phone probably has all of the capability I will need to finish my professional career. The challenging choice was to upgrade to a smart phone that has a steep learning curve, but will increase communication opportunities – in other words, I will able to check my email no matter where I am!

The correct choice became crystal clear after the Dean of Natural Sciences, a geologist, stopped by my office and I mentioned my dilemma to him. His eyes lit up as he pulled his smart phone out of his pocket and explained how the power of smart phone technology can enhance learning. Our College recently acquired a collection of interesting rock specimens that have been placed around campus, creating a "geology-walk" as a resource for classes. The Dean's idea is to label the rock specimens with QR tags. Students, who seem to be physically connected to their phones at all times, will be able to scan these tags with an app and be directed to a website designed and/or chosen by the instructor. Instead of seeing only the limited material contained on traditional placards used to label specimens, students will have immediate access to in-depth information.

So how does my cell phone dilemma relate to chemistry? The choice was easy to make once I became inspired by the potential of smart phones. The message is about inspiration, not phones! I looked at two types of cell phones and saw ----- phones. The Dean looked at a smart phone and immediately began planning how he could embrace the technology to transform and improve learning. Science is built on the shoulders of inspirational people with forward-thinking ideas. My cell phone dilemma was a reminder to look for inspiration around me! I am now planning to implement QR tags in our instrument room that will take students to a site that explains the history and operation of each instrument. The learning curve for my new smart phone no longer seems so steep!

- Eileen DiMauro, San Gorgonio Section

INDEX TO ADVERTISERS

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AMERICAN CHEMICAL SOCIETY
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IMPORTANT
Do Not Delay!

Contains Dated Meeting Announcement

PERIODICAL

Bi-Section Chemists' Calendar

March

1	SC WCC Dinner Meeting at Almansor Court with talk by Dr. Patricia Beauchamp on Water in the Solar System—see page 3
11	YCC Event at Eagle Rock Brewery—see page 5
14-15	SC High School Olympiad—see page 6
17	Expanding Your Horizons Conference at Mount St. Mary's College—see page 6

April

7	Undergraduate Research Conference at CSU Channel Islands—see page 6
21	National Exam for SC High School Olympiad—see page 6
TBA	Chemists Celebrate Earth Day events at California Science Center—see page 7

May

18	SC Educational Awards Banquet—see page 6

June

2	YCC Boy Scout Chemistry Merit Badge—see page 7