

# THE VORTEX

AMERICAN CHEMICAL SOCIETY  
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CALIFORNIA SECTION  
NOVEMBER 2011



Recipients of the California Section "Salute to Excellence Award", Evaldo Kothny and Sheila Kanodia, presented by Chair, Bryan Balazs

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# THE VORTEX

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## Chair's Message

Bryan Balazs



As we wrap up 2011, the International Year of Chemistry, it's a good time to start taking stock of what we have accomplished.

I believe we have had a tremendous year, introducing new activities and outreach efforts, and expanding into areas with new groups and new faces. What are your thoughts? Was there anything you expected to see that did not happen, or any expectations that were not met? I am always happy to receive your feedback, so feel free to send me a note at [bb@llnl.gov](mailto:bb@llnl.gov) or call me at 925-423-5403.

In conjunction with the Lafayette Library and Learning Center Foundation (LLLCF), we started a monthly Science Café this year, allowing us to interface with the general public and also offer our members a wide variety of many interesting talks in difference areas of science. Our Younger Chemists Committee members have had a number of diverse events, from social activities to chemistry photo scavenger hunts to hands-on experiences with young students, and our Women Chemists Committee continues to be the driving force behind many of our outreach, family, and member

events. Our NCW and Family Science Night activities continue to draw hundreds, if not close to a thousand, enthusiastic kids and their parents. In the area of environmental issues, we have participated in Earth Day events, had speakers on Green Chemistry at section events, and brought aspects of sustainability into our activities. Recently, we also helped to offer two short courses on electrochemical sensors for bioanalysis and bioassays, which is a service to our members that we have not offered in many years.

This year also brought a number of excellent events in which we partnered with another organization. In addition to the Science Café with the LLLC noted above, we did several events with our sister organization on the other side of the Bay, the Santa Clara Valley Section. We held several events with the local chapter of the Electrochemical Society, and one with the Golden Gate Polymer Forum. Twice this year we have had a significant presence at major science festivals, such as the UC Berkeley Science and Engineering Fair early in the year and the Bay Area Science Festival just recently. In addition to meeting new people, these joint events give ideas to both organizations on new ideas for programming, venues, and publicity.

Finally, I would like to make note

*(continued on page 12)*

## *SALUTES TO EXCELLENCE*

At the reception for the 2011 International Year of Chemistry hosted by our section at the Lafayette Library and Learning Center Foundation on September 27th, we celebrated the long-standing contributions of two of our volunteers, Dr. Sheila Kanodia and Dr. Evaldo Kothny. Evaldo, accompanied by his wife and two daughters, and Sheila were both presented with the ACS Salutes to Excellence award recognizing their involvement with the section's activities at many different levels. Following the presentation, both shared their experiences in their chemistry careers, noting the connection between the international chemical enterprise and their own immigration to the US at a young age..

Sheila was recognized for her contributions over many years to the Women Chemists Committee, the Minority Affairs Committee, our section's presence at the annual

Earth Day events, and to the Saturday Science Academy which brings the fun of science to kids in predominantly minority communities. She has also had a long history of working at many levels to increase the inclusiveness of our section to all, and to broaden our activities with this in mind.

Evaldo was recognized for his long and consistent history with the Vortex newsletter, helping with editing, proofing, and production, and he has also written several hundred articles for the newsletter in the thirty plus years of his involvement. During the transition from the hardcopy "cut and paste" methods to digital production tools in the late 90s, he remained reliably involved and continues to this day in both content creation and proofreading.

Join us as we thank both Sheila and Evaldo for all of their efforts on behalf of the California Section and its members!



## *ACS 2013 Western Regional Meeting Organization*

In October 2013, the Santa Clara Valley and California Sections of the American Chemical Society will co-host a four day Western Regional Meeting to be held in the vicinity of San Jose. To be successful, such a meeting requires careful organization and planning. The process has begun with the naming of three meeting general co-chairs - Natalie McClure (SCV), nmclure@drug-regulatoryaffairs.com, Neal Byington (Cal), neal@byington.org and Lee Latimer (Cal), llatimer@mindspring.com. Now the time has arrived for a comprehensive organization to be put together to carry forward the planning and execution of the meeting.

The meeting organization needs chairs for such functions as Publicity, Exhibits, etc. Organizers are needed for symposia, events, and tours. Volunteers are needed for various other functions. This is a cooperative effort of the two ACS sections, volunteers from each section are encouraged and co-chairs for some of the major activities will be named.

If you are interested in becoming part of the group committed to making the 2013 ACS Western Regional Meeting a scientific,

financial, and social success, please contact one of the general co-chairs. Now is the time to become part of this exciting and worthwhile activity.

Several very positive items have taken place in the last month.

-A theme has been accepted by the committee: Flavors of California Chemistry. A domain has been registered for the meeting as [www.WRM2013.org](http://www.WRM2013.org)

-A Request for Proposals (RFP) has been sent to potential sites in the SJ metro area.

-Two potential logos have been developed and await discussion. More ideas are welcomed.

-A Save the Date flyer has been prepared for distribution at the 43<sup>rd</sup> WRM in Pasadena November 10-12, 2011.

Besides the core committee, the recent call for volunteers produced over 10. Assessing positions is currently underway. Meetings are scheduled monthly. Will Kuo will be Treasurer, Herb Silber (SCVACS) will be Asst. Treasurer. An initial list of possible symposia/sessions is under discussion. Ideas are welcomed. Temporary Program Chair is Lee Latimer (Need a replacement).

Please let us know if you would like to participate, have an idea for the logo, or have ideas for symposia.

## Science Café Report “Life Without Chemistry?”

Dr. Attila Pavlath

Dr. Attila Pavlath regaled the attendees at the Science Café jointly sponsored by the Lafayette Library Foundation and the California Section, ACS, on September 27, 2011, with his recounting of the advances in the human condition provided by chemists, engineers, and chemistry. Based on the four International Year of Chemistry themes: Energy and Transportation, Information and Communication, Health and Medicine, and Food and Agriculture, Dr. Pavlath began by listing advances in each area that make life what we have come to expect in a modern society. Automobiles, airplanes, and space vehicles could not have been developed without many advances in materials, fuel chemistry and processing, and computer applications. (We take for granted such materials as aluminum, but this ubiquitous metal was very expensive until it was separated relatively cheaply from its ore after a lengthy and difficult invention process in the 1880s.) Imagine the streets piled high with transportation animal waste if we were still in the horse and buggy age.

Potent antibiotics, as generally available drugs, date from the 1940s with the commer-

cial production of penicillin for use in World War II and afterwards. Contraceptives, anti-cancer compounds, and psychoactive drugs date from the 20<sup>th</sup> century work of many pharmaceutical chemists looking for ways to prolong life and make it better. In the Food and Agriculture area, in the past 70% of the population were farm workers providing food for the other 30% of the population. Now, through advances in mechanization, genetic development of plants, and fertilizer and pesticide chemistry. Nowadays, only 2% of the population does the work to feed the rest. Even organic farming requires farm machinery, but would require more people and farm area to feed the world.

Chemistry, as with all human endeavors, is not without its problems. Advances like DDT, used to bring malaria under control in many parts of the world, was later found to be a problem for bird populations due to the thinning of egg shells. However, the betterment of the human condition due to advances in chemistry plus the products which result, vastly overwhelms the negative issues. Chemists actively work to overcome problems and come to grip with solutions to make life better. One cannot live a day without chemistry and the many improvements it has provided.



Dr. Attila Pavlath speaking at the Science Café Meeting



## *ELK-N-ACS*

Evaldo Kothny

### *Nitrogen*

#### **Origin**

Our planet Earth provides a supply of many elements from the periodic table. Only a few are in a very short supply or non-existent if not made by sophisticated instruments. How about nitrogen, the building block for aminoacids? Where is the source? Or is it supplied by the outgassing of Earth's interior? Apparently not.

The fact is, that nitrogen is a primordial gas. It originated during early cosmogenesis during the first few minutes at the violent explosion of a supernova giant star. Involved theories explain hydrogen burning and formation of helium. Helium burning at those extremely high temperatures reached an equilibrium with nitrogen, carbon, oxygen and other low molecular elements. Eventually, the reaction reached an end point. Since nitrogen is the least reactive gas, it was left untouched in the gaseous mixtures of the primordial atmosphere.

Earth condensed in 4700 mi years BP. By 4100 mi years BP, photoionization of water vapor produced the first traces of oxygen and 200 mi years later, the first rocks solidified. Another 400 mi years had to pass before appearance of traces of oxygen derived from photosynthesis by cyanobacteria. During this period, the sun shone a little hotter. Torrential rains carried down a few traces of nitrogen oxides produced by lightning plus dissolved elements freed by hydrolysis from rocks, thus the oceans received their supply of chlorides and bromides. Argon gas originated from radioactive decay of potassium added slowly to this primordial mix which also contained methane. Ferrous components in rocks absorbed most of the first oxygen. In the precambrian period photosynthesis became firmly established and was the source of early life. With only 1% of oxygen at the beginning of the Cambrian (540 mi years BP), the ocean populated quickly with trilobites and worms. Other life appeared on hot vents which supported life based on reduction of carbonic acid with hydrogen sul-

fide. This process is still going on.

Biological processes are strongly dependent on photosynthesis, oxygen, nitrogen, and elements such as phosphorus, sulfur, potassium, calcium, magnesium, iron, zinc and others. These processes created in 200 million years the atmosphere with 20% oxygen plus all the deposits of coal and hydrocarbons as we have it today. With all that oxygen around, nitrogen is sufficiently inert of not burning up to nitrogen oxides. However, some nitric oxide is formed during combustion, i.e., in flames and in motor vehicles. This sets the stage of further oxidation to a variety of oxides and acids. Other sources for nitrogen oxides are photochemical reactions, lightning, ionizing electric discharges, ozone.

#### **History**

The element was separated from air in 1772 by the British physician Rutherford and recognized as element by Lavoisier in 1776. The name nitrogen is a combination and implies "generator of nitro". During the fractionation of air and separation of oxygen, in the inert portion besides nitrogen, there were a number of other gases. For instance, shortly around 1910 argon, neon, krypton, xenon and small amounts of helium, hydrogen, methane and carbon dioxide were separated.

Now visualize a dwindling source of food supplies and the coming of a scientist who wants to explain the growth of vegetation and increase its production: Justus von Liebig (1803 - 1873). He said that the production of foodstuff in a field can be increased by supplying the plants with three basic elements described in his famous formula NPK, or nitrogen, phosphorus and potassium. These three elements, which among others, are the most important building blocks in agriculture, created in 1840 the concept of fertilization.

Before Liebig's time, the farmers used as a source for assimilable nitrogen compost, humus, guano, bone meal, blood, solid or liquid manure, condensed liquids from dry distillation of wood or coal. Native indians added a small fish when planting corn. Compost from legumes or alder has the advantage of nitrogen having been fixed by sim-

*(Continued on page 11)*



## California's First Analytical Chemist?

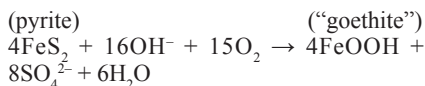
Bill Motzer

On the morning of  
January 24, 1848,  
James W. Marshall was

examining the tail race of a new lumber mill that he was building for John A. Sutter to provide lumber for a new flour mill at Sutter's Fort in Sacramento. The new lumber mill was located on the South Fork of the American River in what is now Coloma, California in El Dorado County about 54 miles northeast of Sacramento. Marshall was concerned that the mill race was not deep enough to drive the water wheel which powered the saws. On the day before, he had his workers deepen the race and then open the forebay gates allowing water to run through the deepened channel to clear out excess excavated sand and gravel. During his examination he noted several small golden "pebbles." He suspected that they were gold nuggets but had never seen gold. One crew member that could recognize gold was the wife of Peter Wimmer, who was Marshall's assistant in charge of the Mormon and Indian workers digging the mill race. His wife, Jennie was employed as camp cook. So Marshall and Peter Wimmer took one of the small nuggets to Jennie to verify that it was indeed gold.

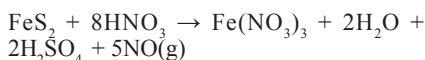
Elizabeth Jane "Jennie" Cloud Wimmer could recognize gold because she had panned for placer gold in the creeks near Auraria in Lumpkin County, Georgia. Gold had been discovered in 1799 in Virginia in what became the Carolina Slate Belt, a northeast-southwest zone extending from Virginia to Georgia and containing small gold deposits. In 1838, when Jennie was 16 years old, her family moved to north Georgia from Virginia. To help with the family's meager finances, her father, Martin Cloud, prospected for gold assisted by his daughter. She also knew several tests to determine if the  $\approx 9.5$  g ( $\frac{1}{2}$  oz) nugget was actually gold or fool's gold (pyrite or  $\text{FeS}_2$ ). So when Marshall brought her the nugget, she promptly threw it into the pot of lye that she was using to make laundry soap for the

camp. In those days "lye" (which is normally sodium hydroxide or  $\text{NaOH}$ ) was made by soaking hard wood ashes (potash) in boiling water to leach out both potassium hydroxide ( $\text{KOH}$ ) and potassium carbonate ( $\text{K}_2\text{CO}_3$ ). Gold, of course, is not affected or dissolved by either hot  $\text{KOH}$  or  $\text{K}_2\text{CO}_3$ , but pyrite is. One possible reaction is:



The next morning, Jennie retrieved the intact nugget and pronounced that it was indeed gold. However, there had been much skepticism by camp workers concerning Marshall's find, many believing that the nuggets were only mica or pyrite. And, what did Jennie know? She was only the camp cook and a woman. Apparently, Jennie had made few friends with the workers because she insisted that they be on time when dinner was served or they would get no dinner.

On being informed by Jennie that the nuggets were indeed gold, Marshall wasted no time, immediately leaving on horseback for Sutter's Fort. He took the gold nuggets directly to Sutter who subjected them to several tests including hammering (they were malleable and not brittle, which pyrite is), weighing them and comparing their specific gravity against silver (gold, 19.3; silver, 10.5), and then exposing them to aqua fortis (nitric acid) that he had in his apothecary. Gold does not react with nitric acid (but will if hydrochloric acid is added to nitric acid forming aqua regia). However, pyrite does react with nitric acid and one possible reaction is:



Sutter concluded that the nuggets were gold and estimated their fineness at 23 out of 24 carats ( $\approx 95\%$  Au). Both Marshall and Sutter wanted to keep the discovery secret and Marshall left that night in a rainstorm for Coloma to be joined the next day by Sutter. At the mill, Sutter gave each worker a pocket knife pledging them to secrecy. However, such a discovery could not be kept secret

*(continued on page 13)*

## Family Science Night

There was a great turnout at Helms Middle School in San Pablo due to the great outreach efforts by the school. By 6:30 PM, the Multi Purpose Room was packed as visitors enjoyed the Scientific Jam's rockin' science and Bryan Balazs's chemistry magic.

From there, it was non-stop fun and excitement at the activity stations. The big turnout of student volunteers from Contra Costa College, San Francisco State University, and UC Berkeley made all the difference to our activity leaders, who were able to relax and

enjoy the evening.

Photo shown is by Lily Lew, more can be seen at: <http://www.meetup.com/Iron-Chemists/photos/4052092>

Thanks to Rich Volberg, the science teacher that invited us to Helms Middle School, who felt that a positive impact on kids engagement and personal interest in scientific fields. A thank you to everyone who helped make the NCW celebration at Helms Middle School such a success.



The Team at Chevron performing the "Slime" experiment at Family Science Night at Helms Middle School

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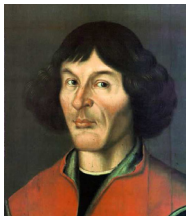
## SCIENCE CAFE

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### FROM COPERNICUS TO GPS: Celebrating Great Ideas in Science

Yau-Man Chan, UC Berkeley College of Chemistry ~ TV Series "Survivor" Fans' Favorite



Yau-Man Chan is a dynamic speaker of many talents and interests. With a B.S. from MIT in physics and Masters from UC Santa Barbara, he applied this knowledge to outsmart most of the contestants on the TV series *Survivor 14: Fiji* to make it to the Final Four and be voted Fans' Favorite. He was invited back for a second season (*Survivor 16: Micronesia*) but participants were smart enough to vote him off quickly! With a passion for science and the exploration of innovative ideas, he will examine the breadth of great achievements in science over the last few hundred years. In an era when science has come under attack, it's critical to take a look back and explore the origin of, and inspiration for, great ideas that changed the world and our daily lives. The evening is guaranteed to be a delightful mix of Survivor stories and visionary science! Yau-Man is also a competitive table tennis player and is a USATT certified coach and umpire, raises egg-laying chickens and honeybee hives at his Martinez home, and is Chief Technology Officer of Computing Services for UC Berkeley's College of Chemistry.

**WHEN:** Tuesday, November 15th ~ Doors Open 6:30 PM, Program 7:00-8:00 PM

**WHERE:** Lafayette Library and Learning Center, 3491 Mt. Diablo Blvd.

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## Books, Science, and Life

Subject to change, it is official! Healthy men should not submit to prostate-specific antigen (PSA) testing. You can read all the comments, analyses, rebuttals, and warnings and decide for yourself what advise to follow .

That news story reminded me of Gabor Mate's, book, *When The Body Says No* for which I had intended to write a brief review many months ago. It was the only book for which I purchased multiple copies to give to family and friends.

In this book the focus is on looking at and understanding how human diseases arise. It is environmental factors and not genetics that play a major role in diseases. By environmental, Dr. Mate means more than just the air we breath or the food we eat. He means the nurturing environment or lack thereof of the newborn. Important also are the early childhood perceptions, that of being loved and feeling secure. In over 30 years in his medical-practice experience and in numerous published studies, the overwhelming evidence is that brain development adversely affects those children who grow up feeling unloved. Throughout the book Dr. Mate references scientific studies and discusses case histories and stories from Ronald Reagan to Lou Gehrig, covering disease states such Alzheimer's, cancer, multiple sclerosis and addictive behavior.

Dr. Mate has added additional information in the 2011 edition. It was first released in 2004. The book has been published in over a dozen languages and yet the information that it presents is not well known or is relegated to quackery or to the less perjurious classification of alternative-style medicine. The relative anonymity it receives is not due to the lack of scientific studies and published data, but due to the Bermuda Triangle Effect. In Dr Mate's words, "There are lots of good studies that give insight, but both the principal and results of these studies do not seem able to escape a downward spiraling vortex."

Dr Mate has written several books. In each

of them, he makes the connection between stress , environmental issues, and neuro-biological roots of diseases including drug-alcohol-sex-shopping-eating-disorders.

In *The Realm of Hungry Ghosts: Close Encounter with Addiction*, Dr. Mate describes his medical practice for 12 years in the most concentrated area of drug use in North America, Downtown Eastside Vancouver. He makes the case that addictions, all addictions, mild and severe, are not due to moral failure or disease, but human development gone amiss.

In the book *Hold On To Your Kids*, Dr. Mate addresses the unhealthy attachment that children make with their peers or gang members, and how parents can awaken their own innate instincts and reattach to their sons and daughters.

In the book, *Scattered Minds* Dr. Mate writes about his own Attention Deficit Disorder (ADD) He offers a new perspective on ADD and that it is a reversible impairment, a developmental delay.

Dr. Mate, in all of his books places great importance on nurturing and compassionate behavior. One wonders what life would be like if those attributes were the default and not the exception.

Lou Rigali



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(Continued from page 6)

biotic bacteria in their root nodules before harvest. Also, during fermentation of green compost and humus, atmospheric nitrogen is converted by bacteria into assimilable nitrogen. Another source of nitrogen fertilizer was niter, also known as sodium nitrate or Chile saltpeter. Soon it was discovered that it is contained in some evaporated desertic lakes. In California it was found in crusts along the Amargosa river which runs from San Bernardino county to Inyo county and in some salty efflorescences in Death Valley. A race was started to find other sources and a rich expanded deposit was found in northern Chile. There, the salts (caliche, a mixture of sodium and potassium nitrate, calcium, magnesium and sodium sulfate, sodium chloride, clay and sand, with small amounts of iodate and chlorate) must be extracted and converted into potassium nitrate. This potassium nitrate served for years as the component for black powder. Now it was imported into Europe as a needed fertilizer. Its usual content of chlorate was detrimental when employed as fertilizer at higher concentrations. This use declined after 1918. To circumvent some problems, Swedish industrialists invented the arc discharge synthesis. The resulting gases are absorbed in an alkaline solution. In the U.S. production of cyanamid after 1905 provided another source for soluble nitrogen compounds. The first step is the fabrication

of calcium carbide with lime and coal in an electric arc. This substance absorb nitrogen and produces the impure calcium cyanamid. It can easily be transformed into urea and other related compounds. The production declined after 1945. After 1914 the invention of Haber-Bosch for production of ammonia from air came into play. With coal and water vapor, water gas is first produced. This gas which contains carbon monoxide, hydrogen and nitrogen must be thoroughly cleaned by removing all traces of carbon monoxide and any trace of sulfur compounds (catalyst poisons). The gas is compressed to 200 - 1000 atm. and heated to 500 - 700 degrees C in presence of a catalyst (potassium activated iron/alumina). Engineering played an important role in the design and development of the equipment, such as specialty steels resistant to elevated temperatures and high pressure pumps.

Ammonia is the building block for a series of soluble nitrogen compounds, and an excellent fertilizer. Since 1918 oxidation of ammonia with air on a platinum impregnated fabric is being used for the production of nitric acid. Chemicals derived from ammonia synthesis are urea, hydrazine, hydroxylamine, amidosulfonic acid, sulfanilamide, nitrous oxide, hydrocyanic acid and thiocyanates, ammonium salts.

Granted that all other agricultural improvements are available how would 7 billion people survive without these chemical inventions?



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(Continued from page 3)

of the dedicated efforts of Neal Byington and Lee Latimer, who are organizing the Western Regional Meeting in the San Jose area in late 2013. Neal and Lee have already initiated regular planning meetings, and they have a good start at rounding up volunteers, although they can always use more. If you are interested in any aspect of helping to put together a regional meeting, call or email them. They would love to hear from you!

Happy Thanksgiving!



## International Year of Chemistry Committee Report

A. Pavlath

The IYC11 committee has been active. At the Denver meeting steps were taken to coordinate efforts to reach 343 Science Museums in the United States and to disseminate our Technology Milestones in Chemistry (TMC) to them.

The Committee met with Dr. William Trummel, recipient of the ACS Helen Free Award for Public Relation and he recommended Dr. Christine Ruffo of the Association of Science-Technology Centers Inc.

Marinda Wu organized a Science Cafe at the Lafayette Library where I presented a talk about the role of chemistry in our everyday life entitled, "Without Chemistry we would be back in the Stone Age". Nine posters of TMC were displayed.

Earlier USDA hosted the Bay Area Science Fair winners at the Albany Laboratory with 20 students ranging 14-18 years old. Consequently, they were congratulated for their achievements them for their achievements and were asked to let their science teacher know about IYC11 and were offered speakers to their science classes. On Sept. 28, a talk on the importance of chemistry in their life was given. A list of science teachers in the Bay Area will be sent an e-mail offering the same opportunity.

The Kansas City Section requested posters

of the Food and Agriculture Section of the TMC display for their special Symposium on Food Chemistry.

The interest in TMC continues to grow. The Korean Chemical Society asked permission to convert it into a book, which was done. 3000 copies were printed and distributed to libraries in Korea. The Turkish Chemical Society is in the process also to create a book. The Hungarian Chemical Society with the sponsorship of BASF converted it into a virtual book, which can be viewed at [www.chemgeneration.com](http://www.chemgeneration.com). I was invited by the European Chemical Societies Annual Assembly in Belgrade, Serbia to publicize these new developments and promote the translation of books into various languages.

Greti Sequin volunteered to arrange the TMC display at SFSU. Other Section Members are encouraged to make arrangements for the display of TMC at academic institutions for which they are affiliated or have other connections. Both Posters and speakers are available for both informal displays or seminars.



Example of one of the posters

(continued from page 7)

and it was inadvertently leaked to the public by one of Wimmer's children, who told a teamster delivering a wagon load of supplies Coloma camp. At Sutter's Fort, the teamster shared the news at Charlie Smith's store. Smith told his partner, Samuel Brannan, who owned a San Francisco newspaper. The Coloma gold discovery began appearing periodically in the news, with a special edition sent East by pony express. By the spring of 1848, coastal California towns were literally deserted with men abandoning farms, shops, and ships, flocking to the foothills carrying frying pans and spoons for panning. In December 1848, President James K. Polk announced the discovery in a

Her grave was originally marked by only a small brick, simply inscribed as "Mrs. Weamer." In 1948, a local Boy Scout troop had a project identifying and marking all of the cemetery's unmarked graves. On October 5, 2003, the Valley Center Historical Society and San Diego County, replaced the brick with a bronze memorial marker



containing her story. The marker reads:

*Elizabeth Jane (Jennie) Cloud Wimmer involved in the single most important event in California history, the discovery of gold at Sutter's Mill on January 24, 1848. Her husband Peter and mill foreman James Marshall found a nugget on the American River and gave it to Jennie, a cook and housekeeper, to test in a kettle of soap. The next day, she declared that the nugget was gold. The famed California Gold Rush began. With James Marshall, she is credited as the codiscoverer of California Gold. An account by Captain John Sutter refers to the gem as the Wimmer nugget.*

Marshall had given Jennie the tested nugget as a keepsake. She kept it all of her life and it eventually ended up in the University of California's Bancroft Library in Berkeley. Moral to this story is that when your wife (or the camp cook) tells you it's gold, believe her.

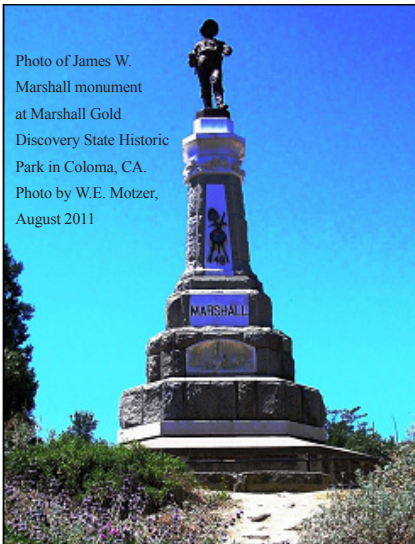


Photo of James W. Marshall monument at Marshall Gold Discovery State Historic Park in Coloma, CA. Photo by W.E. Motzer, August 2011

joint session of Congress and the great 1849 California Gold Rush was on.

Marshall eventually had a large monument erected to him at Coloma; it's at the Marshall Gold Discovery State Historic Park. However, Jennie Wimmer was almost forgotten as one of California's gold discoverers. It is not known when she died; but it may have been in 1885, at the age of 66. She's buried in Valley Center Cemetery, a pioneer's cemetery, in San Diego County.

*November Historical Events in Chemistry*  
*by Leopold May*  
*The Catholic University of America*  
*Washington, DC*

**November 3, 1854** Jokichi Takamine, who was born on this date, isolated the hormone adrenaline from natural sources

**November 5, 1891** Neil K. Adam, researcher on unimolecular surface films, was born on this date. He discovered existence of a two-dimensional state of matter at water-air boundary.

**November 6, 1886** One hundred and twenty-five years ago on this date, Ian M. Heilbron was born. He synthesized naturally occurring compounds, such as vitamins A and D.

**November 7, 1878** Lise Meitner, who explained nuclear fission and discovered Protactinium in 1917, was born on this day. ,

**November 8, 1711** Three hundred years ago on this date Mikhail V. Lomonosov was born. He suggested the law of conservation of mass and a theory of heat as a form of motion. Also, he opposed phlogistic chemistry and was the first to record the freezing of mercury (Hg,  $-80^{\circ}\text{C}$ ).

**November 10, 1764** Andrés M. Del Rio discovered vanadium in 1801, which he called erthronium. He was born on this date. Sefstrom often is given credit of the element for the discovery in 1830.

**November 12, 1947** EG&G Idaho incorporated as Ederton, Gernhausen & Grier on this date.

**November 14, 1807** One hundred years and seventy-five years ago in 1836, Auguste Laurent obtained phthalic acid from naphthalene. Four years before this, he discovered anthracene and in 1841, showed that carbolic acid is phenol. Also, he constructed a saccharimeter; evolved the nucleus theory of organic radicals (with Charles F. Gerhardt), and made Laurent's acid. He was born on this date.

**November 18, 1906** George Wald, who did research in the field of chemistry of vision, was born on this date. In 1967, he shared the Nobel Prize in Medicine with Ragner Granit and Haldan Keffer for their discoveries concerning the primary physiological and chemical visual processes in the eye.

**November 20, 1886** One hundred and twenty-five years ago on this date, Karl von Frisch was born. He discovered how bees orient and communicate. He shared the Nobel Prize in Physiology or Medicine in 1973 with Konrad Lorenz and Nikolaas Tinbergen for their discoveries concerning organization and elicitation of individual and social behaviour patterns.

**November 23, 1887** Henry G. J. Moseley, who discovered that x-ray frequency is related to atomic number of elements in 1913, was born on this date. He was killed in World War I.

**November 26, 1817** C. Adolphe Wurtz, who was born on this date, discovered a method of synthesis of hydrocarbons (Wurtz Reaction), 1855, methyl and ethylamines, 1849, phosphorous oxychloride, 1846, and glycol, 1856.

**November 27, 1874** Chaim Weizmann, who discovered a method for synthesizing acetone in 1916, was born on this date. He served as the first President of Israel, 1948-1952.

**November 29, 1936** Seventy-five years ago on this date, Yuan T. Lee was born. He used a specially designed mass spectrometer that could separate and identify reaction products. In 1986, he shared the Nobel Prize in Chemistry with Dudley R. Herschbach and John C. Polanyi for their contributions concerning the dynamics of chemical elementary processes.

**November 30, 1761** One hundred and fifty years ago on this date, Smithson Tennant was born. In 1803, he discovered iridium (Ir, 77) and osmium (Os, 76) and proved that diamonds are pure carbon.

Additional historical events can be found at Dr. May's website, <http://faculty.cua.edu/may/ChemistryCalendar.htm>.



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