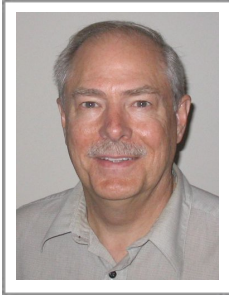


# Water and Power Associates, Inc. Newsletter

Year 40, Volume 1 - January 2011

## PRESIDENT'S NOTES

by: Kent W. Noyes



Most of us have been following actions by the Los Angeles City Council to place proposed charter amendments and other Department of

Water and Power reform issues on the March ballot. Water and Power Associates, Inc. has been very active in this process by attending meetings and submitting oral and written comments.

Although the items to go on the ballot have not been finalized, here is a list of *some* of the items being proposed along with our recommendations.

### City Council Authority to Remove a W&P Commissioner or the General Manager with Two Thirds Vote.

We supported this proposal because we believe that a GM or Commissioner that has lost the confidence of two thirds of the City

Council cannot be effective in doing their job and removal may be necessary to restore trust.

### Restructuring the W & P Commission

There were several changes the Council was considering to restructure the Board of Commissioners. They were increasing the number of commissioners from five to seven, reducing the term which a commissioner could serve without reappointment, and requiring some of the commissioners to be appointed by the Council instead of all of them being appointed by the Mayor. We opposed all these changes because we thought shorter terms would reduce commission independence and believe that there would not be sufficient accountability for a commission that had some members appointed by the Mayor and some by the City Council. The Mayor is now accountable and therefore should appoint the commissioners. If the City Council appoints some commissioners, who is then accountable? The council's ability to remove commissioners should be enough to make commissioners know that they also have to be responsive to the City Council. *(Continued on page 2)*

## Annual Membership & Elections of Board Members Meeting

Saturday  
February 12, 2011

10:00 a.m. ~ noon

L.A. Department of  
Water and Power

111 N. Hope Street

A-Level

Los Angeles

All members are invited to attend.

Bring your LADWP identification or other photo I.D. to gain admittance into the parking lot and the building.

## Water and Power Associates, Inc.

is a non profit, independent, private organization incorporated in 1971 to inform and educate its members, public officials and the general public on critical water and energy issues affecting the citizens of Los Angeles, of Southern California and of the State of California.

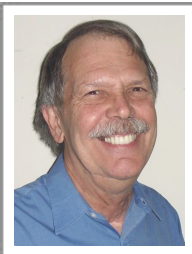
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**Our Distinguished Guests**



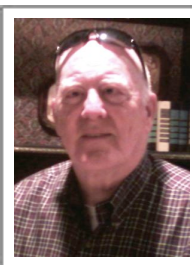
**Aram Benyamin,**  
LADWP  
Power System  
Assistant  
General Manager



**Wiley Gustafson,**  
Consultant on energy control systems. He has been with the LADWP as a consultant for 29 ½ years, two years as a part-time employee. He spent 18 ½ years working on the Energy Control Center.



**Marvin D. Moon,**  
LADWP Director  
Power System  
Engineering Division.



**Richard Adams,**  
Retired.  
Layman's interest in energy. His sister is a water engineer in the Imperial Valley.

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- Philip Shiner
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**Director Emerita**

- Catherine Mulholland



*Noyes Notes*

*(Continued from page 1)*

**Establish an Office of Accountability**

The Council is proposing to establish some sort of independent oversight office such as an Inspector General/Ratepayer Advocate. We opposed this proposed charter amendment for several reasons.

- ♦ First, we believe the council has the authority to establish such a position now without the need for a charter amendment. This function has been performed by the CAO's office in the past and should continue to do so.

- ♦ Second, we have concerns about whether an oversight organization could really be independent and objective. Whether it reports to the Commission, City Council, or the Mayor it would be very difficult to resist the political pressures from those organizations.

- ♦ Finally, we are concerned whether the recommendations from such an organization would be influenced by a need to justify its existence.

**Requiring an Earlier Budget Submittal from the Department and Redefinition of "Surplus"**

We supported the need for the City Council to get budget information from the Department in timely manner so that the information can be included in the city's budget. However, we are concerned about how the Council defines "surplus" because a careless definition could have the opposite effect the Council seeks. Concerns by the financial community could cause higher interest rates for Department bonds which in turn would result in either reduced surplus or need for higher rates.

We intend to continue following this item and provide input as appropriate. ❖

**We Wish you a Happy 2011**



## State and Federal Officials Back Plan to Restore California Bay Delta

**California is one step closer to getting a \$13 billion “conveyance system” that would make deliveries of fresh water to farms and cities more reliable.** Interior Secretary Ken Salazar said that such a structure would divert water from north of the Delta, where the Sacramento and the San Joaquin Rivers meet. It would also be accompanied by restoration of “tens of thousands of acres of marshes and flood plains in the Delta to bolster populations of endangered and threatened fish species.”

**The Delta is a 738,000 acre maze of islands and canals south of Sacramento and provides water to 25 million Californians.** “After years of drought, growing stress on water supplies, and with the Bay Delta in full environmental collapse, it has been clear to everyone that the status quo for California’s infrastructure is no longer an option”, said the Interior Secretary.

**For four years, the fate of the degraded Delta has been debated in a forum known as the Bay Delta Conservation Plan (BDCP),** which included federal and state officials and various constituencies. Issuing separate reports, both the federal government and the

California Natural Resource Agency suggested solutions that they would favor.

**The state report outlined progress to date on the BDCP and provided details on key elements of the plan.** The summary calls for between 105,000



and 115,000 acres of habitat restoration and a new dual-tunnel conveyance system in the Delta. California Natural Resources Secretary Lester Snow indicated that current modeling suggests the system would have a capability of 12,000 cubic feet per second and would be able to deliver

somewhere between 5.4 million acre-feet and 5.9 million acre-feet per year. The system would cost an estimated \$12.7 billion which would be financed by water users and take 10 to 15 years to complete.

**The federal report, which complements the state’s report urged continued progress toward completion of the BDCP and supported the major elements of the plan as a “promising means of addressing the critical needs of both the Bay Delta ecosystem and the state’s water delivery structure”.** “Governor Schwarzenegger and the State of California have worked tirelessly and in partnership with us to develop responsible, forward-thinking solutions that can help break the cycle of shortages and water conflicts,” stated Interior Secretary Salazar. “This is the moment to push forward with solutions, apply the best science available, and build a water future for California that is good for our economy, guards against the impacts of catastrophic earthquakes and other natural disasters, and helps restore California’s Bay Delta to health. ❖



*By Joan A. Dym,*



## LADWP Power System Issues

by guest,  
Aram Benyamin

The Power System  
has three major issues:

1.) **Make sure that infrastructure is kept up-to-date.** Power reliability paid off for the DWP this summer but we still need to invest \$5-\$6 billion into the system to make it long term reliable.

2.) **Modernize and repower the power plants.** This involves a huge investment at Scattergood and Haynes, natural gas fired steam generated plants. [*Scattergood Generating Station was dedicated September 10, 1959. Haynes Generating Station was dedicated September 24, 1963.*] Haynes will ultimately provide over 1500 MW of power. DWP met with the California's Water Quality Control Board and hoped to get their approval for DWP's proposal for once-through cooling, but that did not happen." "They are also meeting with Salt River Project, the operator of the Navajo Generating Station at Page, Arizona [groundbreaking, April 21, 1970.] concerning the sale of DWP's share of the plant."

With regard to the **Intermountain Power Project (IPP)**, Aram praised W&PA Board member John Schumann in working with Eric Tharp, DWP Director of Power Generation, and others to get a coalition working together to develop plans for IPP future after 2027 when DWP will no longer use coal. Utah wants the Department to remain on board with IPP for the transition to alternative energy sources. If IPP were to close, it would be a financial loss for

Utah with the City of Delta which relies on the power plant employees for some 500 jobs and the IPP related businesses.

3.) **Develop greater efficiency and conservative management in operating the Power system.** The DWP has budgeted \$300 million to bring in unskilled workers for \$16 per hour to be trained to where they can qualify to take exams for some 200-300 available permanent DWP positions. These entry level positions are not civil service. Some 400+ people are expected to apply and those employed will immediately receive a reasonable starting salary. There has been a shortage of skilled employees in the utility business – utilities have been stealing employees from each other, and with more people retiring the DWP faces a steep increase in need. With this new program, LADWP will be able to fill more positions. They have a budget of \$120 million a year for training. They are also recruiting from returning military personnel – “helmets to hard hats.” The DWP can mentor candidates into areas where skill sets fit them.

Aram discussed the **CO<sub>2</sub> issue. The California cap-and-trade regulation is coming through.** DWP must reduce CO<sub>2</sub> output from 14 million metric tons to 8 million metric tons to comply with regulations designed to limit greenhouse gases to the 1990 levels by 2020. DWP has already reduced its CO<sub>2</sub> emissions from over 16 million tons in 1990 to its current 14 million tons. They are transitioning from coal to efficient alternative fuels with renewables in the mix.

DWP has spent \$100 million **upgrading transmission lines** which is a low cost way to improve without needing to build new transmission lines.

With **transitioning from coal, the rates are the issue.** They can get off coal right now but would need to put in \$20 billion to pay for it. If California utilities go into cap-and-trade unilaterally, it is believed that companies will move to those states where there is no cap-and-trade and generation is cheaper, e.g. Texas.

**Pinetree solar energy project is to be built on land in the Pinetree windfarm site.** It will be a 20 MW facility, with private companies competing for the design and production of the panels. The competitors will give DWP the design, pull the permits, and get the materials. DWP personnel will do the installation. They are shooting to provide solar energy for 14 cents a kwh, compared with the L.A. Harbor providing solar power at 65 cents a kwh. The project can be funded with 20-year bonds at zero interest because of federal and state funding guarantees. It is the poster child for public/private cooperation in solar projects. May/June of 2011 is the scheduled starting date with completion in eight months. ❖

In Board discussion it was pointed out that the Integrated Resource Plan is projecting a 5-8% rate increase each year – 40% in five years. DWP is replacing 2.5 cents kwh energy with 14 cents or greater per kwh energy. The Mayor's stated goal is to cut back fossil fuels and switch to 35% renewable energy by 2020, which included 20% by the end of 2010.

**The rates problem is a combination of the costs to improve reliability, repowering aged Power System facilities, and the Energy Cost Adjustment Formula** which was provided originally to allow the Department to pass on added costs for purchased energy without a further Council vote, but includes the added costs for renewables. ❖

## California's Cap and Trade Program

**On December 16, 2010, the California Air Resources Board (CARB) adopted cap and trade regulations for the control of green house gas (GHG) emissions.** The program was created in response to California's AB 32, Global Warming Solutions Act of 2006. The goal is to reduce GHG emissions to 1990 levels by the end of 2020. The regulations will go into effect starting January 1, 2012.

The first phase of the program will include all major industrial sources, including electric utilities. The second phase will start in 2015 and will include other large sources of GHG emissions. The program will initially allocate "free" allowances to each entity based on their past emissions. The allowance amount will decline about 2% each year to achieve a 15% reduction from current levels by the end of 2020. If an entity needs additional allowances or has extra allowances, they can be purchased or sold through an auction process conducted by CARB. In addition, entities are allowed to achieve compliance by

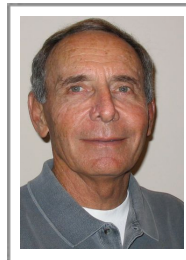
covering a small amount (8%) of their emissions through offset projects such as forestry or agriculture programs. Each allowance is equivalent to one ton of carbon dioxide.

**The Associates have provided comments throughout the rulemaking process. ☆ The adopted regulations were consistent with the recommendations made by the Associates.**

The GHG emissions reduction program will compliment and parallel California's renewable energy goal that is to achieve 33% renewable energy by 2020. GHG emission reductions from electric utilities will require the implementation of renewable energy projects and the renewable energy program will result in the reduction of GHG emissions.

Additional information regarding the cap and trade program can be found on the CARB website:

<http://www.arb.ca.gov/homepage.htm> ❖



By John W. Schumann

## Energy and the Environment California Said to See GHG Program as Lead for EPA to Follow

*E&E West Coast reporter Colin Sullivan* said on E&E TV's OnPoint that California officials see their cap-and-trade GHG emissions program as "the vanguard of a cap-and-trade system that would one day be implemented under the Clean Air Act" by EPA. Sullivan quoted California Air Resources Board Chairwoman Mary Nichols as saying: "Our program will dovetail with what the EPA is doing." Sullivan noted California officials' belief that EPA already has authority to implement cap-and-trade. He said CARB staff also had the "optimistic view" that their GHG program could eventually mesh with the Regional Greenhouse Gas Initiative and other regional programs.

Sullivan also predicted that the efforts by former California Gov. Arnold Schwarzenegger to bring renewables projects online despite opposition from some environmental groups will be continued by new Gov. Jerry Brown. Sullivan declared: "We don't know if he's going to keep Mary Nichols on board at the ARB, which would probably be the biggest staffing decision he'll have to make. But I would think, big picture, more of the same from Jerry Brown."

*E&E TV's OnPoint, Jan. 3.* ❖

### POWER EQUIVALENTS:

Electrical energy rate of use is measured as kilowatt demand (kWd). ♦  
**Volt** = unit of measurement of electrical pressure. ♦ **Ampere** = unit of measurement of rate of electrical flow. ♦ **Watt** = unit of measurement of electrical power. ♦ **1 volt x 1 ampere** = 1 watt (approximately). ♦ **1000 watts** = 1 kilowatt (kw). ♦ **1000 kilowatts** = 1 megawatt (MW). ♦ **1000 megawatts** = 1 gigawatt (GW). **746 watts** = 1 horsepower (hp) (theoretical). ♦  
**1 kilowatt-hour** = 1000 watts of power at work for 1 hour.

*L.A. Water and Power Facts & Figures publication.*

## EIA Projects Coal, Natural Gas to Dominate Fuels Through 2035



Projections released by the Energy Information Administration (EIA -official energy statistics from the U.S. government) indicated no new coal plants would be built between now and 2035 but coal would continue to lead the U.S. energy portfolio as existing plants kept plugging away, Andrew Restuccia reported in The Hill's E2 Wire blog. "The 45 percent of U.S. electricity production now fueled by coal would only drop to 43 percent in 2035, at which time natural gas would account for 25 percent of generation, up from today's 23 percent", said EIA. Renewable generation would rise from 11 percent to 14 percent over the same time period, with nuclear generation increasing to about 12.7 percent, slightly higher than today.

EIA doubled its estimate of how much natural gas was available in shale formations compared with last year's estimate, Matthew Wald wrote in the New York Times' Green blog. Abundant supplies would keep prices under \$5 per million cubic feet through 2022, while

international oil prices would rise to the equivalent of \$125 a barrel in today's dollars in 2035. Cheap natural gas prices would dampen investment in nuclear and wind power, the Financial Times of London reported. Electricity prices were predicted to fall from 9.8 cents per kWh in 2009 to 8.9 cents per kWh in 2016; landing at 9.2 cents per kWh (in 2009 dollars) in 2035.

EIA said imports were predicted to go down from 24 percent of U.S. energy consumption in 2009 to 18 percent in 2035, Platts reported. EIA Administrator Richard Newell was quoted as saying: "We're projecting electricity consumption growth on average of about 1% per year. This reflects a structural shift in the economy to a less energy-intensive economy, as well as higher prices and rising efficiency standards." ❖

*Bloomberg, Financial Times of London, The Hill's E2 Wire blog, New York Times' Green blog, Platts, Dec. 16.*

*Energy Information Administration [news release](#), Dec. 16, 2010.*

## Navajo Generating Station

**Navajo Generating Station is a 2250 megawatt coal-fired power plant located on the Navajo Indian Reservation near Page, Arizona.**

The plant consists of three 750 MW units that provide power to Arizona, Nevada, and California. The Los Angeles Department of Water and Power owns 21% of the power generated by the plant. The station has three 236 meter high chimneys, which are the tallest structures in Arizona. It was assembled during the 1970s and began producing commercial power in 1975. The construction costs were \$650 million, with an additional \$420 million for new environmental scrubbers

**Intermountain Power Station is a coal-fired power station owned and operated by the City of Los Angeles, California, and the Intermountain Power Agency. The plant is located near Delta, Utah.**

The energy is delivered over the project's AC and DC transmission systems to 36 participants in the project that principally serve Utah and Southern California. ❖

## California Set to Become Hub of U.S. Carbon Trading

California is expected to be the hub of carbon trading in the U.S. with three exchange groups preparing product launches following the weakening of U.S. and regional markets, the Wall Street Journal reported. Lenny Hochschild, a managing director at Evolution Markets, was quoted as saying: "It's fair to say the focus of the U.S. [carbon] market at this point is 90% on California."

Beginning in 2012, California Air Resources Board rules are expected to set a cap on most CO2 emissions in the state and then to reduce the cap over eight years. The state is expected to issue inexpensive or no-cost pollution credits in the first years and then sell credits at auction in later years. Among the companies looking to become the dominant emissions-trading center in the state were the Green Exchange, IntercontinentalExchange and NYSE Blue, a planned joint venture between NYSE ❖

Euronext and APX. [Wall Street Journal](#), Nov. 24.



## Wall Street Journal Calls on Congress to End Wind Subsidies

The Wall Street Journal, in a December 20<sup>th</sup> editorial, urged Republicans in Congress to try to end the "green pork" subsidies for windpower. "Talk about throwing good money after bad. Despite more than \$30 billion in subsidies for 'clean energy' in the 2009 stimulus bill, Big Wind still can't make it in the marketplace." The Journal noted that American Wind Energy Association CEO Denise Bode "had warned that without last week's extension of the federal 1603 investment credit, the outlook for the wind industry would be 'flatline or down'."

While construction on new wind facilities had plunged sharply this year from 2008-2009 levels, the coal industry, EPA and the Interior Department "have done everything possible to curtail, added almost three times more to the nation's electric power capacity in the first nine months of 2010," according to EIA. The Journal compared the number of MWs built and run by 85,000 wind workers to generate 1 percent of the nation's power with the 140,000 employed by the coal

industry to help generate half of U.S. electricity. It wrote: "The wind industry gave the vast majority of its campaign contributions this election cycle to Speaker Nancy Pelosi's Democrats. If Republicans are serious about shrinking the federal budget and ending corporate welfare, a very good target would be green pork, starting with wind."

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**Independent ...Energy Information Administration** - EIA - Official Energy Statistics from the U.S. Government.

**Note:** No stimulus money was used for LADWP wind farms. ❖

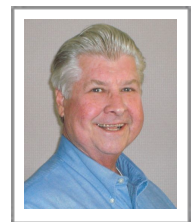


## Sen. Boxer Points to Climate Science as Committee Focus Next Year

*Clean Air Report*, Dec. 23.

Sen. Barbara Boxer, D-Calif., said the Senate Environment & Public Works Committee, which she chairs, will focus on the science of climate change next year in response to anticipated pushback from Republicans on EPA's GHG regulations and other mandates, reported Clean Air Report today.

Boxer was quoted as saying: "We're going to continue in this committee to tell the truth. You've got to bring the facts, and that's my job. And when that happens I think people will say, 'let's move forward.' We will have to play some defense. I'm not blind to that. There's going to be a lot of moves to take back whatever progress we've made." ❖



Articles Submitted by  
 Thomas J. McCarthy

## LADWP Outages and the Changes Since 2006

by guest,  
Marvin Moon

Our guest, Marvin Moon, Director of LADWP Power System Engineering Division, spoke about DWP outages and the changes since 2006. DWP has new tools to deal with outages. It has some 4 million customers with 1.4 million electric meters. In 2005 it had a peak load of 5700 MWs. In 2006 it was 6165 MWs. 79,000 customers were out in 2006 – 950 transformers tripped off. 73% were back on in six hours. In 72 hours 99% were restored. Some were out longer than 3 days. In 2010 it had 25,206 customers out. But only 136 transformers tripped compared to the 950 in 2006. There was much less cable affected than before. DWP had a distribution station overload.

Moon provided a graph comparison of the temperatures for the two outage times. The peak was a little more downtown in 2010 but a little less in the Valley. The transformer failure comparison showed that 2006 was a high with 2007 lower and 2010 much lower still. In July 2006 they had just 1200 transformers in stock. Now they always have at least 3,000 in stock going into the summer. In 2006 they had a problem getting contract crews out to make repairs. Since 2007 they have a contract provision where they can always call on the contractors in emergencies.

There has been a change in philosophy. DWP use to run distribution transformers to failure. This created public relations problems when many transformers failed at the same time during record heat waves.

Now, they fix problems in the field as they come across them and have proactive tools to catch many overloads before they become a issue.

In the last three years they have fixed 9,975 transformers and 8312 poles. They are ramping up pole replacements to 5,000 a year, cable replacement to 60 miles a year, and distribution transformers to 2400 a year.

DWP also has a substation transformer and circuit breaker replacement program. They are installing substation automation, and will have a new maintenance district to focus on minor problems and engage in proactive maintenance. There is a big shortage of linemen so they are using feed-in jobs to increase the pool. They increased the number of classes to train new journeyman level linemen and station maintenance mechanics. Temporary circuit restoration is done in an average of 90 days. They found that if they fix 20 temporary circuits a year; the frequency of outages system wide is expected to drop 8.5% after five years.

In the past 3 years \$2,120,641,000 was spent on Power System reliability. Now they are up to almost \$800 million per year for Power System Reliability and are 2% under their spending cap. Last year they were \$4 million off the \$784 million cap.

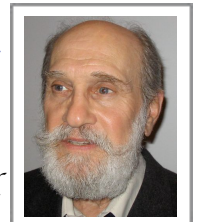
A discussion on transformers revealed that heat overload ages the paper in transformers rapidly. Now, every transformer is modeled so with 80% accuracy they can tell how much load is on the transformer. They get usage information from the customer (consumer information data) so they can model both the transformer loading and various portions of the circuits. They started putting a temperature gauge on the transformers but it proved unpopular with the service technicians so they now attach temperature tags. When the

temperature tag reaches its limit, (e.g. 54 degrees Celsius), it turns black. They changed the temperature rating of the transformers from 65 degree rise to 55 degree rise which causes the transformers to run cooler, providing a built-in overload to 12% possibility. Hence the transformers last longer. They have a heavier transformer with a greater core. **So, now they are ready for every summer.**

The speaker showed by graphic how GIS monitoring of transformer loading will work, using a color intranet display system that would show blue for okay transformers, yellow for problems and red for overload. They can immediately target the transformers for change out. There will be a new tool using the GIS system for modeling overloads of distribution circuits. They will have PQ meters monitoring sending messages regarding circuits showing voltage dips and measuring the power quality. With the new transformer modeling system, eventually it will become more real time with wireless communications and monitoring. Every 15 minutes there will be a reading of the kw/h.

They are changing things on a realistic cycle basis using the latest technology. For Electric Vehicle (EV) car chargers they expect to incentivize the first 5000 LA charges. Several charging options are available including a separate electric service for the car. They also have discounted rates for EVs for off peak charging.

They are going forward with a new CIS system. They currently have two vendors competing over putting in the new system. They are **investigating various methods to provide useful feedback to customers using a developing Smart Grid that takes into account the need for good Cyber Security.**



Guest Speaker presentation summaries submitted  
by





## SECRETS OF THE HEART: *Adventures of a California Girl, 1886-1920,*

by **Charles Lee**. Mendocino: Pearl Press, 2003. 310 pp. Illustrations. Paper, \$20.  
Order from Pearl Press, P.O. Box 924, Mendocino, CA 95460

**Katherine Newhall Lee** died on July 29, 1920, just five days after giving birth to her son, Charles Hamilton Lee, Jr. Her husband subsequently married again, and young Charles grew up knowing little about his mother; his father preferred to keep his secrets in his heart. Not until nearly the end of the 20<sup>th</sup> century did Charles obtain a cache of a hundred letters from an aunt who had preserved them all those years. Most of the letters were from Katherine to her husband, Charles Hamilton Lee, Sr., known as Milton. Some were from Milton to Katherine, and a few were to family members.

The letters provided Charles with the opportunity to learn about his mother and the adventurous life she had led in her brief 34 years. Born in 1886, Katherine attended Mills College and graduated from there in 1909. Milton had known her for some years and, as a young civil engineer with a degree from the University of California, was courting her while on his first career assignment. That job was surveying the route for the Los Angeles Aqueduct to be built from Owens Valley to Los Angeles, and to measure stream flow.

Although the main actors in the history of the city's acquisition of Owens River water for Los Angeles are well known, there were other people involved who have received little attention from historians. One important exception, Dr. Raymond G. Taylor, wrote *Men, Medicine, and Water: The Building of the Los Angeles Aqueduct, 1908-1913, a Physician's Recollections* (1982), describing his work as the physician in charge of patients injured on the job.

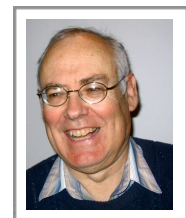
Milton Lee also worked on the aqueduct project, hired by William Mulholland, and he knew Joseph B. Lippincott, Harvey Van Norman, and many others, from engineers to mule packers. But of special interest here is the story of Katherine Lee who was an eyewitness to the historic achievement of the aqueduct's construction. Katherine and Milton were married on January 17, 1911, and the Mills College graduate found herself spending the first year of her marriage in the Eastern Sierra, camping out with her husband (and his work crew) for weeks at a time, or living in a modest home in Independence a short distance from where Mary Austin had lived. She made friends with the wives of engineers, especially Bessie Van Norman, Harvey's wife.

Los Angeles residents celebrated the arrival of Owens River water at the Aqueduct Cascades on November 5, 1913. However, another celebration took place earlier in the year, on February 15, at the intake gates. "Mrs. Van and I were the only ladies who were fortunate enough to be with our husbands," wrote Katherine. But "fortunate" included their washing dishes, making coffee, and boiling eggs for the event. The event was captured on motion picture film, and standing on the intake, if you look carefully, you see Katherine among the officials gazing down at the water.

Katherine's descriptions of life in the Owens Valley are vivid, keen, and comparable to Mary Austin's *Land of Little Rain*, published eight years earlier, in 1903. Katherine's husband went on to other engineering assignments

and, when the United States entered World War I, he joined the Army as an officer in the engineers. Katherine moved to New York and (metaphorically) spread her wings, becoming a children's librarian and gaining a sense of independence. Reunited after the war, the couple returned to California. They had become Christian Scientists, a faith that father would pass on to son, though it is likely that Katherine's refusal of medical assistance in giving birth contributed to the embolism that killed her.

In addition to his mother's letters, Lee utilized essays she had written, a diary she kept, and other sources to reconstruct as much as possible the life of the mother he never knew. He even resorts to creative non-fiction, in which he holds imaginary conversations with Katherine. The end result is a true labor of love, a quest in which Lee brings back to life a talented, spirited young woman, a helpmate who made it possible for Mulholland, Lippincott, and others to eat sandwiches and hardboiled eggs at a major turning point in the history of Los Angeles. ❖



*By Abraham Hoffman,  
a W&PA member,  
teaches History at  
Los Angeles Valley College*