



Capital Branch



Central Valley Branch



Feather River Branch



Shasta Branch

January 2011

# The Engineerogram

Volume 73, No. 1

## President's Message

by Oscar Serrano, P.E., President



I hope everyone enjoyed the holidays. As we enter 2011 this marks the 100th Anniversary of the "I" Street Bridge in Sacramento. 2011 also marks the 90th Anniversary of the Sacramento Section of ASCE. Thank you to all the officers and volunteers that have helped throughout the years.

I know that we will continue to work hard into the future.

### Maintain a Strong Workforce:

Keep it simple: smile and greet your staff/employees each morning. Spend 5 minutes talking to each of them this week and ask them how their holidays or time off was.

### Increase Member Involvement:

One question that is frequently asked is why there is a lack of engineers from the public sector who are involved with ASCE. From speaking with members in the public sector it sounds like cost is the biggest factor. Most private compa-

nies pay membership fees for employees to join engineering groups. Many private companies also reimburse their employee's expenses for attending events. In the public sector that is rarely the case. A few public agencies do provide a small amount employees can use towards professional development like being a member of ASCE but typically it is not enough to cover the entire cost of the membership. For instance the State of California gives each employee a \$100 allowance. With the start of the New Year this may be a good time to find out what the policy at your company or agency is.

Also remember that you don't have to be a member of ASCE to attend events. It's also good to know that some of our groups offer free events periodically. YMF's events are always free.

### Increase ASCE Legislative Presence:

Did you know that ASCE Region 9, which consists of all of California, has its own lobbyist? Richard Markuson tracks bills for the Region 9 Board of Directors and provides them with updates. Richard along with the Region 9 Government Relations Committee also helps Region 9 take positions on bills. Check out Richard's monthly column in *The Engineerogram*.

### Increase Interaction with Students and Younger Members:

I'm happy to announce that the Sacramento Section recently awarded funding scholarships to each of the four ASCE Student Chapters in our section: California State University – Chico, California State University - Sacramento, the University of California – Davis, and the University of the Pacific. The Section also provided additional funding to the organizing committee of the 2011 Mid-Pacific Conference which will be hosted by the ASCE Student chapter at California State University – Sacramento.

The Section also provides scholarships every February to individual ASCE students in each of the four universities in our Section through the Alfred R. Golze Scholarship Fund.

If you would like to donate to the scholarship fund please visit our website:

<http://www.asce-sacto.org/Students/Scholarships.htm> or contact Erik Polson at [polsonengineering@earthlink.net](mailto:polsonengineering@earthlink.net).

Please let us know what you think:

[sacramentosectiongsd@ermail.asce.org](mailto:sacramentosectiongsd@ermail.asce.org)

Thank you,  
Oscar.

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The Engineerogram is the official publication of the Sacramento Section of the American Society of Civil Engineers and made available to ASCE members paying local dues to the Section. It is published regularly at the beginning of the month. **To contribute articles, mail, fax, or e-mail to ASCE/Sacramento Section Executive Secretary, Vivian Mevorah, at [asce@asce-sacto.org](mailto:asce@asce-sacto.org). Deadline for articles is on the 20th of the month prior to the issue.**

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**(To our contributing writers: The Engineerogram reserves the right to make revisions, correct spelling and grammatical errors, to prioritize information and to summarize content. Articles may be shortened as editorial requirements dictate. Questions regarding this policy may be directed to the President of the Sacramento Section. Thank you for your understanding. Editors.)**

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Shasta Branch President	Present status is Inactive	-	-

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For more ASCE activities if you wish to be active in a committee, career opportunities, complete text for the legislative activities, go to the Sacramento Section web site at [www.asce-sacto.org](http://www.asce-sacto.org), or contact a current officer. To MAKE CHANGES OR RENEW YOUR MEMBERSHIP, go to website: [www.asce.org](http://www.asce.org). For MEMBERSHIP APPLICATIONS, please e-mail to [memapp@asce.org](mailto:memapp@asce.org).

MASTER CALENDAR

Date(s) (Times)	Event	Location	Information
<b>2010</b>			
<b>January</b>			
	Capital Branch Meeting, Page 3	Radisson Hotel - Crocodiles Lounge, 500 Leisure Lane, Sacramento, CA	Thor Larsen, 916-973-0356 <a href="mailto:thor.larsen@edcgov.us">thor.larsen@edcgov.us</a>
	Central Valley Branch Meeting, Page 3	Marie Calendar's, 2628 W. March Lane, Stockton	Anthony Mazzei, <a href="mailto:amazzei@condorearth.com">amazzei@condorearth.com</a>
	Feather River Branch Meeting, Page 3	El Zarape Restaurant (530-755-2888), 1005 Stafford Way, Yuba City, CA	Amie McAllister – 530.228.6003; <a href="mailto:amie.steel@gmail.com">amie.steel@gmail.com</a>
Thursday, 6th 6:00 pm	YMF Résumé Workshop	UC Davis, Room TBD	<a href="http://www.sacymf.org">www.sacymf.org</a>
Monday, 17th 6:00 pm	Sacramento Section Board Meeting	Quincy Engineering, 3247 Ramos Circle, Sacramento	Greg Young, 916-368-9181
Wednesday, 19th 6:30 pm	Sacramento Valley Professional Chapter of Engineers Without Borders Meeting	RBF Consulting, 4540 Duckhorn Drive, Suite 202, Sacramento	Mark Quito, 916-567-2500, <a href="mailto:quito@pbworld.com">quito@pbworld.com</a>
Saturday, 22nd 6:15 am	YMF Ski Trip	Sugar Bowl (pick up in Sacramento) Location TBD	<a href="http://www.sacymf.org">www.sacymf.org</a>

**February**

Tuesday, 15th	Sacramento Chapter of EWRI Hosting the Second Annual Symposium	Hyatt Regency, Downtown Sacramento, CA	
Saturday, 26th	Engineers Day at the Mall	Sunrise Mall	Joyce Copelan at 530-908-8372 cell, or <a href="mailto:jcopelan95694@yahoo.com">jcopelan95694@yahoo.com</a>

**March**

Wednesday, 9th	Fifth Annual ASCE Region 9 California Infrastructure Symposium and Awards Dinner	Sacramento	Lori Campbell, Administrator, <a href="mailto:lkconsulting@sbcglobal.net">lkconsulting@sbcglobal.net</a> or 916-965-1536
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Conferences	Section Officer Meetings	Seminars	YMF Events
Section Meetings	Region 9 Events	Outreach Events	Student Events
Branch Meetings			

**Feather River Branch Meeting**

If you have suggestions or recommendations for a meeting topic or location, please contact Amie McAllister at [amie.steel@gmail.com](mailto:amie.steel@gmail.com) or Shane Cummings at [sdcummings@handk.net](mailto:sdcummings@handk.net). We are looking to increase our membership participation in our monthly meetings and regular community outreach activities, so please drop us some suggestions.

**Is Your Membership Information Current?**

*by Fareed Pittalwala, Past-President*

Please ensure that your membership information is up to date with ASCE's national database, as our local system is dependent on your information being current. It's a quick and easy fix that you can accomplish in less than five minutes by going to: <http://tinyurl.com/yhl6pvd>.

**Capital Branch Meeting**

For more information about the Capital Branch meetings, please contact Thor Larsen at [thor.larsen@edcgov.us](mailto:thor.larsen@edcgov.us), 916-973-0356.

**Central Valley Branch Meeting**

For more information about the Central Valley Branch meetings, please contact Anthony Mazzei at [amazzei@condorearth.com](mailto:amazzei@condorearth.com).

**Shasta Branch**

The Sacramento Section is currently looking for volunteers who would like to take a leadership position within ASCE and re-invigorate the Shasta Branch. For more information, contact Section President Oscar Serrano at [oserrano@colusa-nsn.gov](mailto:oserrano@colusa-nsn.gov) or Region 9 Governor Fareed Pittalwala at [fpittalwala@rbf.com](mailto:fpittalwala@rbf.com).

## The Law and Civil Engineering

by Eugene L. Bass, Esq.

### The Mechanics' Lien and Arbitration

In a prior article, it was pointed out that a lawsuit for foreclosure of a mechanics' lien had to be filed within 90 days of the date of recording of the lien and that failure to meet that time limit could result in loss of the ability to sue to enforce the mechanics' lien. Several alternate strategies were also noted whereby the lien could be kept alive until the lawsuit to foreclose could be filed at a later date. One of the options mentioned was to file another mechanics' lien to replace the old one. This required that the lien filing period had not yet lapsed when the replacement lien was recorded. It also required that the old lien be released. Another option was to record a "Notice of Credit" which could extend the period for filing the foreclosure action to one year.

It is not uncommon for there to be an arbitration clause in the agreement out of which a construction dispute and prospect for a mechanic's' lien may arise. The parties may wish to pursue arbitration and not file a lawsuit. They are met with a dilemma, however, where the law requires that a lawsuit be filed within 90 days (or within agreed time limits) or the lien will become invalid. A further complication arises from the fact that the filing of a lawsuit is deemed to be a waiver of the right to arbitrate.

California law provides a resolution of the dilemma and allows for the preservation of the right to arbitrate while still filing an action for foreclosure of a mechanics' lien. The dispute is resolved in arbitration, however, and not in a court action. The law requires that the lawsuit that is filed for foreclosure of a mechanics' lien include an allegation that the plaintiff does not intend to waive any right of arbitration, and intends to make a motion to the court, within 30 days after service of the summons and complaint, for an order to stay further proceedings in the lawsuit. In addition, at the same time that the complaint is filed, the plaintiff must file an application with the court requesting that the lawsuit be stayed pending arbitration. Finally, within 30 days after service of the summons and complaint, the plaintiff must make a motion to the court to stay the lawsuit pending the completion of the arbitration. If the procedures are not followed, the filing of the lawsuit will be deemed a waiver of the right to compel arbitration.

The legal procedures for being able to arbitrate a dispute that may result in foreclosure of a mechanics' lien are fairly complex and should be handled through legal counsel. Preservation of mechanics' lien rights can be critical to eventually getting paid, however, and can be worth the additional inconvenience and expense.

*The author's discussion of legal ramifications of the particular case(s) are provided only for educational purposes and should not be relied on as legal advice. If you have a specific legal problem, please consult with your attorney.*

## Alfred R. Golze Scholarship Fund

by Eric Polson, PE, Chair  
A. R. Golze Scholarship Trustees

The Sacramento Section Alfred R. Golze Scholarship Trustees request donations for the 2011 Golze Scholarships.

Your generous donations will help ensure that significant scholarships will be awarded to Civil Engineering Students at CSU, Chico; CSU, Sacramento; UC Davis; and the University of the Pacific.

In light of the ever increasing costs of education and the recent cuts in state and federally funding, the need to help deserving students is greater than ever. Last year nine Golze Scholarships were awarded for a total of \$8,500. The goal for 2011 is to award over \$10,000 in Golze Scholarships.

The donation categories are: Bronze Sponsor - \$25.00 to \$49.00; Silver Sponsor - \$50.00 to \$99.00; Gold Sponsor - \$100.00 to \$499.00; Platinum Sponsor - \$500.00 to \$999.00; and Patron - \$1,000 and above.

The Golze Scholarships will be awarded at the Engineers Week awards banquet in February, 2011. All donors will be recognized by name and category in the upcoming Engineerogram, and in the 2011 Awards Banquet program. All donations are fully tax deductible.

### **Please send your generous donations to:**

ASCE, Sacramento Section  
ATTN: Eric Polson  
P.O. Box 1492  
Lincoln, CA 95648

**Please make your check payable to:** ASCE, Sacramento Section and note on the check "for Al Golze Scholarship." If you would like more information, please feel free to contact the ASCE, Sacramento Section Office at (916) 961-2723.

Eric Polson, P.E.  
Consulting Civil Engineer  
916.801.6290



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## UOP Student Receives Scholarship



by Luke S. Lee, Ph.D., P.E.  
Assistant Professor of  
Civil Engineering, UOP

Thanh Do has been selected as a recipient of the 2010 Samuel Fletcher Tapman ASCE Student Chapter Scholarship. The Tapman scholarship awards outstanding ASCE student members \$3,000 scholarships based on academic performance, potential for leadership capacity, and ASCE activities.

Do is a third year civil engineering student with a minor in engineering management at the University of the Pacific. He served as an ASCE meeting chair in 2009 and has been a Steel Bridge team co-captain in the past two years. Do also serves the engineering and university community at Pacific as president of Tau Beta Pi, as an International Student Ambassador, as a university and engineering tutor, and a member of Circle K. He has a passion for structural engineering and plans to pursue graduate studies after completing his degree at Pacific.

## ASCE Region 9 Update

### A New Year's Resolution: Get Involved in ASCE

by Camilla M. Saviz, P.E., Ph.D., M. ASCE, Governor-At-Large



It is a great honor to serve as a Governor-At-Large and one of three new Governors for Region 9, joining Fareed Pittalwala, P.E., who represents the Sacramento Section and Brent Siemer, P.E., who represents the San Francisco Section. Within Region 9 that is made up of the great State of California, there are 4 Sections, 17 Branches, 10 active Younger Member groups, and 25 ASCE Student Chapters [www.

asce.org, under "Membership and Community"]. This means that there are many opportunities to get involved in the profession, e.g., by attending meetings, serving on a committee at the local level, taking on a leadership position at the Younger Member, Branch, or Section levels, or supporting a Student Chapter as a speaker, champion, or Faculty/Practitioner Advisor. There are also numerous opportunities to serve and learn at the Society level. I have had the good fortune to work with ASCE members in different capacities and each time, I have been inspired and awed by their dedication to serving other ASCE members and advancing the profession.

ASCE provides some valuable resources to help Sections and Branches increase involvement and engage members. One such resource is the upcoming *Multi-Region Leadership Conference* to be held February 11-12, 2011 in Costa Mesa, CA. This conference provides a forum for meeting other Section, Branch, Younger Member, and Student Chapter leaders and participating in sessions and roundtables on topics relevant to each group. Please consider sending at least one representative from your group to this

conference. Another resource, the *2010 Section and Branch Best Practices Guide*, was compiled by the Committee on Geographic Units and includes activities and initiatives developed by various Branches and Sections to enhance the value of ASCE participation for their members. The guide is available at <http://www.asce.org/sections/resources>.

To achieve the vision for Civil Engineering, ASCE has identified *Infrastructure, Competency, and Sustainability* as three strategic priorities [www.asce.org, under "Issues and Advocacy"]. There is a lot of work to be done to achieve the vision and advance the profession. Difficult economic times have resulted in cuts in infrastructure funding in many states despite recent catastrophic reminders that the nation's infrastructure needs our attention. The competency and sustainability strategic priorities acknowledge that Civil Engineers will have to meet even more challenging societal requirements in the future and will have to do so by using fewer resources and, likely, less funding. In these challenging times, it is easy to think we are 'too busy' to participate. However, each one of us makes up ASCE and the Civil Engineering profession - there is no better or more critical time to be involved. At the local level, ASCE provides opportunities to network at meetings, learn through speaker series, develop leadership skills in officer positions, and not to be overlooked: reconnect with friends and meet new ones. The list of opportunities just grows at the Section, Region and Society levels. Get involved or get more involved—either way, both you and the Civil Engineering profession will benefit!

Best wishes for good health and happiness in 2011.

## In Memorial

James C. Moese was born April 11, 1938 in Chicago, IL. He died December 16, 2010 in Sacramento at the age of 72. Jim received his degree in Civil Engineering from the University of Illinois. Following two years of duty in the Army Corps of Engineers, he began work for the State of California.

He worked in the field in Southern California for approximately 1 1/2 years, then transferred to Sacramento where he worked in the Bridge Department.

In 1976 he transferred into design of retaining structures. Jim is survived by Elizabeth, his wife of 40 years, sons Brian and Bruce, his sister Dorothy Barthold, and neices Heather and Melinda. Memorial service will be held Saturday, January 15th, 11 A.M., at Northminster Presbyterian Church, 3235 Pope Avenue. Remembrances may be made to Guide Dogs for the Blind, P.O. Box 3950, San Rafael, CA. 94912-3950.

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**ASCE Region 9**  
**Announces the Fifth Annual**  
**California Infrastructure Symposium and Awards Dinner**

***SAVE THE DATE***  
**March 9, 2011**

The American Society of Civil Engineers (ASCE) realizes that critical infrastructure systems are facilities and assets so vital that their destruction or incapacitation would disrupt the security, economy, safety, health, or welfare of the public. One of ASCE's top priorities is to raise the grades on California's infrastructure.

ASCE Region 9 is taking the lead by presenting the **Fifth Annual California Infrastructure Symposium** to be held on **Wednesday, March 9, 2011**, in Sacramento. The Symposium will address such topics as roads and highways, bridges, high speed rail, water supply, and flood control. The speakers are invited to give you the most current information on Federal and State priorities, alternate modes of funding, the stimulus plan, gas tax restructuring, and more. There will also be discussion of National and Statewide Report Cards which will identify and bring attention for infrastructure support and renewal in California.

Following the Symposium, you may also register for an evening to help celebrate excellence in California Civil Engineering projects and honor the outstanding accomplishments of individuals at the 2010 ASCE Region 9 Awards Dinner.

Please mark your calendar to join us on **Wednesday, March 9, 2011**, at the Hyatt Regency, 1209 L Street, Sacramento, California for continuing education, networking, and social events you will not want to miss. Look for more information as it becomes available at [www.asce.org/region9](http://www.asce.org/region9).

Also, please note that ASCE Region 9 Legislative Day will take place on March 8, 2011 at the California State Capital in Sacramento.

For additional information, please contact Lori Campbell, Administrator, [lkc.consulting@sbcglobal.net](mailto:lkc.consulting@sbcglobal.net), or by telephone at 916.965.1536.



ASCE Region 9 represents more than 18,000 ASCE members in the State of California.

P.O. Box 2575 | Fair Oaks, CA 95628 | 916.965.1536 | FAX 916.965.6234 | [www.asce.org/region9](http://www.asce.org/region9)

## History and Heritage

Story by John D. Galloway, Hon. M. ASCE,

Consulting Engineer, Berkeley, CA,

reprinted from *Civil Engineering*, October and November, 1941

On September 9, 2010, officers, members, and guests of the Sacramento Section of ASCE gathered at the Holiday Inn, Capitol Plaza, for our annual Installation and Awards Dinner. Many of the Sacramento Section's awards are named after civil engineers from this area's history, now deceased, that the Section has chosen to honor for their notable contributions to the profession, this Society, our community, the country, and the world. Each month, in this column, we will profile one of these remarkable engineers.



Theodore D. Judah (1826–1863)

This month's historic engineer: **Theodore D. Judah (part 2 of 2)**

### Part II. Surmounting the Sierra Nevada

Building of the Central Pacific Railroad, starting from tide-water on the Pacific to complete the first transcontinental line, easily ranks as one of the most important if not the greatest engineering exploit of the early West. It was largely the work of one man, Theodore Dehone Judah. Trained in the East, he had built the 22-mile Sacramento Railroad in California before he was 30 years old. During this time he was obsessed with the ambition to conquer the Sierra crossing. This longing, which seemed fantastic to his friends, possessed his mind continuously. Some of the details of his ambitious dreams were given in the article in the October issue.

By 1859 Judah had attended three sessions of Congress with the aim of furthering the Pacific Railroad Project. The results of the Government surveys had become known, and the agitation for the railroad was growing in strength. The Government reports, while complete, could not of themselves produce a railroad. Congress could not agree upon a route, and was absorbed by the problems that culminated in a few years in the Civil War. On January 1, 1857, Judah published in Washington

a pamphlet entitled "A Practical Plan for Building the Pacific Railroad," in which he outlined the substance of a project to be built by private enterprise without Government aid. He felt that the national Government was "a house divided against itself;" that the project could not be undertaken "until the route is defined; and if defined, the opposing interest is powerful enough to defeat it."

His estimate of the general situation was correct. He maintained that what was required was a definite survey on a selected route and not general reconnaissances of several routes, on which differences of opinion would certainly arise. He stated that about \$200,000 was required for surveys and that the project for the 2,000 miles of road would average about \$75,000 per mile, or a total of \$150,000,000.

Congress did nothing. So Judah returned to Sacramento, convinced that the Pacific Railroad must be promoted from the West. Probably under his inspiration, the California State Legislature on April 5, 1859, passed a resolution calling for a convention to consider the subject. Over one hundred delegates met in San Francisco on September 20, 1859, with Judah as a representative from Sacramento. As usual, debate centered on the route to be adopted, and a resolution was passed expressing preference for the Central Railroad route. A number of ideas were discussed by the convention. In all the actions taken, Judah had a prominent part. In the end, on October 11, 1859, he was formally appointed as the accredited agent of the convention to convey its recommendations to Washington. Judah sailed on October 20, 1859.

Although Judah established an office in the Capitol, filled with maps and other data for the enlightenment of Congress, the necessary bills never reached a vote. His work, however, had laid a foundation for the later bills, passed in 1862.

While Judah was in the East, he took pains to accumulate the latest information on railroads that might be useful in the Western venture. Several lines across the Appalachian Mountains, notably the Baltimore and Ohio, were fine examples of this type of construction. He returned to California convinced that nothing could be done in Congress until an actual project was outlined, with proper surveys, estimates, and organization.

In 1860 Judah was in the mountains, making a reconnaissance of several routes, using a barometer to determine elevations. Dr. Daniel W. Strong, a druggist of Dutch Flat, CA, had heard of the explorations of Judah and invited him to come to Dutch Flat and examine the Donner Pass route. When Judah reached Dutch Flat he formed a friendship with Strong that lasted the rest of his life. This route had been traveled by some of the early emigrants, who came up the Truckee River and crossed the divide. Mostly, however, they used the more favorable wagon roads to the north and south. By this time the tide of immigration had turned eastward to the mines of Nevada, and Dr. Strong, with others, were interested in a possible wagon route over Donner Pass to divert traffic through his home town.

It is hardly necessary to argue as to who deserved the honor

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for determining the route of the railroad over the Sierra Nevada. Dr. Strong undoubtedly is entitled to the credit for suggesting a route that had been known for over ten years as an emigrant trail. However, it required the trained eye of a practical engineer to determine in a preliminary way the merits of the location that was afterward adopted. The two men went over the route across the mountains in the fall of 1860, and on their return Judah prepared the engineering data at Dr. Strong's store in Dutch Flat. It was agreed that a corporation should be formed and articles were written with that end in view. Judah prepared a pamphlet entitled "Central Pacific Railroad of California," published in San Francisco in November 1860, in which he advocated the chosen route, as the most practicable one, "which gives nearly a direct line to Washoe with maximum grades of one hundred feet per mile. The elevation of the Pass is 6,690 ft." Washoe was the name then applied to the Virginia City-Gold Hill developments in Nevada. One point made by Judah was that the proposed route was shorter by possibly 150 miles than that recommended in the Government reports. He also dwelt upon the possibilities of traffic with the Nevada mines and estimated the resulting revenue from it. Government aid was contemplated.

Dr. Strong secured subscriptions amounting to \$46,500 and Judah went to San Francisco to secure the remainder, some \$70,000. While he was well received at first, when the time came for subscriptions, none of those approached were willing to sign their names. Judah, who was called an enthusiastic lunatic, went back to Sacramento, disgusted with San Francisco. A meeting in Sacramento, the first of several, was well attended. At later meetings, Judah for the first time met the men who were to carry out the project – Leland Stanford, Collis P. Huntington, Mark Hopkins, and Charles Crocker. Huntington was cautious and only agreed to share the cost of the surveys; after those were made, he would consider the subject further.

As a result of Judah's efforts, an organization meeting of stockholders was held on April 30, 1861, and on June 28, the Central Pacific Railroad of California was incorporated. Leland Stanford, just nominated for governor on the Republican ticket, was made president. Huntington became vice-president, Hopkins secretary, and Judah, chief engineer. Strong was a director.

The organization gave Judah the necessary money for surveys, and he soon organized field parties. A barometric reconnaissance was also made of two other possible routes, both of which proved markedly inferior to that proposed. The results were embodied in a report by Judah dated October 1, 1861, in which the merits of the route were discussed and the benefits from Government assistance were set forth. The cost from Sacramento to the state line was estimated at \$12,380,000 and costs to several other more distant points as far as Salt Lake City were also estimated, the total 733 miles to that point being \$41,415,000. Judah's route resulted in saving a distance of 184 miles over the Government route and, in his own words, in "developing a line with lighter grades, less distance, and encountering fewer obstacles than found upon any other route or line hitherto examined across the Sierra Nevada Mountains."

Referring to the engineering problem of location he explained:

"When it is considered that the average length of the western slope of the Sierra Nevada Mountains, from summit to base, is only about 70 miles and the general heights of its lowest passes about 7,000 ft, the difficulty of locating a railroad line with 100-ft [per mile] grades is correspondingly increased, as it becomes absolutely necessary to find ground upon which to preserve a general uniformity of grade.

"In the present instance, the elevation of the summit...is reached by maximum grade of 105 ft per mile; showing a remarkable regularity of surface, without which the ascent could not have been accomplished with this grade."

In describing the ridge up which the road was located, he said:

"These rivers run through gorges or canyons, in many places from 1,000 to 2,000 ft in depth, with side slopes varying from perpendicular to an angle of forty-five degrees. The ridges formed by these rivers are sharp, well defined, and in many places so narrow on top as to leave barely room for a wagon road to be made without excavating surface of ridge. The branches, also, of many of these rivers have worn out gorges as deep as those of the rivers, and present physical barriers to a line of communication either crossing them or extending in a northerly and southerly direction. The line on the top or crest of ridge being far from uniform, of course the lowest points or gaps in ridge become commanding points, and it was found necessary to carry the line from gap to gap, passing around the intervening hills, upon their side slopes."

The controlling gaps that were of the most importance were Clipper Gap, 42 miles from Sacramento; New England Gap, 6 miles farther; Long Ravine, about 4 miles from Illiniestown (Colfax); and Emigrant Gap, 82 miles from Sacramento. Beyond this the line, as finally located, was on the side of a mountain and the gaps no longer controlled the surveys.

Following the report in October 1861, the directors authorized Judah "to...proceed to Washington, as the accredited agent of the...Railroad, for the purpose of procuring appropriations of land and U.S. Bonds from the Government to aid in the construction of this road."

Upon his arrival he began an active campaign for the bill for a Pacific Railroad. Through Senator Sargent of California, a subcommittee of the Pacific Railroad Committee was appointed to draft the bill. Judah had obtained the appointment as secretary of the Senate Committee and was also made clerk of a subcommittee in the House. Finally, on July 1, 1862, the bill became a law with President Lincoln's signature. Land rights of way, and aid in the form of first-mortgage Government bonds were the essential elements of the bill, which also provided for the organization of the Union Pacific Railroad Company. Bonds were to be issued when 40 miles of railroad had been constructed.

After some preliminary items had been adjusted, Judah went to New York to order supplies. Formal acceptance of the contract

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between the Government and the Central Pacific Railroad Company was signed November 1, 1862. Judah sailed for California the 21st of July, his long struggle for the railroad completed. His success was largely due to his own efforts, without money or influence.

On his return to Sacramento, he filed his second report with the company, dated October 22, 1862. He enumerated the advantages of the arrangement with the Government, the value of the land grants, the amount of lumber available, and the anticipated revenue, largely from local traffic and the traffic with Washoe. His estimates, based on actual count of freight and passenger traffic on the American River route, may have been overly optimistic, but they showed that a good business existed. One point may be mentioned that was of importance in expanding the ideas of his associates; the act of 1862 permitted the California company to build eastward until it met the Union Pacific Railroad and Judah urged the company to promptly extend its surveys as far as Salt Lake. The road was rapidly taking on the character of a transcontinental line, with the greater cost and larger outlook.

Construction started on January 8, 1863, when ground was broken at Sacramento. In the later months of 1862, surveys had been pushed by several parties in the mountains. In December, Charles Crocker was given a contract for grading the first 31 miles to Newcastle, subcontractors taking short sections of the line.

In another report, dated June 1, 1863, Judah, as chief engineer, further described in detail some of the engineering problems. Again, in July, he made what was to be his last report to the directors. In addition to the account of the surveys, there was an estimate of the cost of the first 50 miles. He explained why the Sacramento Valley Railroad could not be incorporated in the new line – it was not in the proper location, being eight miles longer to Auburn; the Government bill applied only to a new road; the older road was heavily bonded and hence the Government bonds would not be available; the worn rails of English make would have to be replaced with American iron and much repair work would be necessary; and finally it did not command the possible traffic from the northern section of the state. The decision was correct, but much criticism was directed against Judah by the owners of the older road, who wanted to sell out.

Meanwhile, differences of opinion had developed between Judah and the men who were directing the affairs of the company – Stanford, Huntington, Hopkins, and Crocker. Most of the other directors had dropped out. Judah became impatient, and expressed himself in a letter dated May 13, 1863, to his friend Strong:

“I cannot tell you in the brief space of a letter all that is going on, or of all that has taken place; suffice to say that I have had a pretty hard row to hoe... I had a blow-out two weeks ago and freed my mind, so much so that I looked for instant decapitation. I called things by their right name and invited war, but my hands are tied, however. We have no meeting of the board nowadays, except the regular monthly meeting, which, however, was not

had this month; but there have been any quantity of private conferences to which I have not been invited.”

Judah maintained that his stock subscription had been paid for by his previous services but Hopkins ruled otherwise. Huntington returned from the East and evidently was an influence that Judah resented; he objected to the exclusive contracts being given to Crocker and in a letter declared that he had prevented a certain gentleman, probably meaning Crocker, from being a contractor on the road. The directors had themselves organized the Dutch Flat and Donner Lake wagon road, which was intended to bring the railroad much-needed revenue from the Washoe mines. However, it was not a railroad wagon road but one belonging to the four directors, and the revenues, if any, were to be theirs and not the railroad's.

This was but one of many sources of differences between Judah and his friends on one hand and the four directors on the other. Judah was an engineer and wanted to get on with building the railroad. The four directors had before them the problem of financing the road and meeting the continuous attacks made on their enterprise by antagonistic interests. For them there was no use in going on with the construction unless they could control the venture and assure themselves of a substantial profit.

The nature of the men involved in the controversy was an element that made for discord. Judah was a strong, persistent, and emphatic character. The railroad project was his own, one that he had developed and brought to realization; to have others take charge was a thing he could hardly understand. On the other hand he was dealing with four men equally strong minded who intended to dominate the enterprise if it was carried out. A clash was almost inevitable; it came to a head in the summer of 1863.

While the details are lacking, the result was that Judah was bought out for the sum of \$100,000, but at the same time he was given an option to buy out the four associates for an equal amount each. They evidently were in doubt as to the possibilities for profit and were willing to get out for the sum named. They were all merchants and not railroad builders and at that time the Government help, from the nature of the law, was of little or no benefit. Judah decided to go East, and he left in September.

There is evidence that Judah had arranged to meet certain parties in New York and Mrs. Judah later stated that they were the Vanderbilt group, then in control of the New York Central Railroad. He sailed from San Francisco early in October 1863. At the Isthmus he contracted Panama fever, and on November 2, a few days after he reached New York, he died. He was buried at Greenfield, MA, his wife's girlhood home.

Thus, before he was 38, ended the remarkable career of a man to whom must be given the credit of originating a practicable plan for the Pacific Railroad of California, of selecting a general location of the line, and of organizing a company to prosecute the work. On his death, the enemies of the railroad endeavored to besmirch his character; and none more so that one of the former promoters of the Sacramento Valley Railroad and of a

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paper project to the Virginia City mines. Pamphlets were written and distributed and the officials of the Central Pacific answered. These pamphlets are of interest now, not with respect to the railroad as built, but as indicating the type of men Judah had to fight – men who would not stop at vilifying even the dead in the hope of defeating the project for which he gave his life.

Must criticism has been directed at the officers of the railroad company for consigning the memory of Judah to oblivion. The board did pass a resolution, “That the death of Mr. Judah, in the prime of his manhood and the full career of his usefulness, will be felt far beyond the immediate circle of his acquaintance. His ability as an engineer, his untiring energy of character, and the success with which he followed his profession, place him among those whose lives are a benefit to the state, and in whose death the public experiences an undoubted calamity.” In answer to some of the slanders, President Leland Stanford declared that Judah remained the chief engineer up to the time of his death. It is worthy to note in this connection that in 1862 a testimonial to Judah signed by 35 members of the House and 17 Senators recited his services in assisting the passage of the bill through Congress and especially in preparing the accurate and detailed information he had supplied.

It was but natural that poor Mrs. Judah should see only the part that her dead husband had played and should voice some feeling against the men of the railroad company. In justice to them, however, it must be said that there was nothing they could do. Naming a station or locomotive after the dead engineer would have been futile. It is inevitable that the memory of even exceptional men must pass away, for the living are but little concerned with the dead. However, more than sixty years afterwards, when the new station was built at Sacramento, employees of the engineering and maintenance departments of the company, led by W. H. Kirkbride, M. ASCE, chief engineer, subscribed the money for, and erected on the station grounds, a monument to the first chief engineer of the road.

That Judah was a man of exceptional ability will be apparent from the record of his signal achievements. What would have been developed out of his disagreement with the “Big Four” and the proposed financing by Eastern men must remain forever in the realm of conjecture. Judah was not the character to occupy a subordinate position and accept the dictates of other men. His friends were warm in their praise of his character and of his work. The slanders of the time were inspired by motives unconnected with the character of the man and they have long since died away.

Outstanding was his clear insight into the proper location of the railroad over a mountain chain far more lofty and rugged than any previously surmounted by a railroad. He analyzed clearly the pros and cons of the chosen route and of other possible routes. While others were talking of a railroad to the state line, Judah saw that the road must be transcontinental. William Hood, who came as a young man to the service of the Central Pacific in 1867 and was for many years chief engineer of the

Central and Southern Pacific Railroads, asserted that “were there now no railroad over the Sierra, the Donner Lake route would still be selected over all others as the best possible.”

For the more than seventy years that have passed since its completion, traffic of central California and the West has been carried over the Central Pacific. In spite of the fact that eight other transcontinental railroads have been built, the central route retains its preeminence. The railroad was built on the route selected by Judah. That is his monument; none better could be devised for any man.

Those interested in further study may well consult the admirable “Sketch of the Life of Theodore D. Judah” by Carl I. Wheat, in the Quarterly of the California Historical Society, September 1925; also the “History of the Southern Pacific Railroad” by Eric Heath and Lindsay Campbell, in the Southern Pacific Bulletin, 1926. The writer has freely drawn on these and on the reports that Judah made from time to time. Material is also found in the works of the historians, Theodore Hittell and Hubert Howe Bancroft.

*About the author*

John D. Galloway, Hon.M.ASCE, was a consulting civil engineer working out of San Francisco for most of his career, and was a Charter Member of the San Francisco Section ASCE when it was founded in 1905. Galloway’s first job after graduating from Rose Polytechnic Univ. in 1889 was working as a design and construction engineer for the Fairhaven and Southern Railroad in the State of Washington. It was taken over by the Great Northern Railroad around 1891 and Galloway returned to work in the SF Bay Area where he grew up. He and his wife attended ASCE’s National Convention held in Sacramento in 1930, when the monument to Theodore Judah was dedicated. The Sacramento Section’s 1976 Historic Civil Engineering Landmarks booklet mentions some of his bridge and hydropower projects. Galloway is the author of a book *The First Transcontinental Railroad* published in 1950. Galloway’s older daughter did much of the work to get the book finished and published after the death of her father in 1943.

*Contributed by Dick Wiltshire, US Bureau of Reclamation (ret’d), great-grandson of John D. Galloway*

**Engineers Day at the Mall**

You are invited to join us in celebrating 2011 Engineers Week. “Engineers Day at the Mall” will be held at Sunrise Mall on Saturday, February 26, 2011. Fun free hands-on educational activities will be provided. Bring your families, friends, students and teachers; all are welcome to come.

For more information, please contact Joyce Copelan at 530-908-8372 cell or [jcopelan95694@yahoo.com](mailto:jcopelan95694@yahoo.com).



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### **SKI TRIP!!**

Calling all Snow Busters and Bunnies! Mark your calendars for Saturday, January 22<sup>nd</sup>! YMF is renting a bus to Sugar Bowl Ski Resort for a fun-filled snow day!

When: Saturday, January 22, 2011  
 Time: Depart Sacramento 6:00 AM  
 Depart Sugar Bowl 4:30 PM  
 Where to meet: Jacobs Office  
 180 Promenade Circle  
 Sacramento, CA 95834  
 Cost: \$90 per person  
 What's included: Bus Ride To / From  
 Lift Ticket  
 Lunch Voucher and Pizza in the bus on the way home

We'll be at the Resort from 9:30 AM to 4:00 PM, a full day of fun in the snow! Plus, you can sleep on the way up and back, since the driving is being done for you! The trip will also be a great opportunity to mingle with YMF'ers from Truckee Meadows and Central Valley! Contact Elias Karam at [elias.karam@jacobs.com](mailto:elias.karam@jacobs.com) for more information and to RSVP. We hope you can join us on this fun filled trip!

### **RÉSUMÉ WORKSHOP**

A Résumé Workshop is coming up at UC Davis, and we need you! If anyone is interested in volunteering for Résumé Critique and Mock Interviews, please contact Greg at [gregy@quincyeng.com](mailto:gregy@quincyeng.com) for more information. The Résumé Workshop will be held on Thursday, January 6, 2011, 6 PM, at UC Davis (room to be determined). This is a great opportunity to help our future engineers!

### **FEBRUARY MIXER!**

YMF will hold a Mixer on Wednesday, February 2, 2011. The Mixer will start with an opportunity to catch up with members, old and new, during the social hour starting at 5:30. Following the social hour, you will have an opportunity to listen in on a technical presentation. Connect with your fellow YMF members during this Mixer! Speaker and location are TBD, but stay tuned for more information from your programs chair, or check out our website at [www.sacymf.org](http://www.sacymf.org).

### **HOLIDAY PARTY**

On Wednesday, December 1st, YMF held our annual Holiday Party at The Old Spaghetti Factory in Downtown Sacramento. The restaurant offered a quiet banquet room perfect for socializing over a wonderful dinner of salad, pasta, and ice cream for dessert. The party gave YMF members an opportunity to catch up with one another as well as to get to know some new faces. YMF also gave back to the community this year by including a toy drive as part

of the dinner event. A special thank you to YMF Programs Chair Elias Karam for organizing the successful event!



### **YMF SPRING 2011 PE EXAM REVIEW COURSES**

Planning on taking the PE exam? It's not too late to register for the YMF SPRING 2011 PE Exam Review Course and let the experienced instructors lead the way! The Sacramento Chapter of the ASCE Younger Member Forum is offering improved review courses for the following exams:

1. Principles and Practice (General / 8 Hour)
2. Engineering Surveying
3. Seismic Principles

April's not that far away, so register now. It's easy; just visit our website at <http://www.sacymf.org/pe-review> to register online. Class schedules, locations, and prices are located on the website too. Don't delay – classes start as early as January 19! And remember, early registration discounts are still available for the Engineering Surveying and Seismic Principles review segments!

### **UPCOMING EVENTS**

- \* Business Meeting at Blackburn Consulting (2941 Boatman Avenue, West Sacramento, CA 95691) Wednesday, January 5, 2011, 5:30 PM
- \* Résumé Workshop, UC Davis (Room TBD), Thursday, January 6, 2011, 6:00 PM
- \* Ski Trip, Sugar Bowl (pick-up at 180 Promenade Circle, Sacramento, CA 95834), Saturday, January 22, 2011, departs at 6:00 AM
- \* February Mixer, Wednesday, February 2, 2011

For more information, visit  
[www.sacymf.org](http://www.sacymf.org)

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