President's Corner **(Lee Halverson)**

Wow, another year has passed. We have added a few new members to our rolls, but have also lost a few members from the rolls. Our dedicated board members continue to provide a program for our members who are able to participate. Our VP has introduced us to several new and interesting topics for our dinner historic speakers program as well as an interesting and interactive panel of valley residents for our summer social. We had a terrific trip to Mission Dolores in October and co-sponsored a sold out "Tunneling through Time" presentation on the new Caldecott Tunnel bore. We are currently wrapping up the language for our historic marker commemorating the Veterans Memorial Building.

Most of your board members are continuing for another year. We will readily welcome any member that would like to join or rejoin the society's leadership in the fun job of providing a unique historic program for the benefit of our members and community. We still have several historic locations in the valley to identify and to develop markers for.

We're looking forward to another successful year. Please join us at our next meeting to hear a great presentation on the history of Chevron in the valley. We will also elect and install our officers and board members for the year.

Members' Corner

A Cal Trans lecture on the new Bay Bridge span is planned for March 27, 2012. More information later.

Do you have suggestions for speakers you would like to hear at our Dinner meetings? Please contact Jerry Warren.

We are looking for a SRVHS board member to serve as Historian. If this would interest you, please contact Karen Stepper.

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Need a Ride
To The Society Meeting
On January 19th?
Contact Bill Lloyd: 837-9382.

Over 41 Years Looking Back!

First Class Mail

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SAN RAMON VALLEY HISTORICAL SOCIETY
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NEXT MEETING
THURSDAY,
JANUARY 19TH
"MANY INTERESTING
YEARS AT CHEVRON"

SAN RAMON VALLEY HISTORICAL SOCIETY

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January 2012 ALAMO · BLACKHAWK · DANVILLE · DIABLO · SAN RAMON

In-Depth History Of The Golden Gate Bridge Truly Enjoyed By All At November Dinner Meeting

Peter Moylan spoke on the Golden Gate Bridge at the November 17th dinner meeting. Peter has a business called San Francisco Walks and Talks. He provides live documentaries on people, places, and events that made the San Francisco of today.

Peter has a journalistic background. Peter came from Long Island, New York. After high school, he served in the Marine Corps for four years. He was a writer while he was in the Marines. He then came to San Jose, California, started college and worked for the San Jose Mercury News. He graduated from San Francisco State University in Political Science. Peter has also worked in real estate.

San Francisco in 1916 was the unchallenged financial, commercial, and maritime capitol of the Pacific Coast. It was the only major city west of St. Louis. But her location on a peninsula, surrounded on 3 sides by water, threatened the city's economy. The sparsely populated counties north of San Francisco represented the last frontier for expansion and continued growth of the region. The exploding phenomenon of a new means of transportation – automobiles –caused long delays at the ferry terminals.

In that year of 1916, San Francisco Bulletin editor James Wilkins wrote editorials calling for a bridge from San Francisco to Marin as crucial to the city's economic viability and prominence. He suggested spanning the Golden Gate at its narrowest point, Fort Point in San Francisco to Lime Point in Marin. One man who agreed with Wilkins was San Francisco's City Engineer, Michael Maurice O'Shaughnessy.

In 1912, Mayor James Rolph created the position of City Engineer for O'Shaughnessy, promising complete authority to run the Public Works Department as he saw fit. Rolph saw O'Shaughnessy as the one man with the integrity to rise above the political corruption of early 20th century San Francisco and rebuild a city destroyed by earthquake and fire in 1906.

The post-1906 infrastructure of San Francisco was virtually the creation of O'Shaughnessy: the municipal railway, the factories in which the cars were manufactured and the tracks on which they rode, the Stockton and Twin Peaks tunnels, fire protection pumping stations, sewer systems, the Great Highway, and streets paved by his employees with asphalt made in the plant O'Shaughnessy built for the City.

His crowning achievement: the Hetch Hetchy, a 156 mile system of dams, pipelines, and aqueducts that is the primary source of water for San Francisco. What was once the Hetch Hetchy Valley, a mirror image of Yosemite Valley, is now a reservoir behind the O'Shaughnessy Dam.

But O'Shaughnessy had never built a bridge. In 1917, he began a national inquiry among engineers regarding the feasibility and cost of such a project. Most said if a bridge could be built, it would cost 100 to 250 million dollars. O'Shaughnessy then sought out a nationally renowned bridge builder from Chicago. His name was Joseph Baerman Strauss.

(Continued on Page 2)

Long-Time San Ramon Company, Chevron, Will Be Subject Of January 19th Dinner Meeting

John Harper will speak at our January 19th dinner meeting. John will speak about some of his experiences at Chevron.

The meeting will be held at the San Ramon Golf Club, 9430 Fircrest Lane, San Ramon. We will gather at 6:30 pm, eat at 7:00 pm, and enjoy our speaker. We hope to see you there.

Great History Of The Golden Gate Bridge (Continued)

Joseph Strauss was born January 7, 1870 in Cincinnati, Ohio. As a boy, he could look out his bedroom window to gaze upon the Cincinnati-Covington Bridge, spanning the Ohio River. It was the first successful long-span suspension bridge in America, completed in 1866 and designed by John Augustus Roebling, who would go on to build the Brooklyn Bridge in 1883, at the time, the most beautiful bridge in the world. Strauss saw the Brooklyn Bridge as a great sculpture that enhanced its setting.

Strauss earned a liberal arts degree in 1892 from the University of Cincinnati. He exhibited a flair for romantic poetry, lofty prose, and art. But he also took engineering classes and made bridge building his career.

By 1915, he was the nation's foremost builder of bascule bridges: spans of roadways lifted and lowered by mechanized counterweights, commonly called draw bridges. Strauss had built 400 bridges around the world.

Strauss designed the "aeroscope," the most popular attraction at the 1915 Panama Pacific International Exposition in San Francisco. A glass-enclosed observation tower that rose 260 feet and provided panoramic views for 120 passengers. The aeroscope was essentially a revolving bascule bridge. It was at the Exposition that O'Shaughnessy and Strauss first met.

In 1916, O'Shaughnessy hired Strauss to build the 4th Street Bridge across Mission Creek. They also discussed the conversations O'Shaughnessy had with other engineers about building a bridge across the Golden Gate. Strauss told O'Shaughnessy that he could bridge the Golden Gate for $25 million.

In November of 1918, San Francisco Supervisor Richard J. Welch asked Congress to authorize a survey of the Golden Gate channel. In August 1919, Welch instructed O'Shaughnessy to explore the possibility of building a bridge across the Golden Gate. These would be the first official steps in what would be a two decade long epic struggle.

In January 1920, the Coast Guard surveyed the depth and contours of the channel. The results were not encouraging. Still, O'Shaughnessy asked for cost estimates from Strauss and two other prominent bridge builders. One did not reply; another said a bridge would cost more than $60 million.

In June of 1921, Joseph Strauss submitted to O'Shaughnessy a sketchy bridge design that he estimated would cost seventeen and a quarter million dollars

Two bridge styles dominated in the early 1920s - cantilever and cable suspension. The cantilever bridge features massive steel trusses that provide rigid support, but its weight can support a center span of no more than 2,000 feet, half the distance required to span the Gate. A suspension bridge, such as the Brooklyn Bridge, features cables anchored at either side of the bridge and strung across the entire span, supported by two evenly spaced towers. Suspender cables hang from the main cables to hold up the roadway. It is a light, flexible design, ideal for long span bridges. But Strauss didn't think a suspension bridge could withstand the gale force winds that sweep through the Golden Gate.

His solution was a blend of the two styles, a suspension center span held up by heavily girded cantilever arms for the side spans. He patented the design as the Strauss "symmetrical cantilever suspension" bridge.

The design revealed Strauss' limitations as a bridge designer. Visually, it suggested the hundreds of utilitarian bascule railroad bridges he had built in the cold, gray steel cities of the east. The plans sat untouched on O'Shaughnessy' desk for a year and a half.

Early in 1922, Strauss suddenly and unexpectedly began promoting the bridge at government, business and civic group meetings in every county from Marin to Del Norte on the Oregon border.

Strauss was only 5 foot 3 inches, with a personality that his secretary called "gruff and forbidding." He was humorless and spoke in a monotone. Sausalito Mayor James Madden called him "the world's worst speaker."

Yet his appearances became media events, the star of which was the great engineer from Chicago. He managed to convince community leaders of the benefits of and the need for a bridge. It would eliminate ferry boat congestion, raise property values, encourage developers to build homes and businesses, stimulate commerce and boost tourism. It could be built for $20 million and be open by 1927.

His personal crusade culminated in January of 1923, when three hundred business, civic, and political leaders met at the Santa Rosa Chamber of Commerce. Twenty-one Northern California counties agreed to form The Bridging the Golden Gate Association to lobby the state legislature and local representatives for a bridge. They drafted legislation to create a multi-county public entity that would build and operate the bridge.

(Continued on Page 3)

The Sales Table — Nancy Ramsey

Alamo Grammar School 1876 notes and envelopes are available. We have a supply of Mount Diablo, Front Street, Southern Pacific Depot, Tassajara School, the "Grand Dames" series of three San Ramon older homes and miscellaneous packages with eight historical scenes for sale. Our price to members is $3.50 per package. Lots of postcards with historic scenes are available for $0.20 each.

We invite everyone to visit our Sales Table at our dinner meetings and activities.

Happy New Year To All Our Members!

RECORD

Published by
San Ramon Valley Historical Society
Founded 1970
P.O. Box 521, Danville, CA 94526

Member's Memorial Gift

NAMES HONORED BY MEMORIAL AND COMMEMORATIVE GIFTS, AND NAMES OF DONORS, ARE ENTERED IN A BOOK OF MEMORY AND WILL BE PLACED IN OUR MUSEUM. For tax purposes, we are a non-profit organization. You may make your donation to the Society or to the Museum — Please check box, below.

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Thursday,
January 19, 7 p.m.

San Ramon Royal Vista Golf Clubhouse
9430 Fircrest Lane
(North of Alcosta Blvd., San Ramon)

Great History Of The Golden Gate Bridge (Continued)

Charles Ellis would not finish the work that he started, nor in life would he receive the credit he deserved; but the calculations, blue prints, and specifications he produced became the Golden Gate Bridge.

A plaque on the South Tower honors the district officials, engineers, designers and construction companies who built the bridge. The name Charles Ellis is not on that plaque. In Strauss' 1930 report to the Board of Directors, Ellis was listed only as Assistant to the Chief Engineer. Although Strauss took credit for the work, it is Ellis' signature on all the drawings and specifications. He never returned to San Francisco to see the fruition of his work.

O'Shaughnessy and Ellis, Clifford Paine, Leon Moisseiff, Charles Derleth, O.H. Ammann, John Eberson, Irving Morrow, Russell Cone, hundreds of brave men who risked death; the eleven who died; dozens of politicians and civic leaders, they all played critical, even indispensable roles in the building of the Golden Gate Bridge.

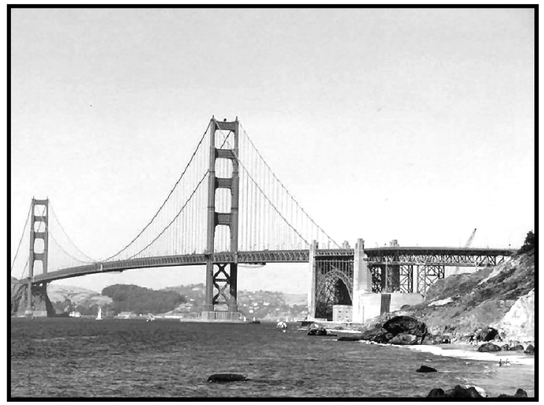
But Joseph Strauss' vision, determination and leadership ultimately led to what would be his monumental accomplishment of a lifetime. Joseph Baermann Strauss passed away on May 16, 1938, just 11 days before the first anniversary of the opening of the bridge.

Author John Vander Zee: "That the Golden Gate would have been bridged ultimately without Joseph Strauss there can be no doubt; but he was the only man with acceptable credentials who could have justified building it at the time it was built, within the budget that the voters accepted, and who could have brought the people he did to work on its design and construction. In this, perhaps, is his most enduring achievement."

The San Francisco News of May 27, 1937 featured a poem by Joseph Strauss. In part, he wrote:

Launched 'midst a thousand hopes and fears,
Damned by a thousand hostile seers,
Yet ne'er its course was stayed;
At last the mighty task is done.

Joseph Strauss was the driving force behind the building of the bridge.



The beautiful Golden Gate Bridge today

Museum News

General

January 27 – April 28: *Wild, Weird, Wonderful Exhibit*

What possesses us to accumulate objects? Is it because of a personal connection? Is it because of the objects' particular beauty? Or is it because of a more deep seated need to collect? Come and explore the history of early collections and the beginnings of museums while investigating our very own Curiosity Cabinet. Our museum will exhibit a distinctive and eclectic variety of collections from our own San Ramon Valley hunters and gatherers. Perhaps these objects will give you flight to the imagination, wings to the mind, and gaiety to the spirit. .

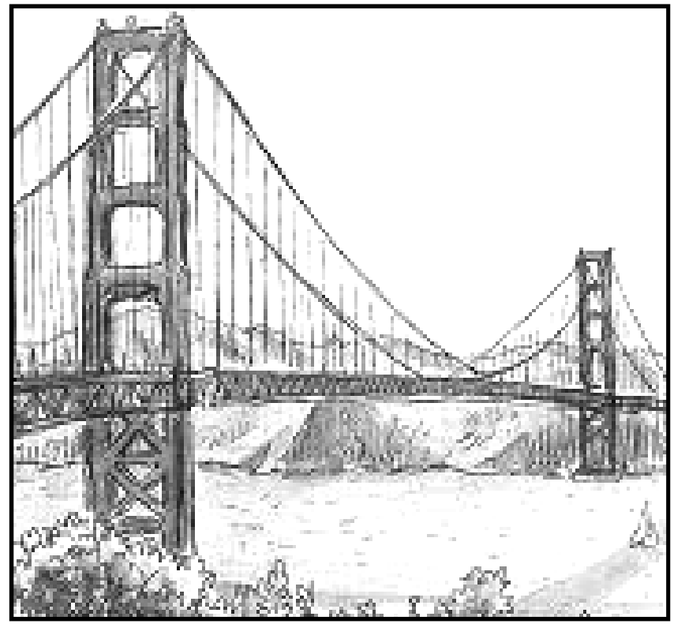
The Museum of the San Ramon Valley is located on the southwest corner of Prospect and Railroad Avenues [P.O. Box 39, Danville, CA, 94526, (925) 837-3750]. Hours: 1-4 pm Tuesday-Friday, 10 am.-1 pm. Saturday.

The information above was taken from the Museum's informative website, www.museumsrv.org.

Great History Of The Golden Gate Bridge (Continued)

Strauss testified to the State Assembly Committee on Roads and Highways that, "The engineering issues are fully solved. It is up to California to go ahead." This was not true There had been no engineering studies and the revenue projections were badly flawed. Still, in May of 1923, the State Assembly passed the Golden Gate Bridge and Highway Act. Voters would have the opportunity to authorize the formation of a Golden Gate Bridge and Highway District with unprecedented power to levy taxes, issue bonds, build a bridge, and collect tolls.

The War Department had ultimate authority over any construction in waterways essential to military logistics and commercial shipping. In May 1924, Strauss still had no official position with any governmental or civic agency. But it was Strauss who was the main spokesman for the bridge at the War Department hearing in San Francisco's City Hall, even though Michael O'Shaughnessy was there.



The Beautiful Bridge In All Its Splendor!

Strauss testified: "I believe this bridge will bring an era of unprecedented prosperity. It will be, in my opinion, the greatest feat of construction ever developed."

Strauss then addressed the concerns of the War Department. Question: *Would the bridge be high enough for all vessels to pass?* Answer: It would be more than 200 feet above the water, modern vessels no longer had masts that tall. *Would it block the channel if it were to fall into the Bay?* It would fall 300 feet below the surface. *Would ships collide with the piers?* Modern navigational systems would make a collision very unlikely. *What would happen if an enemy plane bombed it?* Strauss said: "If the enemy got so close as to be able to bomb the bridge, there would be very little left of the city." The War Department gave its approval.

By 1925, opposition to the bridge began to spread. It came from many directions.

Property owners would be risking their life savings and property on the promises of a bridge for which there was nothing more than a rough sketch from 1921, a Coast Guard report that questioned the feasibility of its proposed location, and a new cost estimate by Strauss that was now $27 million. $10 million more than he originally estimated.

An unelected board of directors would have the power to raise property taxes without assurance a bridge would bring the promised prosperity or even pay for itself.

Several counties cynically realized that by staying out of the district, they would reap the benefits of the bridge should it succeed, without the liability if it failed.

For Humboldt and Lake County lumber companies, a bridge had no benefit, but would lead to higher property values, thus, higher property taxes. Mendocino County timberland owners feared that logging could be limited or stopped entirely so that tourists could see the trees!

Environmentalists including The Sierra Club and an aspiring young photographer named Ansel Adams, believed the bridge would forever ruin one of the most beautiful harbor entrances in the world.

Harper's Magazine essayist Katherine Fullerton Geroud wrote: "In the interest of your own uniqueness, dear San Francisco, do not bridge the Golden Gate. Leave that kind of gesture to Los Angeles, which, if it had a Golden Gate, would almost certainly bridge it, and sink oil wells into the bay and ocean on either side of the bridge."

(Continued Page 4)

Great History Of The Golden Gate Bridge (Continued)

The opposition had taken its toll. By August of 1925, only six counties voted to form and join the District: Mendocino, Marin, Napa, Sonoma, San Francisco, and Del Norte.

The District almost immediately came undone. Because 85% of the taxpayers lived in San Francisco, the Board of Supervisors demanded a large majority of the seats on the District's Board of Directors. To the Northern counties, this confirmed their worst fears, corrupt San Francisco politicians would have total control of the bridge. With support for the bridge dwindling rapidly, the Supervisors agreed to a compromise: half the district board members would be from San Francisco.

Opponents took to the courts. Mendocino County's suit to withdraw from the district just one year after joining was rejected by the California Supreme Court.

In 1927, more than 2,300 individuals filed lawsuits for their property to be excluded from the district. During one hearing in Sonoma, The Taxpayers Protective League, representing 550 citizens, introduced into evidence a study by the Joint Council of Engineering Societies of San Francisco. The authors attacked Strauss' qualifications and denigrated him as simply a promoter. They argued that advances in bridge building meant a suspension bridge was possible, and that Strauss had not kept current in his field. They rejected Strauss' cost estimates. Even if the challenges of the depth of the Bay and the strength of the bedrock to uphold the bridge, particularly in an earthquake, could be met, the bridge would cost taxpayers $112 million to build, requiring a 20 to 25% increase in taxes.

The *Engineering News-Record*, an industry newspaper, editorialized: "No competent engineer has said that the Golden Gate cannot be bridged. However it is a far cry from that which is possible, regardless of cost, to that which is feasible from a financial viewpoint. No scheme for bridging the Golden Gate that meets all these requirements has yet been proposed. It is natural, therefore, that such a bridge scheme should be opposed by the engineers of San Francisco."

All the suits were rejected, except for some properties in Mendocino and Napa that were permitted to be excluded from the District. On December 4, 1928, the District was now legally incorporated. The responsibility for building the bridge was now in the hands of the new District Board of Directors.

Perhaps the most important decision they faced first was the selection of the chief engineer.

For the past eight years, the force of Strauss' vision, competitiveness, and desire to leave behind a legacy, had almost single-handedly kept the hopes of a bridge alive. He had given up his home in Chicago and millions in potential income from other projects. He was divorced in 1927, and his health was noticeably failing. At 59 years of age, Strauss knew that this would be his last chance for the monumental accomplishment of a lifetime.

Strauss would have to compete against ten of the nation's leading bridge engineering firms for the position he so desperately wanted and believed was rightfully his: Chief Engineer of the Golden Gate Bridge.

Some Directors felt he earned it. He had promoted the bridge at his own cost and no one matched the ferocity of his defense of the bridge when attacked. He did organize and lead men well, and hired good people. But some directors believed Strauss lacked the necessary engineering credentials. There were directors who simply disliked Strauss.

Strauss was not an easy man to like. He could be mean, petty and vindictive, some used the term Napoleonic. He was litigious with his clients: he twice sued the bridge district. He was egotistical yet insecure: he claimed to have been a consultant on major bridges when he had not. He claimed to have received a Civil Engineering degree from the University of Cincinnati, which did not offer an engineering degree until nine years after he graduated. He claimed to be *the* designer of the Golden Gate Bridge, although the work was done by others.

If Strauss were to be appointed Chief Engineer, District Directors demanded he engage experts who would not only legitimize his efforts, but would also transform a-bridge-in-concept into a reality. Strauss agreed to establish a Board of Consulting Engineers, consisting of the most prominent theoreticians and practitioners of bridge building.

Charles Derleth was the Dean of the Department of Engineering at the University of California, Berkeley. In 1927, he was chief engineer on the Carquinez Bridge and consulted on every other Bay Area bridge at the time. He was well connected in academic, political and social circles, and the District wanted him involved. He had lobbied for the job of Chief Engineer himself, but settled for the consulting role.

"O.H." Ammann was the Chief Engineer for the Port Authority of New York, a skilled designer and administrator, responsible for 10 New York bridges, including Chief Engineer of the George Washington Bridge.

(Continued Page 5)

Great History Of The Golden Gate Bridge (Continued)

Ed Reed rented a room in a house of a widow in Sausalito. At dinner, with the widow's children at the table, she said: "don't you feel proud that some day, your son or daughter will look up at that bridge and say, my father helped build that." With a mouthful of food, Ed Reed replied: "Just so the little bastards don't say I fell off of it."

There had been the usual variety of accidents, falls, and injuries, some severe. Still, by June of 1936, there had been no fatalities, unprecedented on a project of this scale. Strauss then shocked the workers. He installed safety nets under the deck. Bridge workers had been fighting for a net for years, but their companies thought safety nets were an "unjustifiable extravagance."

Strauss correctly assumed the $125,000 cost of the nets would be paid for in saved construction costs – with the net, workers moved with speed and confidence, cutting days off the construction schedule.

The net saved more than construction costs. 19 men fell into the net avoiding almost certain death. They become members of one of the most exclusive fraternities in the world, the "Halfway to Hell Club."

Luck ran out on October 21, 1936. Kermit Moore became the bridge's first fatality, killed by a falling steel girder.

Less than a month later, November 18, with Joseph Strauss at the controls of the crane, the last steel chord of the bridge deck was put into place. For the first time in history, San Francisco and Marin County were connected. All that was left was the simplest project of all: pave the roadway. Workers simply poured concrete into wooden forms, then removed the forms.

Engineers came up with another jerry rigged innovation to speed up the work. Two 60 foot long movable platforms were hung underneath the roadway for depositing the unneeded forms and carrying tools. Many of the engineers and workers had reservations about the clamps and safety bolts that secured the platforms to the bridge.

On February 17, 1937, just two months before the end of construction, one of the five ton platforms pulled loose from the bridge and fell into the net. The weight of the platform pulled more than 2,000 feet of net straight down to the icy water below. A photographer captured the moment. What seemed to be tiny black spots on a photograph were actually 12 men, clinging to the net. Ten men were lost. Two men survived the fall, both sustaining multiple fractures and other injuries. They were rescued by a fishing boat outside the Gate. Two other men were able to hang on to the bridge until rescued.

The 10 who perished brought the final total to 11. The tragedy overshadowed the fact that the deaths were less than one-third of the acceptable average - one person per $1 million of the $35 million costs.

On April 19, the last section of concrete was poured. Construction of the Golden Gate Bridge was complete. On May 27, 1937, the Bridge would open first to pedestrians, Pedestrian Day, and 200,000 people walked, ran, tap danced, unicycled, roller skated, and stilt-walked across the Golden Gate Bridge.

The next day, a parade of dignitaries led the first autos from Marin to the San Francisco toll plaza.

500 Navy planes flew overhead in formation as President Franklin D. Roosevelt pushed a telegraph key in Washington to symbolize the opening of the bridge. More than 40 Navy ships sailed into the harbor under the bridge.

An exhausted Joseph Strauss was introduced to a roaring crowd, but he gave no speech. The Chief Engineer officially turned the bridge over to District President William Filmer. In a weak voice, he said simply: "This bridge needs neither praise nor eulogy nor encomium. It speaks for itself."

This was to have been Michael O'Shaughnessy's bridge. O'Shaughnessy sensed that, despite his accomplishments, he would only be remembered if he could have built the Golden Gate Bridge. But O'Shaughnessy had become so independent and powerful that he had become the target of attacks from resentful politicians and press. The public had turned against him for his repeated calls for more money for his projects, particularly the Hetch Hetchy, now years behind schedule and millions over budget.

He also underestimated the political and promotional skills, and the burning desire of Joseph Strauss to be the one to build the Golden Gate Bridge. Upon Strauss' selection as Chief Engineer in 1929, O'Shaughnessy joined the opposition to the bridge that he and Strauss had so ardently advanced. Michael Maurice O'Shaughnessy, the greatest builder of infrastructure in San Francisco history, would not build, nor live to see, the single greatest piece of infrastructure in San Francisco history.

(Continued Page 10)

Great History Of The Golden Gate Bridge (Continued)

Twelve years had passed since the first official action at the San Francisco Board of Supervisors. Now the fate of the bridge was just two months away.

During the fall campaign, powerful interests were still determined to do whatever was necessary to prevent the bridge from being built. They had powerful arguments: three other Bay Area toll bridges were operating at a deficit. The country was in a great depression. Federal funds were not available. This would be a high risk mortgage on taxpayers' property. A bridge would hinder shipping and spoil one of "nature's perfect pictures."

To proponents, a vote for it would be a vote for faith in the future and in the value of progress. On November 4, 1930, voters passed the bond measure by a 3-1 margin.

Immediately, lawsuits were filed by several groups, challenging the legality of the District itself, as well as its authority to sell the bonds. A banking syndicate that had planned to purchase the bonds suddenly pulled back its offer asking that the federal courts uphold the District's authority to levy taxes.

Behind virtually all the opposition was the company with the most to lose financially, the Southern Pacific Railroad. It owned the Golden Gate Ferries Company.

On November 25, 1931, the California Supreme Court ruled in favor of the Golden Gate Bridge and Highway District on all the suits.

Near the end of 1931, Charles Ellis had completed the design for the main structure and was working on the towers. With costs rising and pressure mounting to get the bridge built, Strauss told Ellis he was taking too long and to complete the tower design without further delay.

But Ellis was going beyond the state of the art to something very new. The challenges posed by this suspension bridge required time to solve. He knew the tower calculations of another engineer were incorrect. Ellis wanted time to rework them.

On December 5, 1931, Strauss ordered Ellis to go on vacation for two weeks. He then sent Ellis a letter that said: "the structure was nothing unusual and did not require all the time, study, and expense thought necessary for it." Ellis was told to stay on vacation without pay. He had been fired.

Strauss turned to Clifford Paine. Paine was Managing Engineer at Strauss Engineering Corporation in Chicago. Paine was Strauss' closest friend and confidante, the only person who could call him "Joe." In time, he would become Strauss' partner in Strauss and Paine, Incorporated. Paine picked up the design where Ellis left off, including completion of the arch that would save historic Fort Point. He supervised design and construction for the remainder of the project. He became the conduit between the increasingly abrasive Strauss and all the others involved in the project.

Unlike Strauss, Paine was personally involved in every aspect of the project. Once construction began, Strauss was not seen more than once a month at the bridge, choosing to watch its progress from his Nob Hill apartment window, and working on other projects, including another bascule bridge in San Francisco: the 3rd Street, or Lefty O'Doul Bridge, completed in 1933.

In July of 1932, a federal court found the Golden Gate Bridge and Highway District legally empowered to levy taxes. The last of the lawsuits was over. The District had won them all, but a decade of relentless opposition left it exhausted and nearing bankruptcy. The Great Depression had a crippling effect on bond sales. Taxpayers were rebelling against a third straight year of increased property taxes. The District had to sell the bonds to keep going.

Perhaps at no other time was the fate of the bridge so much at risk. In the fall of 1932, two remarkable men met in San Francisco. One was Joseph Strauss. The other was Amadeo Peter Giannini.

A .P. Giannini had founded the Bank of Italy in 1904 to serve, in his own words, the baker and the bricklayer, the middle class working man that most banks had no interest in serving. He believed in the power of investment to stimulate the economy. In 1930, Giannini had purchased three small financial institutions and merged them with his Bank of Italy and renamed it the Bank of America.

In Giannini's office at Powell and Market, Strauss explained that further delay would doom the project. Giannini said: "San Francisco needs that bridge. We will take the bonds." As Strauss stood to leave, Giannini asked "How long will the bridge last." Strauss said: "Forever."

(Continued Page 7)

Great History Of The Golden Gate Bridge (Continued)

Nothing like this bridge had ever been built before. It would be the longest and tallest bridge in the world. It would be the first to be constructed over an open sea. It would require the coordination and timing of ten major contractors and hundreds of workers. Because the bond issue capped the taxpayers' contribution to 35 million, each contractor had to meet strict deadlines and tight budgets, or potentially lose money on the project.

Then there was nature. Beyond the danger inherent to workers on any major construction project, everyone faced unknown challenges of geology, unique and powerful tidal currents, constant shifting freezing winds, blinding fog, and violent storms.

To direct the field engineers and inspectors would require a Resident Engineer every bit the equal of the architects, engineers, and consultants on the project. Strauss recruited Russell Cone, who, at 36 years of age, had already been the resident engineer on several major suspension bridges for Leon Moisseiff. He had also studied under Charles Ellis at the University of Illinois.

On January 5, 1933, construction finally began on the anchorages and pylons. The two cables that hold up the bridge's roadway are guided through the pylons to be embedded in the 120 million pound concrete anchorages. They are able to resist 63 million pounds of pull without moving an inch. Building the anchorages was simply a matter of digging enormous pits into the earth to a depth of 250 feet, securing each of 61 cable strands to its own shoe strand, and encasing it in the concrete.

This provided employment for unskilled workers. It was hard physical work, low paying and sporadic. The depression ensured there would be more than enough unskilled workers. Men lined up each day for the chance of a few hours work a week. If you couldn't keep up, you were replaced.

Frenchy Gales worked on the anchorage. "There were guys down in the cement. You'd walk on it to level it off. They took a count, and we were short one guy. We had to notify his family. It was 1:30 in the morning. We went to his home. Knocked on the door. The guy answered in his pajamas. The guy said, 'I got tired. I went home and went to bed.' That was the end of him on the bridge."

Next came the piers, the underwater foundations for the towers. The North Pier was relatively simple. A steel framed enclosure called a cofferdam is lowered to the gate's floor and the water is pumped out. Workers then poured concrete around reinforcing steel rods that connect to the steel tower. In June of 1933, the pier was the first section of the bridge to be completed, on budget and ahead of schedule.

The south pier was something quite different. It would have to be constructed eleven hundred feet into the channel off the tip of Fort Point.

Mighty forces of nature are concentrated at this deep and narrow opening to the Pacific. Twice a day, gravitational forces draw 2.3 million cubic feet of sea water hurtling into the bay at 5 to 8½ miles per hour; twice a day the forces are reversed with fresh water sweeping out to sea. Winds gust up to 60 miles an hour.

Stauss' plan was to build an eleven hundred foot steel trestle into the channel to the site selected for the pier. The trestle would serve both as a staging area for equipment and supplies as well as a platform for constructing the pier.

He would then build a fender, an oval-shaped, football-field-sized enclosure, open on one end, with concrete walls 30 feet thick, to calm the water. Inside the fender, a steel-framed enclosure called a caisson would be lowered to the bottom, providing a safe, dry enclosure for 160 men to construct the pier.

Between August and December, the trestle was severely damaged three times: first by a ship that rammed it in the dark, followed by two winter storms one month apart. It would be March 1934 before the trestle could be repaired and work could start anew.

By October 1934, the caisson was within the fender and ready to be lowered to the bottom of the strait. A storm fifteen hundred miles out at sea sent huge waves into the Bay, severely damaging the caisson. Strauss, Russell Cone, Charles Derleth, and the construction contractor, Pacific Bridge, decided to abandon the caisson. They would enclose the fender entirely and build the pier within the fender. The fender became, in essence, a massive cofferdam.

In January of 1935, the south pier was finally completed. The project was now seven months behind schedule.

(Continued Page 8)

Great History Of The Golden Gate Bridge (Continued)

After the piers were completed, the 746' foot towers began rising, a honeycomb of interlocking steel cells $3^1/_2$ feet square, weighing 65 tons, secured by 600,000 rivets in each tower. The towers were so enormous, dark and intricate, workers would get lost inside. On top of the towers, workers had to lean into the wind to stand up straight to keep from being blown off the bridge. They would lie on their bellies while the towers would sway 7 feet in each direction.

Bridgeman Albert Zampa: "When you're good, only then can you work up in the air like that. They call you aces, and you're like fighters with fast footwork, quick hands, and plenty of guts. You work with your hands, but you're keeping balanced with your feet. You have to carry 30 to 40 pounds of tools. But I loved every minute of it. It made me feel good to know I was doing something that most guys couldn't."

As the towers went up, millions of gallons of salt water in the fog and wind began immediately to eat away at the steel. To protect the steel, a crew continuously painted the bridge with lead paint. No one realized at the time that white hot rivets contacting lead paint created poisonous fumes. Dozens of steel workers got lead poisoning. From then on, new sections were painted with a red iron oxide primer, compressed air was pumped into the sections, and workers were required to wear filter masks.

Irving Morrow and the engineers would have to decide on the bridge's color. To the consulting engineers, color was not an issue: aluminum or battle ship gray were typical of most bridges and perfectly acceptable. Strauss suggested that black would hide dirt. So that it would be easily seen, the Navy wanted the bridge painted in yellow and black stripes.

Morrow felt the natural setting demanded a warm, reddish color to complement the greens and blues. He suggested the iconic mix of orange and vermilion known as International Orange.

With the towers up, it was time to spin the cables. For this, Strauss hired Joseph A. Roebling & Sons, the firm that built the Cincinnati-Covington and Brooklyn Bridges. For three quarters of a century, Roebling represented the state-of-the art in cabling. First, 15 foot wide catwalks were suspended from the towers and anchorages for the cablers to do their work as high as 700 feet over open water.

Cables consist of wires less than 1" thick, so strong they cannot be bent in half. 27,000 wires are formed into strands, ranging from 256 to 462 wires per strand. 61 strands make up each cable. The strands are compacted under hydraulic pressure into a perfect circle 36 3/8" in diameter and wrapped with a layer of fine wire. Laid end to end, the wire in each cable would extend 40,000 miles.

Cable spinning is a finely calibrated series of delicate steps: reeling, splicing, measuring, clamping, monitoring, and constantly adjusting. Cabling must conform precisely to the engineer's calculations, or literally put the bridge at risk of failure.

Cable workman Gerry Conser: "Before they let any of us get near that spinning operation, they sent us down to Fort Point for a week-long training session. They only taught us our one job; they wanted us to do one thing to perfection, not a lot of things poorly."

One end of a spool of wire is tied to a shoe strand set in the anchorage. The other end is placed on a pulley wheel called a sheave and attached to a mechanized overhead carriage that carries the wire across to the other anchorage. The wire is tied to a shoe strand there. A new loop of wire is attached to the sheave for the return trip.

To save time, Roebling kept adding sheaves until they had 12 sheaves They also saved time by having the sheaves meet in the center of the bridge. There, the wire loops were transferred, and the sheaves went back to their original anchorages. Now they were spinning 271 tons of cable a day, more than 400 times faster than on the George Washington Bridge. They cut three months off the schedule.

The final piece of the bridge to be built was the most dangerous work of all: the bridge's span, its deck and its roadway. At center span, it would be 220 feet above the open channel. Workers balanced on steel girders just 8 ½ inches thick as they riveted a latticework of beams and girders called chords, while withstanding the gusts of wind and wet, slippery steel.

Bridgeman Lefty Underkoffler: "In those days, a man's life wasn't worth a nickel, anyway. They figured one life for every million dollars on any job, no matter what type of work it was."

The Golden Gate Bridge was different. Strauss was committed to safety. For the first time, workers would be fired for not wearing hard hats, goggles, and safety ropes.

Harold McClain: "If they caught you clowning out at the Golden Gate, you were fired. After that, the men themselves began to take a big interest in safety. Why the hell go out and commit suicide when the company was willing to take precautions to save your life."

(Continued Page 9)

Great History Of The Golden Gate Bridge (Continued)

Leon Moisseiff was the world's foremost theorist on the design of lightweight suspension bridges in high wind areas. He revolutionized bridge building, allowing for lighter, longer and more flexible bridges that could be built at less cost. He had been a consultant to O.H. Ammann on the George Washington Bridge and he designed the Manhattan Bridge in New York City and the Philadelphia-Camden Bridge.

Strauss now had a team of the greatest minds in bridge building. On August 15, 1929, the District introduced the Engineering Board to the public as quote "Four engineers of national and international reputation." To the Board, Strauss was not even first among equals. Strauss had to accept a fee that was half of normal for the work. He abandoned his symmetrical cantilever suspension bridge and accepted the desirability of a suspension bridge. But Strauss had what he most wanted: his title: Chief Engineer of the Golden Gate Bridge.

The Engineering Board of Amman, Derleth, and Moisseiff, met regularly through the summer of 1930 on the bridge design. It would be the responsibility of a design engineer named Charles Alton Ellis to translate their ideas, theories, and conclusions into the actual engineering design.

Charles Ellis was a professor of structural and bridge engineering at the University of Illinois when he was hired by Strauss in 1922. Ellis was an authority in structural and civil engineering, an inspiring teacher, author of a widely read textbook. Ellis provided the academic and professional credentials that Strauss lacked, without overshadowing Strauss.

For Charles Ellis, the Golden Gate Bridge was an opportunity to be part of a project grander than he could have ever dreamt of and to work with Leon Moisseiff, who Ellis considered a genius.

From August 1929 through the following February, Ellis was on site every day as Strauss's point man with the consulting engineers. Strauss had become more and more the promoter and less the engineer. He would attend meetings, make speeches, and meet the press. Then he would be gone for several days at a time to one of his many other projects around the country.

In March of 1930, Ellis returned to Chicago to spend long hours on what he loved best: mathematics, the calculations, equations, drawings, and specifications of the bridge.

While Ellis was designing the structure and calculating cost estimates, consulting architect John Eberson was creating the beginnings of the art deco design.

John Eberson was an architect in the industry of illusion: theaters and movie houses. His experience showed how architectural touches can heighten a structure's dramatic effect. Eberson designed a "stepped-off" style for the towers, slowly tapering as they rose, creating the illusion of disappearing into the sky. When Eberson left the project, Strauss hired Irving F. Morrow.

Morrow was an architect with an artist's touch, well known and respected in San Francisco. Author John Vander Zee wrote, "he commuted daily from Oakland by ferry, fascinated by the ever changing interplay of light and shadow; morning fog and setting sun; and the contrasts of blue water, brown Marin hills and Presidio greenery."

Morrow knew this bridge would have to be more than a state-of-the-art engineering masterpiece; it would also have to be a masterpiece of art. It had to be as majestic as the Golden Gate itself.

Morrow designed the vertical fluting on the cross bracings to accent the sunlight, which, along with the tapering towers, would reduce the sense of bulk and weight inherent in a structure of this size. He designed a scheme that softened the intensity of the lighting as the towers rose, complementing Eberson's tapered tower design

The traditional bridge tower, such as the Oakland San Francisco Bay Bridge, has X-bracing to the tops of the towers, but Morrow designed open portals above the road deck as a visual frame through which to see across the Gate.

He designed the curved and angular street lamps to blend with the angles of the towers and the guard railings at a height and width between posts to permit the extraordinary views from the bridge for pedestrians and motorists.

On August 27, 1930, Strauss presented a 285 page report to the District Directors addressing with facts and figures every issue that opponents had raised. It included drawings of a slender, soaring, and graceful structure. What had been an argument against the bridge, its design, had now become one of the most powerful weapons in Strauss' arsenal.

The District placed the bond issue on the November ballot. Voters in the six District counties would decide whether or not to approve a bond measure to pay for the entire project at a cost of no more than 35 million dollars.

(Continued Page 6)

Our Enjoyable Visit To San Francisco's Mission Dolores In October, 2011!

On October 20, 2011 nineteen members of the San Ramon Valley Historical Society and guests boarded a bus at Danville Park and Ride at 9 a.m. for a tour of Mission Dolores in San Francisco. Andrew Galvin met and guided us through the mission grounds cemetery and church for a couple of hours. Andrew spoke at our November 2010 meeting.

Next, we were served lunch at the UCSF training facility in the Laurel Heights area (of San Francisco). Lectures on the history of the Laurel Heights area and the development of the UCSF institution were presented by two staff members: Edwina Newsom and MC Yue.

Then we went around the corner to the San Francisco Fire Department Museum on Presidio Avenue. Alas, no one was there to greet us. We boarded the bus and returned to Danville by 3:15 p.m..

Edwina Newsom gave a brief history of the Laurel Heights area of San Francisco.

She spoke of the cemeteries in early San Francisco. This includes cemeteries from 1776 into the 1940's. Russian Hill was the burial location of many Russian sailors in pre gold rush days (1830's), as was part of Telegraph Hill from 1840 to 1850.

Today there is a cemetery at Mission Dolores and at the Presidio. There is one building, the IOOF Columbarium, that was at the entrance to the Odd Fellows cemetery.

In the 1850's land was purchased in the Laurel Heights area, and four large cemeteries were created. There was a concern in the 1880's that these cemeteries discouraged development. Property owners wanted to move them.

The grounds of the cemeteries deteriorated over time. It was a haven for those who would come in to destroy the property. No one was adequately caring for them.

By 1900, most of the grave yards were filled. In 1902, the Board of Supervisors enacted an ordinance prohibiting further burials in the City and outlawed the sale of additional plots in the four big cemeteries.

The Richmond District wanted the cemeteries moved. The Catholic Archdiocese opposed the removal because the graves were on hallowed ground.

In 1921 the State Legislature passed the Lords Act which allowed the cemeteries to be abandoned if ratified by the majority of the plot owners. There was some litigation that did not get very far.

By 1923, the second Lords act was passed, which allowed removal of the bodies under police power.

The removal began in 1929.

Between 1922 to 1940, these cemeteries were moved to Colma. This move was due to health concerns by the residents.

This left lots of unclaimed tombstones. The tombstones were broken into pieces and used as paving materials for lining the walks in Buena Vista Park. Other fragments were used to line the breakwater at the Saint Francis Yacht Club. Few of the elaborate monuments survived.

Only the marker at the Columbarium entrance and California Historic Landmark 750 for The Laurel Hills Cemetery (1854-1946) located at the entrance to this UCSF building remain today.

By the end of WWII, Laurel Hill was subdivided into house lots. There was one parcel planned for a school. The plan changed. In 1953, Fireman's Fund Insurance Company bought the property and constructed this building at California and Presidio and occupied it in 1957. When Fireman's Fund relocated in 1985, UCSF bought the property. It has become an institute for health and aging.

MC Yue spoke next. This property sat fallow for ten years (1986-1996). The neighbors did not want a hospital here.

In 1854, Dr. Hugh Toland started Toland Medical College. He intended this medical school to be like the spring for youthful medicine, and he wanted to make his mark on San Francisco. But, sadly, this was not to be because the school was transferred as an unconditional gift to the University of California at San Francisco in 1873. The Toland School became a medical department in this young institution.

The institution began next to a hill. There was no refrigeration then, but it was necessary to keep the cadavers cool for

(Continues On Backside)

Our Enjoyable Visit To San Francisco's Mission Dolores In October, 2011! (Continued)

the medical students to study them. There was a hole in this hill having a wind tunnel effect to provide the necessary cooling.

In 1911, an anthropologist Alfred Kroeber started the Anthropology Department at UCSF. He was very interested in the calamitous loss of the native California Americans and their destruction. He started the discipline called Salvage Ethnography. He would go out into the field, interview survivors, take photographs, and collect artifacts.

In 1911, he found a survivor of the Yahi Indian Tribe that had had no direct contact with the Caucasian culture. Following the Tribe's custom , the survivor refused to give his name. So Kroeber named him Ishi.

Ishi was brought to San Francisco in 1911 and was given an apartment in the old Law School. Ishi demonstrated technological skills of his culture. He spent time with T.T. Waterman and the famous linguist Edward Sapir retelling his Indian tales and songs to capture the culture and get this information in written form. This occurred over a period of five years from October 1911 to March 1916, when Ishi died. During this period, some 24,000 people observed him at various times.

The area where Ishi was became Health Sciences West (HSW).

In April of 1906, there was an earthquake in San Francisco. The hospitals downtown were damaged. A tent city was built in Golden Gate Park to house people in need of medical help. The Medical Faculty organized the UCSF Hospital. The UC Regents recognized the significant role of nurses in this endeavor. In 1907, a training school for nurses was authorized.

In 1965, the Dean of the School of Nursing invited a sociologist from the University of Chicago, Anselm Strauss, who studied the sociology of work, work chronic illness, and dieing. Dr. Strauss was brought to UCSF to teach the doctoral candidate nursing students in the methods for doing qualitative research. The classes were successful and a Medical Sociology Behavioral Sciences Department was begun. This was groundbreaking at this time. It was combining the social and clinical aspects of society in the School of Nursing.

In 1974, Dr. Carroll Estes joined the faculty. In 1979, she started the Aging Health Policy Center. It became an organized research unit in 1985. There are public, private, and state representatives.

In March, 1996, the Center moved into the building we are in now. The other UCSF Departments began moving in. Since no wet labs were to be here, it was decided to build the Mission Bay campus for the wet labs.

Now the two Co-directors are Dr. Wendy Max, a Health Economist, and Dr. Patrick Fox, who is a Sociologist. There are 46 faculty and 109 research and administrative staff located here and in Sacramento (there are several State projects). In this department there is a Research Center with 12,000 books and journals.

The faculty represents diverse fields. A new acquisition is called In Health with Dr. Fukioma. She is using technology including cell phones and a pedometer to get inactive women to exercise. Every day women patients receive instruction and respond as to what they did that day (exercising and eating).

Visiting scholars from around the world have projects here.

MC Yue has been told by personnel who work on weekends in the building that there are ghosts here. All of the bodies or spirits did not get moved to Colma. The ghosts fly by and doors slam.