

# The John A. Blume Earthquake Engineering Center

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## In Memory of John A. Blume

**John A. Blume**, known as “the father of earthquake engineering,” died at his Hillsborough home on March 1 at age 92 with his wife, **Jene**, by his side. Blume’s affiliation with Stanford began in 1929 as an undergraduate and continued for the next 73 years as student, teacher and benefactor.

“Dr. Blume was a pioneering researcher who, through extensive publications and leadership in the profession, exerted tremendous influence on the development of modern earthquake engineering practice,” recalled **Prof. Anne Kiremidjian**. His major role in developing seismic design procedures and codes have become a mainstay of modern construction. Today’s level of maturity in designing buildings that are earthquake resistant, not earthquake proof — “Don’t say ‘proof’ unless you’re talking about whiskey,” Blume once told a newspaper reporter — is due to many years of dedicated work by a few innovative researchers and engineers including Blume, several of his Stanford colleagues observed.

### Earthquakes Shaped His Life

Earthquakes played a major role in Blume’s life. Born on April 8, 1909, in Gonzales, Calif., he grew up hearing stories from both sets of grandparents about how they survived the 1906 San Francisco earthquake and fire. His father, **Charles A. Blume**, a builder, participated in the reconstruction of the Palace Hotel and other buildings in San Francisco following the disaster. As a young man, Blume worked for his father as a steel erector and rigger.

In 1925, he witnessed the destruction of Santa Barbara by a magnitude 6.3 earthquake. Blume helped with the rescue work and said later that this event, along with his grandparents’ experiences in San Francisco, raised in him a desire to “do something” about earthquakes.

Four years later, Blume enrolled at Stanford to study engineering and created a unique study plan — a mix of courses in geology, architecture and mathematics. In those days, textbooks referred to buildings as “static” — a notion Blume rejected. In 1933, he received a bachelor’s degree with distinction and continued his studies toward a graduate degree with **Prof. Lydik S. Jacobsen**. In 1934, Blume constructed the second and most elaborate multi-story dynamic model to date — designed to simulate the motion of a 15-story building. Blume’s model was constructed with five degrees of freedom per story and could be repeatedly tested without being damaged.

To pay for his education, Blume took part-time jobs as a laborer, carpenter, truck driver and cannery worker. He also played the guitar and banjo, and was second tenor in a quartet that sang with dance bands. Blume’s sense of humor was legendary, friends recalled, as were

his sports car escapades.

In 1935, he received the degree of Engineer — although it would not be the end of his Stanford education.

### Innovative Engineer

While still enrolled as an undergraduate, Blume took his first engineering job with the U.S. Coast and Geodetic Survey, now the U.S.G.S. In 1935, he was hired as a construction engineer on the Bay Bridge and later worked for Standard Oil Co. and for the structural engineering design firm of H. J. Brunner.

In 1945, he established John A. Blume and Associates (JAB) in San Francisco, which soon became the preeminent consulting firm in structural and earthquake engineering. The company designed and analyzed numerous construction projects for earthquake resistance — among them the Stanford Linear Accelerator Center, the Embarcadero Center and the Diablo Canyon Nuclear Power Plant. His firm also conducted earthquake research on dozens of California public school buildings; on more than 40 nuclear power plants in the United States and in six other countries; and on deep-water harbors. Other research projects examined the structural response to underground nuclear explosions and sonic booms.

### The ‘Dropout’ Returns

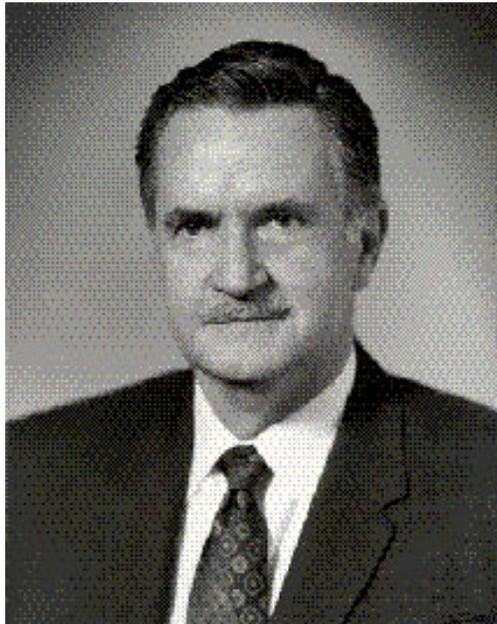
In 1964, at the age of 55, Blume returned to Stanford to study for his doctorate — “after 30 years as a dropout,” he liked to say. Blume decided that he needed to update his

understanding of modern techniques in civil engineering such as matrix and computer analysis of structures and statistical methods. Although he headed a large consulting firm, Blume pursued his studies diligently, taking course work for an entire academic year. He asked for no special treatment and studied in the same manner as other students. On Jan. 6, 1967, 34 years to the day after receiving his bachelor’s degree, Blume was awarded a doctorate in civil engineering.

### Leadership and Awards

Blume helped establish the EERI in 1949. He was named its first secretary and was president from 1978 to 1980. He was named an honorary member of EERI, ASCE, SSA, the New York Academy of Sciences and SEAONC; and was a fellow of ACI and the International Association of Earthquake Engineering.

During his long career, Blume authored more than 150 papers, articles and books. In recognition of his pioneering contributions, he received numerous awards and honors (please see the Blume Center website for a complete listing).



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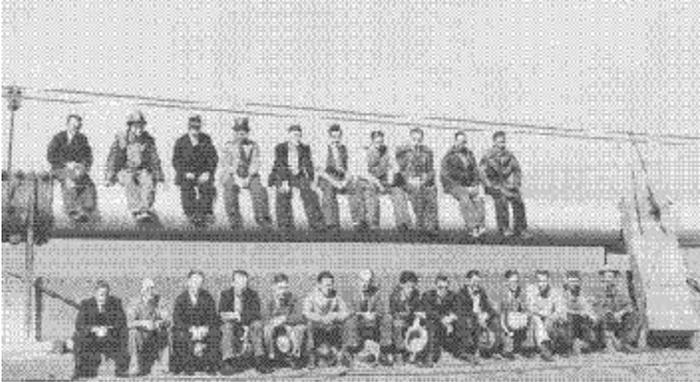
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# Tribute to John A. Blume

## John Dalton - Nephew

My uncle's paternal grandfather came to northern California as a Captain in the Navy, to help establish Mare Island. His maternal grandfather was a horse and buggy physician in the Salinas Valley. His father, mother (who died when he was three), and stepmother were all native Northern Californians.



*The San Francisco-Oakland Bay Bridge field engineering staff prior to opening. John Blume is seated in the top row at the far right, 1936.*

My grandfather (John Blume's father) was a contractor on the radio towers above Honolulu in 1924, when my uncle decided to compete as a swimmer in the Olympic tryouts. He was medically disqualified due to a "serious" heart murmur. But he was always in great shape; sturdy and strong like his father. He was home schooled during his time on Oahu by my grandmother. One time I asked him at what age had he finished college calculus. He said that most of it was self taught before leaving Hawaii at the age of sixteen. When I was in grade school, we played a game to see if he could solve my Algebra problems by guessing at the logarithm of the unknown. His answers were instant and usually correct within a tenth. Though my mother is eighteen years younger, when she attended school in San Francisco, Uncle John's scholastic achievements many years earlier were still revered. Throughout my childhood and adult life I was always in awe of his intelligence.

The stories Uncle John told were of legend to me even as a child. During his youth he was a terrific handball player in Golden Gate Park, where a gambler's day was made or broken depending on my uncle's athleticism or competition. He was usually heavily favored.

During the bridge building days, Uncle John sang in various saloons. They attracted tourists who wanted to see remnants of the old Barbary Coast days via the life of the bridge workers. My uncle thought it was great fun singing to an unaware audience. The saloon owners would provide free drinks to the singers and workers as long as they attracted drinking tourists.

In 1963, my uncle reportedly drove his 1962 Mercedes 300SL Roadster from San Francisco to Los Angeles, down Highway 1, in less than 6 hours. There always seemed to be that risky side to

him, which seemed incongruent with structural design analysis. He did both with equal confidence.

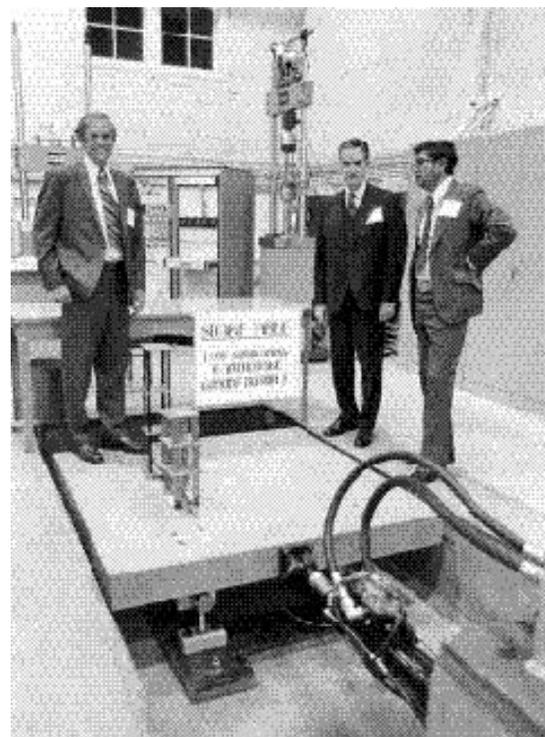
Always humorous, entertaining, and eloquent, he entered a speaking contest in the mid 1960's, which resulted in a first place tie with, soon to be, Governor Ronald Reagan. I always had the feeling that he could accomplish anything. His achievements were remarkable and influenced not only by his love of his work, but his dedication to Stanford. His disappointment that I did not attend Stanford was unspoken between us. It wasn't due to my specific choice of Berkeley, as much as I felt that he desired having another generation be a part of the great institute that he loved.

The original Blume local name now ends, since he had no children of his own. From the descendants of the Blume family, he is survived by his only sister Beverly Dalton, two nieces Claudia and Colleen, and myself. I am his namesake.

## Professor Emeritus James Gere

John was a great personal friend to many people, including myself, and we loved him for his sociability, high spirits, and generous nature. Whenever a social gathering took place, you could count on John to be the life of the party. He was great at telling stories, he could make you laugh, and he enjoyed singing.

I recall one of John's favorite stories. He told of the time when he worked for the California Division of Highways on the construction of the Bay Bridge. Because he was a recent engineering graduate, he



*Jim Gere, John Blume, and Haresh Shah at the opening of the Blume Center, December 5, 1974.*

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was given the job of installing some strain gages way out on the bridge. To put them in place, he had to lean outward over the railing, with open water far below. In the process he began to slip, so he grabbed a suspender cable. All was well except that he dropped the gage. His supervisor came running over, very mad. John apologized and explained that he was afraid he might fall. The supervisor cursed him out, saying, “Those #?@%# gages cost us \$2 apiece!”

John’s singing career started early, when he was in college. To earn money, he sang and played the guitar at a club in Palo Alto. Later he joined a quartet that sang in the Rose Room of the Palace Hotel. He continued singing at parties with friends. A few years ago, about a dozen of us were assembled at a nice restaurant with him in Hawaii, after a day of lectures and meetings on earthquake research. Before the dessert arrived, John was on his feet singing for the entertainment of the table. At John’s insistence, Anne Kiremidjian soon joined him, and the singing got even better.

Not many people are aware that John was athletic and kept himself in shape. He used to run regularly, and he enjoyed handball. When the new athletic facilities were built at Stanford a few years ago, John donated one of the handball courts. Even after his health began to fail and he could no longer run, he would still enjoy his daily two-mile walk.

Eventually, the time came when he could no longer move about. All of us can be grateful for the tremendous devotion shown by his wife Jene as she took care of John for those last years. They were extremely difficult times, yet Jene persevered, day after day. She truly was John’s guardian angel.

### **Professor Helmut Krawinkler**

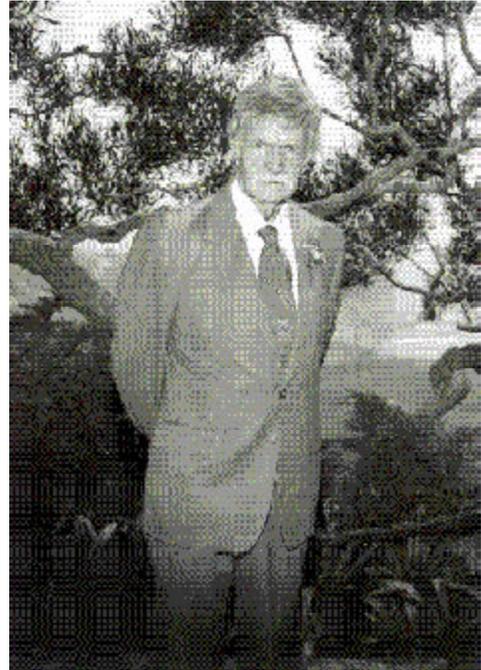
**A Dissertation on Sea Cucumbers.** In autumn of 1980, EERI sent an earthquake engineering delegation to the People’s Republic of China (see photo). The purpose of the tour was to “expedite implementation of the Agreement on Cooperation in Science and



*EERI Delegation to China, 1980.*

Technology between the US and the PRC signed by President Carter and Vice Premier Deng Xiaoping in January 1979.” John Blume was the obvious choice as leader of the delegation. I was lucky enough to tag along. At that time I was young and John was in his prime. His boundless energy kept us moving at a pace approaching the speed of

light, and his wit, savvy, and diplomatic skills made the trip enjoyable and a great success. I was truly amazed by the charm, diplomatic wisdom, and great variety of gems he put into his



uncountable welcome, thank you, and dinner speeches (the latter after many toasts and an impressive and obligatory consumption of beer, wine, and mai tai mixtures). He was a superb leader, and our hosts recognized this as much as we did.

We attended many outstanding banquets, and John’s fascination focused on one part of the superb meals that came in many varieties and shapes – all of them foreign to our sense of beauty and taste. Our Chinese member of the delegation, Professor Leon Wang, enlightened us that these foreign objects were sea cucumbers. Many of us bestowed diplomatic immunity onto these objects, but John (and I) bravely consumed them all. Sea cucumbers became the favorite topic of our dinner conversations, but I forgot about them as soon as we set foot on American soil. About a week later I received a package from John, which included technical material but also a six page dissertation on sea cucumbers. He made the effort to research these creatures, which are “sluglike marine invertebrates of soft, cylindrical body, usually of dark color and often warty, thus resembling a cucumber.” It took a curious mind like John’s to set the record straight.

I am telling this story, because it typifies John Blume. John was a brilliant engineer and a workaholic, we all know that. But it is fascinating that with his busy schedule he found the time to research an irrelevant topic, simply to satisfy his curiosity. Before leaving for China, I considered John as an icon of engineering. During and after the trip to China I saw John as a human being, for many pleasant personal experiences we shared, the sea cucumber story being just one of them. For many years to come, John and I had many laughs about sea cucumbers, even after Parkinson’s disease changed the life of this brilliant and energetic person for ever. The irrelevant sea cucumber story did tell me that John got pleasure out of little things in life, not just out of the accomplishments he is known for. This is what made John dear to me.

**Stanford Educator and Donor**

Blume's dedication to education and research led him to provide fellowships that have supported many graduate students in structural engineering at Stanford. He also urged the university to establish the Blume Earthquake Engineering Center in 1974.

"The center draws the brightest students from around the world carrying on John's legacy of excellence and leadership," Kiremidjian noted.

He also endowed the John A. Blume Chaired Professorship, recognizing the outstanding contributions of a CEE faculty member to the field of earthquake engineering. The chair is currently held by **Prof. Helmut Krawinkler**.

Blume is survived by his wife, **Jene**, of Hillsborough; his sister, **Beverly Dalton**, a nephew, two nieces, three grandnieces, a stepson and two step-granddaughters.

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**CORNELL ELECTED FELLOW**

**Prof. C. Allin Cornell** was elected to be an American Geophysical Union (AGU) Fellow for 2002. AGU members who are selected as Fellows have attained an acknowledged eminence in a branch of geophysics. The number of Fellows selected annually is limited to no more than 0.1% of the AGU membership.

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**SEG AUTUMN GRADUATES**

Congratulations to all of the Structural Engineering and Geomechanics Autumn 2001 Graduates: **Chunyun Ge (DCI), Koosun Kim, Che-Han (Eddie) Lee, and Tsang Wong.**

**BLUME CENTER NEWS**

On October 2, **Prof. Helmut Krawinkler** gave a lecture on "Progress and Challenges in Performance-Based Earthquake Engineering" as part of the Linbeck Distinguished Lecture Series at Notre Dame University.

**Prof. Ronnie Borja** participated in the International Workshop on Earthquake Simulation in Geotechnical Engineering held at Case Western University from November 7-10, sponsored by the National Science Foundation.

**Dr. Renate Fruchter** and Ph.D. Research Asst. **Peter Demian** visited the Obayashi Corporation Headquarters in Tokyo, Japan in Dec. to organize a three-day workshop on PBL collaboration technologies, and to deploy one of the technologies, ThinkTank, for pilot projects at Obayashi.

In December, **Dr. Renate Fruchter** was invited to Science City Corp. in Beijing, China for a series of talks on Global Teamwork and Collaboration Technologies. She was invited to give lectures at Tsinghua and Beijing Universities and to meet the Vice-Mayor of Beijing, Liu Zhihua.

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**SEG STUDENT RECEIVES ASCE AWARD**

**GeeLiek Yeo**, a Ph.D. Candidate in the Structural Engineering and Geomechanics Program, has been selected by the Structural Engineering Institute as a recipient of the 2002 Raymond C. Reese Research Prize for his paper, "Design Live Loads for Passenger Cars Parking Garages," in the Journal of Structural Engineering, March 2001. He accepted the award at the Structures Congress & Exposition on April 4-6 in Denver, Colorado.

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