

ASSOCIATION OF ENGINEERING GEOLOGISTS

SOUTHERN CALIFORNIA SECTION

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May 1995

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This Newsletter is provided as part of your membership in the Association of Engineering Geologists. If you are not a member of AEG and would like to subscribe to this newsletter, send check or money order in the amount of \$35.00 (\$15.00 for full-time students), made out to "AEG Southern California Section", to the newsletter editor (see address on back page). **Deadline for submittal to the May newsletter: May 19**

THIS MONTH'S MEETING

May 9, 1995

Lessons of the Northridge Earthquake

presented by

Lucile M. Jones

Reservations must be made by **Friday, May 5!**

call GeoSoils at 818-785-2158

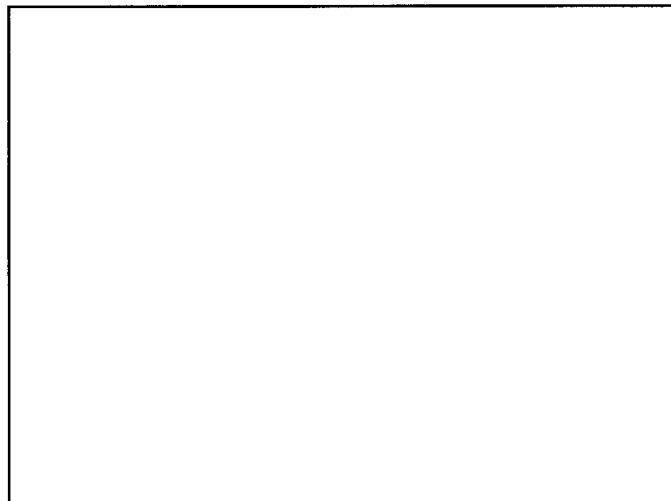
(leave your name and the number of people in your party)

Cost: \$20.00 (full-time students \$10.00)

Map to Meeting

Steven's Steak House
5332 Steven's Place
City of Commerce
(Santa Ana Fwy. to
Atlantic-south exit
T.G. Page:675 G-3)

5:30 Social Hour
6:30 Dinner
7:45 Program



MAY PROGRAM

Lessons of the Northridge Earthquake

by Lucile M. Jones

U.S. Geological Survey, Pasadena, California

The magnitude 6.7 Northridge earthquake, the most damaging earthquake in the United States since 1906, occurred in response to compression of the Los Angeles basin caused by the Big Bend of the San Andreas fault. It brought home two conclusions from seismological research of the last decade that had not yet been reflected in the building code — 1) that large earthquakes should be expected on the buried faults under Los Angeles and 2) that the ground motions can be very large when very near to the fault. Because of a large bend in the San Andreas fault, southern California has over 300 faults capable of damaging earthquakes. A new report from the Southern California Earthquake Center argues that faults other than the San Andreas system will produce about half of the earthquakes above magnitude 7 and most of the smaller earthquakes. Because of their proximity to population centers, these faults actually pose the greatest threat to our society. Moreover, the slip rates of these faults suggests that the last 200 years in Los Angeles has been anomalously quiet.

The Northridge earthquake raises the question whether the current building code (the Uniform Building Code in California) adequately represents earthquake loading and structure behavior. The "code earthquake" is intended to be the maximum one with some reasonable chance of occurring. The ground motions from the Northridge earthquake exceed the code earthquake, especially for higher frequencies. Such ground motions should be regarded as the norm in the epicentral region of a large thrust earthquake. Furthermore, because earthquakes larger than Northridge will occur, other possible deficiencies in the code earthquake may exist such as insufficient consideration of long-period ground motion, near-fault ground motions, and duration effects. The behavior of structures is also inadequately represented in the code in some respects because of a lack of knowledge; the fracture of steel welds is one example. Because the goal of a building code is to protect life by preventing collapse, damage — possibly unrepairable — is to be expected from strong shaking even in new structures. Design mistakes and construction flaws must be sorted out as well. Because the present rate of California seismicity suggests that earthquakes similar to Northridge will occur several times in a structure's lifetime, the focus of current structural design practice solely on avoiding collapse should be rethought.

Large earthquakes will occur again in southern California. Almost 100 faults in the Los Angeles metropolitan area have been identified as capable of damaging, $M \geq 6$ earthquakes, and more are probably still unmapped, but only a few of these, and we do not know which, will produce events in our lifetimes. The mitigation strategies for this heavily populated metropolitan area should focus on recognizing that large earthquakes in the urban areas are not rare events, predicting the effects of these earthquakes, and designing buildings and response strategies that adequately account for these effects.



Biographical Sketch

Present Position:

Seismologist, Pasadena office of the United States Geological Survey
Visiting Research Associate, Seismological Laboratory California
Institute of Technology (Caltech) Pasadena, California

Education:

A.B. Chinese Language and Literature, Magna Cum Laude, 1976
Brown University, Providence, Rhode Island
elected Phi Beta Kappa, 1976
Ph.D., Geophysics, 1981, Massachusetts Institute of Technology,
Cambridge MA

Thesis topic: The mechanics of faulting

National Science Foundation Graduate Student Fellow,
1977-1980

Professional Societies and Boards:

Board on Natural Disasters of the National Research Council,
National Academy of Sciences. appointed 1992

Seismological Society of America, member since 1982,
elected to Board of Directors in 1990, chairman of
Publications Committee since 1991

American Geophysical Union, member since 1977

Professional Experience:

As a graduate student at MIT, Dr. Jones was awarded a Fulbright Fellowship in 1979 to work at the State Seismology Bureau in Beijing. She was the first American scientist to work in China after normalization of relations and spent twelve months working in China from 1979 to 1983. She was a Lamont Post-Doctoral Fellow at the Lamont-Doherty Geological Observatory of Columbia University from 1981 to 1983, and a National Research Council Fellow at the U.S. Geological Survey in Pasadena from 1983 to 1985. Since 1985, she has been a seismologist with the U.S. Geological Survey and a visiting Research Associate at the Seismological Laboratory, California Institute of Technology. Dr. Jones is actively involved in seismological research and has authored over 40 papers on seismology. She also participates in the management of the Southern California Seismic Network and the monitoring and prediction of earthquakes in southern California. Her primary research interests are the physics of earthquakes, foreshocks and earthquake prediction, and the seismotectonics (earthquake-producing geologic structures) of southern California. She was honored in the Women Making History '93 for her role in seismological research and earthquake education in southern California.

Personal Information:

Dr. Jones was born February 13, 1955 in Santa Monica, California, a fourth generation resident of southern California. She currently lives in Pasadena with her husband, Egill Hauksson, also a seismologist, and their sons, Sven, age 7, and Niels, age 3.

CHAIRPERSON'S COLUMN

by Robert A. Larson

About 75 people attended our April meeting at the Airtel Hotel in Van Nuys. Hugh Robertson gave a great talk on his experience with homeowners and insurance companies after the Northridge Earthquake. If you missed this meeting you will have another chance to hear what Hugh has to say about this topic at the AEG Annual Meeting, October 4-6, 1995 in Sacramento. I hope all of you are planning to attend the meeting. Abstracts are due May 1 to Julia Turney at jtourney@trmx3.dot.ca.gov. By the time you receive this newsletter this deadline will have passed. So if you're going to talk at the meeting send your abstract NOW.

I have attended the last three Board of Registration of Geologists and Geophysicists meetings in order to represent the Section. I was the only public person to attend the first meeting and one of only two at the following two meetings. Obviously, we need to get more involved at informing the Board on what we like, don't like, and what we would like to see happen in the future. They are not getting enough input. I have heard many folks express dissatisfaction with certain aspects of the Board operations, but to get your message through to them the best way is in person at one of these meetings. The next Board meeting is in Sacramento on Friday June 23, 1995. You can call the Board at (916) 445-1920 for the location. The next meeting of the Board's Examination Committee will be on May 5, 1995 at the Cathedral Hill Hotel in San Francisco. The next exams for RG, RGp, CEG, and CHg will be given on October 2-3, 1995 just before our Annual Meeting. For your information the number of people who sat for the March 1995 exams are RG - 323, RGp - 9, CEG - 51, and CHg - 327. It's amazing that more people sat for the Hydrogeologist exam than the RG exam.

As most of you know our Board is sunsetted on January 1, 1998 as a result of Senate Bill 2036. The Board is working hard to stay in business. One of the problems that I have observed is that there is too much work to do and not enough people to do it. The Board itself consists of 8 members, 5 public and 3 professional. These people all have good intentions and are volunteering their time. There are only 5 paid staff to handle all of the day to day business. The three Board committees all consist of volunteers. John Williams, head of the Exam Committee, is putting in 6-7 days a month of his time to see that the exam process operates smoothly.

We owe all these volunteers a debt of gratitude for helping our profession and helping to protect the health, safety, and welfare of the public.

Due to SB 2036, geologists must now get involved in politics if we are to save our Board of Registration. There are three phases that you can get involved in. The first phase is between now and October. The Board has solicited info from all registered geologists via a recent mailing. Please respond with the info they requested and any ideas you have that will help the Board improve its operation. The second phase consists of public hearings during October, November, and December of this year. Consider going to these hearings and giving testimony. If you do this, you will probably have 5 minutes in which to talk. You will need to have your testimony written out and enough copies available to hand out

before your testimony is given. The third phase will start next year. We will have to find a legislator to introduce a Bill to keep the Board. This will be the time to contact the legislators by letter or personal contact and urge them to vote for the Bill preserving our Board. Plan now to get involved in the process and help save our profession.

If you haven't noticed, the sunset of our Board is only one symptom of a larger attack on our profession. The USGS and Bureau of Mines may be eliminated or have its funding cut back severely, research funds for geologists are being cut back, academic programs are being cut, and the public need for geology is being questioned. What are we to do? It's time for geologists to promote our profession and demonstrate how much the public relies on us. Please consider what YOU can do to accomplish this goal. If you don't give something back to the profession, soon you won't have a profession. See you all at the May meeting. ϕ

SCHOLARSHIP ANNOUNCEMENT

In honor of Martin L. Stout and with his help and advice, the Martin L. Stout/SCS-AEG Scholarship was formed by the Southern California Section of the Association in 1994. The scholarship is open to all student members of the Association of Engineering Geologists. An award of \$500.00 will be given to one student member in August, 1995. Each year a similar award will be given. Applications for the award are due July 1, 1995. If you would like to receive an application for this award please contact Robert A. Larson, Chairperson, Southern California Section of the AEG, 6416 Woodley Avenue, #5, Van Nuys, CA 91406.

CONTRIBUTIONS NEEDED

Please consider contributing to the Martin L. Stout/SCS-AEG Scholarship. Our CD is about to turn over and we would like to add as much money as possible for the next year and get the highest interest return. The fund is currently at about \$13,450. We appreciate the recent contributions of Lisa A. Rossbacher, Dallas D. Rhodes, William J. Elliott, Paul Davis and Associates, Richard E. Lownes, and Paul Merifield. ϕ

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Los Angeles, California | \$20.00 |
| 2) | A.E.G. 34th Annual Meeting Proceedings
Chicago, Illinois | \$10.00 |
| 3) | Highway & Railroad Slope Maintenance | \$20.00 |
| 4) | Field Trip Guidebook - Oct. 1991 | \$10.00 |
| 5) | National Colloquium on Professional
Registration for Geologists | \$10.00 |
| 6) | Field Trip Guidebook - Oct. 1990 | \$10.00 |

For information or to order, contact:

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GEOQUOTE OF THE MONTH

"Dams must stand. Not all of them do, and there are all degrees of uncertainty about them. Reservoirs must hold water. Not all of them do, and there are many ways by which water may be lost. The work must be done safely as a construction job. Not all of them are, and there are many sources of danger. The whole structure must be permanent and the work has a right to be done within the original estimates. Not all of them are, and there are many reasons for their failure or excess cost, most of them geologic or of geologic dependence."

Charles P. Berkey, 1929
Responsibilities of the geologist in engineering projects
AIME Tech. Pub. 215, p. 1-26
