ASSOCIATION OF ENGINEERING GEOLOGISTS

AEG

SOUTHERN CALIFORNIA SECTION

NEWSLETTER - JANUARY 1989

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DINNER MEETING JANUARY 10 th

- **Tuesday, January 10, 1989**
- **The Quiet Cannon Restaurant**
  901 North Via San Clemente
  Montebello, CA
- **$20.00 (includes tip)**
- **For reservations call**
  Jerry Treiman
  (213) 620-3560 (CDMG LA Office)

Make reservations by Noon on the Friday prior to the Meeting.

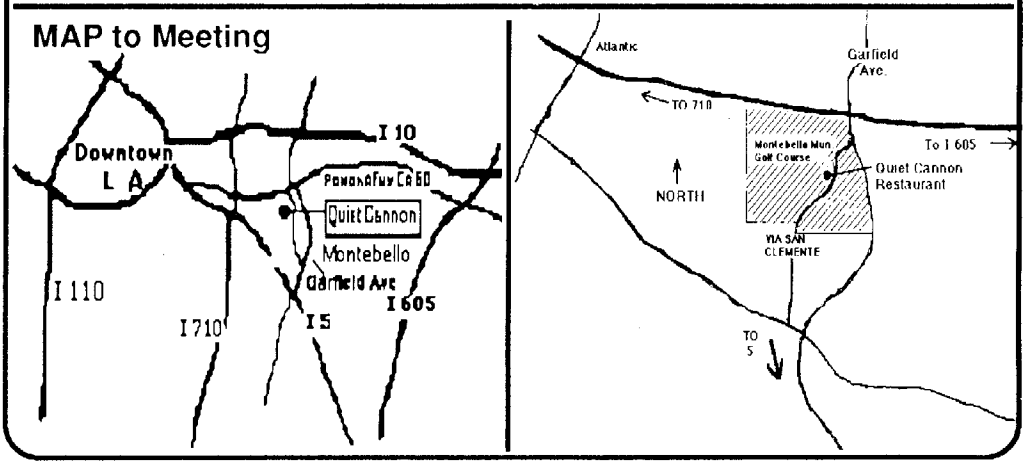
- **5:30 Social Hour**
  6:45 Dinner
  7:30 Announcements
- **8:00 Speaker**
  9:00 Section Affairs

PROGRAM

Geology of Blackhawk Canyon, San Bernardino Mtns: Source Area of the Blackhawk Landslide

Dr. Martin L. Stout
Professor of Geology
California State University at Los Angeles

MAP to Meeting



TOPIC & SPEAKER

Geology of Blackhawk Canyon, San Bernardino Mountains, Southern California: Source Area of the Blackhawk Landslide

Dr. Martin Stout

Prof. Stout received his BA degree from Occidnetal College and his MS and PhD degrees from the University of Washington. He has been teaching at Cal State Los Angeles since 1960. He has been a member of AEG since 1967.

Prof. Stout started working in Blackhawk Canyon in the late 1960's, taking introductory mapping classes to the canyon, and leading arm-waving tours to the landslide, which he was hopeful of dating. After many failures in attempting to drill the landslide to obtain datable materials, he settled on a second best option - getting a minimum age on fossils from a perennial freshwater body formed shortly after slide movement.

The geology of Blackhawk Canyon is briefly summarized on the enclosed sheet, and all AEG members are invited to participate in the scheduled field trip to the site on January 21, 1989.

Blackhawk Canyon, on the northeastern edge of the San Bernardino Mountains in southern California, is best known as the source area for the Blackhawk landslide, a 17,000-20,000 year old mass of marble debris which Shreve (1968, 1987) proposed rode out an air cushion. Recent mapping in Blackhawk Canyon shows that this model may need revision.

The canyon provides a classic exposure of Precambrian Baldwin Gneiss which has been thrust over easily eroded Pliocene Old Woman Sandstone by a southerly dipping fault known as the Voorhies thrust, one of five such thrusts. Nearby, the Baldwin Gneiss is intruded by Cretaceous Cactus Quartz Monzonite, and both are unconformably overlain by the Pliocene Old Woman Sandstone. Near the top of Blackhawk Mountain, Paleozoic carbonates have been emplaced by low angle faulting, and the post-Pliocene and most likely still active fault zones are heavily mineralized in places. High angle faults, as well as thrust faults, cut all contacts, and Quaternary landsliding has moved all of the above. Some difficulty is experienced in separating fault from landslide contacts.

Landslide evolution has greatly influenced the geology and geomorphology of the canyon. Exposures of paleo-talus and slip-surface striae directions, some exposed recently by mining operations show that prior to movement of the Blackhawk landslide, at least two large (>3 sq km) rotational failures occurred on the northern side of Blackhawk Mountain, offsetting many of the primary fault features, including the Voorhies thrust. This older movement is substantiate by carbonate development in both talus and slide debris. By not recognizing these earlier landslides, nor associated displacement, incorrect assumptions regarding fault displacements, landslide source areas, and landslide timing have been make. The Blackhawk landslide was apparently derived from slide debris of one of these large rotational failures, so the Blackhawk landslide could not have fallen from the summit of Blackhawk Mountain as the air rafting model proposes.

*Modified from Stout, M.L., 1988, Geological Society of America, Abstracts with Programs, v. 20, p. A 361.

THIS MONTH

JANUARY 1989

A couple of unofficial field trips are reported his month. **1.** The Blackhawk Canyon - San Bernardino Mountains field trip is scheduled for the entire day, Saturday, January 21st. **2.** The Red Rock Canyon - El Paso Mountains field trip is scheduled for February 24-26th. The weekend following "Washington's Birthday" weekend.)

Background for the Blackhawk Canyon field trip is detailed on the facing page and to the left of this column. It compliments the talk **Prof. Stout** will give at the January 10th meeting at the Quiet Cannon. Prof. Stout's references, following his abstract, show that he has spent considerable time at Blackhawk Canyon

Background for the Red Rock Canyon - El Paso Mountains field trip in Eastern Kern County is detailed on the page following the description for the Blackhawk Canyon field trip. It is the 3rd annual field trip organized by the **San Diego State University - Geology Department Alumni Association.** Anyone interested is encouraged to come. Call Bill Elliott (619) 586-0870 if you have any questions.

Last month **Dr. Ehlig** spoke about the current developments of stabilizing the Portuguese Bend Landslide. The primary control over the continuing slope movement in the area is through select location and operation of dewatering groundwater wells. Redistribution/grading of soils was also accomplished to control slope stress and cracks in the soil masses. As a result 1) the stability has improved, 2) maintenance costs have been reduced, 3) the marine environment has improved, and 4) the property values have appreciated.

In November, **Scott Kerwin**, from Moore & Taber spoke about the engineering geologic work that has taken place over several years to stabilize the slope in Dana Point at the Quiet Cannon Restaurant. The work included use of a monitoring system employing extensiometers, installation of long rock anchors and detailed geologic work to permit continued operation of the restaurant. The slides of the project were scientifically facinating and showed it is a great place to have dinner if you want a beautiful view of Dana Point and the southern coastline.

If an AEG Member has made a new year's resolution to help out this year in the AEG Southern California Section I would appreciate someone taking over as Publications Chairman. I volunteered last Spring and together with taking over the position of Newsletter Editor in November, it is too much to handle at once. Being a Publications Chairman takes about 4 hours per month, and requires showing up to all of the monthly meetings to show and sell our local section's special reports and field trip guidebooks. For details give me a call me at (714) 261-7210. My wife and I would appreciate it.

Note: The next issue should have the AEG Logo on the front cover. I am trying to get it set-up electronically, but the curves are challenging to get right.

BLACKHAWK CAYNON GEOLOGY FIELD TRIP...

Purpose: The purpose of this trip is primarily to look at the geology of Blackhawk Canyon—the source area of the Blackhawk landslide. Although excellent views are available overlooking the Blackhawk landslide, mid-day lighting is not good for photographs of it.

Date and meeting location: Saturday, January 21, 1989. Meet at Bank of America (you should find it easily) parking lot (also dirt parking lot just east of bank) in downtown Lucerne Valley at 8:00 am SHARP. You must have a high clearance 4-wheel drive vehicle (NOTE: high clearance vans will not make it—DON'T BRING)—please carpool as much as possible, because the narrow road will be temporarily blocked whenever we stop. You should allow 2 hours travel time to Lucerne Valley from downtown Los Angeles. Lucerne Valley is northeast of the City of San Bernardino, on the other side of the San Bernardino Mountains.

Itinerary: Start at 8:00 am Finish at 5:00 pm. We plan to proceed by vehicle up the northwestern side of Blackhawk Mountain, stopping to look at the complex relationships interpreted by Stout to be landslide debris (not Blackhawk landslide), and drop down the northern side of Blackhawk Mtn. into Blackhawk Canyon, where the vehicles will be parked. **There will be about 2-3 hours hiking exercise—moderate to steep climbing, but some may elect to wait at the vehicles as necessary.** If time/interest allows, we'll stop at the fossil locality where the carbon-14 sample dating the Blackhawk landslide was obtained. We should be on the lower alluvial plain near Old Woman Springs Road by dark (about 5 pm.). **Bring lunches and beverages (no food available)!**

Weather: In January, there is a moderately high likelihood of snow, but this area is in the rainshadow of the San Bernardino Mountains, so is normally protected from many LA Basin storms. Blackhawk Mountain is 6700 feet high, so **expect cold weather (gloves, etc.).** In the event of a major storm anytime during the week preceding the Saturday trip, we'll probably reschedule the trip for March, but a light dusting of snow will not affect our plans as long as snow accumulation is not too great along our route. **Please call our department on Friday, January 20th for confirmation if in doubt—213 343-2400. A message will also be left on our answering machine=e after 4 pm. so you can check on Friday evening.**

Cost: There is **no charge** for this trip. Please call the department number if you are planning on attending. A few-page handout will be provided to each vehicle in Lucerne alley regarding the stops and geology.

GEOLOGY OF BLACKHAWK CANYON, SAN BERNARDINO MTNS., SOUTHERN CALIFORNIA*

Blackhawk Canyon, on the northeastern edge of the San Bernardino Mountains in southern California, is best known as the source area for the Blackhawk landslide, a 17,000-20,000 year old mass of marble debris which Shreve (1968, 1987) proposed rode out an air cushion. Recent mapping in Blackhawk Canyon shows that this model may need revision.

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*Modified from Stout, M.L., 1988, Geological Society of America, Abstracts with Programs, v. 20, p. A 361.

SELECTED GEOLOGIC MAP AND BLACKHAWK REFERENCES

Johnson, B., 1978, Blackhawk landslide, California, U.S.A., in Voight, B., ed., Rockslides and avalanches, 1; Natural phenomena: Amsterdam, Elsevier Scientific Pub. Co., p. 71-93.

Sadler, P., 1982, Geologic map of the Big Bear City quadrangle, California Division of Mines and geology, Open file map 82-18.

Shreve, R.L., 1968, The Blackhawk landslide, Geological Society of America, Special Paper 108, 47 p.

Stout, M.L., 1975, Age of the Blackhawk landslide, southern California, Geological Society of America, Abstracts with Programs, v. 7, p. 378-379.

_____, 1976, Age and engineering geologic observations of the Blackhawk landslide, Southern California, in Woyski, M., ed., Geologic guidebook to southwestern Mojave Desert Region, California, South Coast Geological Society, p. 104-109, also reprinted in South Coast's Transverse Range volume, 1982, p. 630-633.

_____, 1977, Radiocarbon dating of landslides in southern California, California Geology, v. 30, p. 99-105.

_____, 1985, Relation between large landslides and debris flows, Proc. IVth Intl. Conference and Field Workshop on landslides, Tokyo, p. 357-359.

_____, 1988, Geology of Blackhawk Canyon, San Bernardino Mountains, southern California, Geological Society of America, Abstracts with Programs, v. 20, p. A361.

Woodford, A.O. and Harriss, T.F., 1928, Geology of Blackhawk Canyon, San Bernardino Mountains, California, University of California Publications in the Geological Sciences, v. 17, p. 265-304.

RED ROCK CANYON FIELD TRIP February 24, 25, and 26, 1989

Red Rock Canyon State Recreation Area is located in eastern Kern County, about half way between Mojave and Inyokern, along State Highway 14. This high desert area, at the western edge of the Mojave Block, can be expected to have warm days and cool to cold nights. Come prepared to experience possible weather extremes, some spectacular geology, and beautiful scenery! This area is tectonically active, and the climate is arid, so you can plan on seeing some excellent exposures (no poison oak to fight here).

The following has been excerpted from Whistler, D. P,, 1987, Field Guide to the Geology of Red Rock Canyon and the Southern El Paso Mountains, Mojave Desert, California, NAGT-PWS, p. 1-5.

The geology of Red Rock Canyon and the southern El Paso Mountains spans an interval of time from Late Precambrian to Holocene. Major depositional episodes occurred in the later Paleozoic, Paleocene, Miocene, and Quaternary time. Plutonic intrusion occurred during the latest Permian and Mesozoic. The bulk of exposures in Red Rock Canyon document the later Miocene through Holocene history of the area, which is under major structural control by the Garlock and El Paso faults.

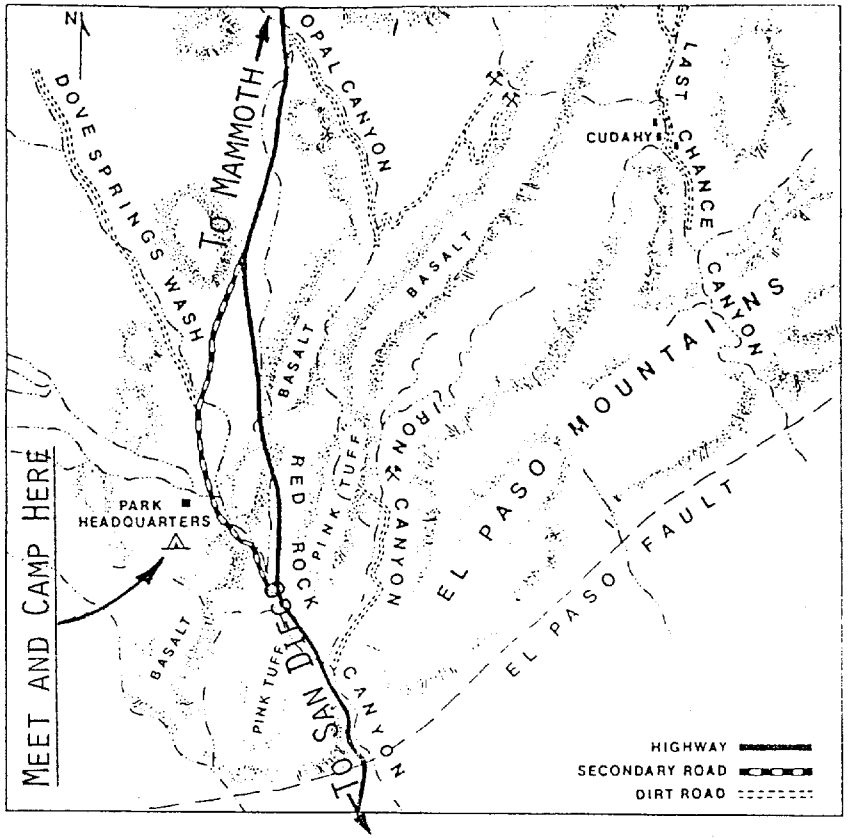
The oldest rocks exposed in the El Paso Mountains are the highly metamorphosed Precambrian chlorite-quartz-albite-sericite Mesquite Schist which forms the basement upon which the slightly metamorphosed, Late Paleozoic, marine Garlock Formation has been deposited.

The Garlock Formation and the Mesquite Schist have been intruded by a complex of plutonic rocks ranging in composition from hornblende-quartz diorite to granite. One of these intrusive units, a highly fractured and jointed granophyre plug, surrounds the gorge at the entrance to Red Rock Canyon.

The Paleozoic and Mesozoic rocks are deeply eroded, and are unconformably overlain by the Paleocene continental Goler Formation, a thick succession composed primarily of conglomerates and sandstones. Occasional finer-grained rocks in the Goler Formation have produced sparce, but diagnostic, vertebrate fossils.

The dominant exposures in Red Rock Canyon are Middle and Late Miocene volcanics and clastics lumped together as the Ricardo Formation. The Ricardo Formation is overlain by several episodes of Quaternary alluvial deposition derived primarily from the emerging Sierra Nevada. These deposits demonstrate a complex history of down-cutting, terrace, and pediment development.

The dominant structural feature of the area is the Garlock fault and its major splay, the El Paso fault. The Garlock fault is a major transform fault which separates the relatively stable Mojave Block to the south from the major crustal extensional area of the Basin and Range Province to the north. A cululative left-lateral displacement of 48 to 64 kilometers has been demonstrated for the Garlock fault zone. Alluvial fans that are offset from their source canyons along the front of the El Paso Mountains indicate at least 18 kilometers, or roughly 1/3 of the cumulative displacement, has occurred during the past 1.5 million years.



Index map of the Red Rock Canyon area (After Whistler, 1987)

S D S U GEOLOGY DEPARTMENT ALUMNI

3RD ANNUAL FIELD TRIP

RED ROCK CANYON - EASTERN KERN COUNTY

FEBRUARY 24, 25, 26, 1989

Y'ALL COME !!!

QUESTIONS ??? - CALL BILL ELLIOTT @ (619) 586-0870

OK it's January of a new year, and the holiday recovery period is underway. It is also once again the time to renew your annual subscription/membership for the AEG Southern California Section. Instead of the usual $15.00 per year, the ante has been raised to $20.00 per year. The $5.00 increase is to go to the fund to support a lobbyist in Sacramento that will represent the interest of AEG members and geologists/engineering geologists registered in California.

Your dues are part of the overall non-profit operation of the Association of Engineering Geologists Southern California Section. Your dues go toward 1) the publication and mailing of the monthly newsletter, 2) paying for dinners for needy students at the monthly meetings, 3) paying for dinners for the monthly speakers, 4) expenses for field trips, 5) printing of special publications & reports, 6) awards, 7) keeping you up-to-date on engineering geology, and notifications for professional activities. Your dues will now also provide funds for support of a lobbyist in Sacramento to represent our interests.

(Please remember to complete and mail, by 1-10-89, the San Francisco Section Board of Registration Questionnaire enclosed with the December Newsletter so the lobbyist will know what our interests are.)

Presently, the renewals for 1989 are at 15 percent of the 1988 total membership. It will be appreciated if you renew promptly, so we can get the mailing list updated quickly. To encourage new membership at any time of the year, all of the subscribers will now have featured on their mailing labels, to the right of their names, the month that their subscription will expire. If your name is misspelled or you disagree with the date that is displayed please contact Jerry Treiman - Treasurer (213) 620-3560(CDMG LA office) or Eldon Gath - Secretary (714) 598-2856. It may take a couple of months to get everyone caught up on the list.

SEMINARS/MEETINGS/FIELD TRIPS

JANUARY 1989

Start of UC Irvine Winter 1989 Toxic and Hazardous Substances Program including: One-Day Seminars and a Certificate Program for Hazardous Materials Management. University Extension (HMM Program classes start on different days & months and are 5 - one day per week meetings total-afternoon and evening)Pacific Mut. Training Ctr. 17330 Brookhurst, Fountain Valley. CONTACT: UCI Univ. Extension program. Some good classes for engineering geologists and hydrogeologists working in the environmental field (714)856-5414.

18 ASCE Geotechnical Group Meeting "Steam-Cleaning Contaminated Soils"-Prof. Kent S. Udell (UCB). Stevens Steak House 5332 Stevens Place, City of Commerce, Dinner 6:30, Program 7:30 Call (213)877-2757 for reservations.

21 Blackhawk Canyon Field Trip, San Bernardino Mtns. Meet at Lucerne Vy., CA B of A 8:00am Call (213) 343-2400 CSULA Geol. Dept. to confirm (free).

31 -2/2 Theory and Practice of Ground Water Monitoring and Sampling. San Diego, CA. CONTACT: NWWA, 6375 Riverside Dr., Dublin, OH 43017 (614)761-1711.

30 -2/4 21st Annual - Fundamentals of Shallow Foundation Design. Orlando, FL CONTACT: Engineering Continuing Education U. of Missouri-Rolla (314)341-4200.

FEBRUARY 1989

6-10 13th Annual - Fundamentals of Deep Foundation Design. Orlando, FL CONTACT: Engineering Continuing Education U. of Missouri-Rolla (314)341-4200.

14 Tuesdays - 3/14 Introduction to Environmental Auditing. UCI University Extension (5 Meetings total-afternoon and evening)Pacific Mut. Training Ctr. Room 17330 Brookhurst, Fountain Valley. CONTACT: UCI Univ. Extension program Certificate Prog. in Environmental Auditing (other courses available). (714)856-5414

20 -22 In-Situ Stress and In-Situ Stress Measurements. U. of Colo., Boulder, Center for Adv. Training in Eng. and Comp. Sci. Dept. of Civil, Envir. and Arch. Engineering.CONTACT: (303)443-3322 CATECS

POSITIONS AVAILABLE

ADVERTISEMENTS FOR STUDENT & PART-TIME "POSITIONS AVAILABLE" ARE WELCOME.....

Career Opportunity For

Environmental Geologists

Hazardous waste consulting firm has openings for entry and senior level Geologist positions. Experience with hydrogeology and hazardous waste desirable. California Registration or Certification preferred for senior positions. Challenging work and promotion potential with a rapidly growing firm. Salary is negotiable and commensurate with experience.

Call (714) 892-2565 or send resume to:

BCL Associates, Inc.
5702 Bolsa Avenue
Huntington Beach, CA 92649
Attention: Personnel
Equal Employment Opportunity firm

Career Opportunity For

Hydrogeologist-Water Resources

The City of Riverside needs a skilled hydrogeologist in the Water Division of the Public Utilities Department. As a member of the Water Planning Section work will involve evaluation of the City's groundwater resources and contamination situations, review of hydrogeologic work by consultants, and participation in planning activities related to all facets of water system engineering and design. Minimum 3 years of hydrogeological experience required. License as an Engineering Geologist in California within one year of employment is required. Salary is negotiable and commensurate with experience. *Filing period was December 9, 1988, but position is likely unfilled.(ed.)*

Call (714) 782-5571 for application or send resume to:

City of Riverside, California
3900 Main Street
Riverside, CA 92522
Attention: Personnel Office
Equal Employment Opportunity Employer

Career Opportunity For

Hydrogeologist

Immediate openings are available for a Hydrogeologist. Applicants should have a minimum of 5-7 years experience, masters degree in geology and registration as a geologist in California is preferred. Work is to be undertaken in the Los Angeles area. Challenging work and promotion potential with a rapidly growing firm. Salary is negotiable/commensurate with experience.

Call (415) 652-1164 or send resume to:

E2 Consulting Engineers Inc.
Mr. Hersh Saluja
1900 Bowell St., Suite 250
Emoryville, CA 94608

Career Opportunity For

Engineering Geologists

Openings are available for a staff and a project level Engineering Geologist. Applicants for staff level geologist should have a minimum of 2-3 years experience in hillside development projects in Southern California. Registration preferred for project level geologist. Salary commensurate with experience.

Call (714) 647-0277 or send resume to:

GeoSoils, Inc.
H.D. Pouncey, Principal Geologist
1446 E. Chestnut Avenue
Santa Ana, CA 92701

Career Opportunity For

Senior Engineering Geologist

Immediate openings are available for an Engineering Geologist with the City of San Diego. Duties include reviewing building permit applications and determining the necessity and extent of geological evaluation needed; reviewing geological and investigative reports; and evaluating proposed geologic hazard mitigation measures. License as an Engineering Geologist in California is required. Salary commensurate with experience.

Call (619) 236-5753 or send resume to:

Employment Info. Counter
City of San Diego
Administration Building
202 C Street
San Diego, CA 92101

PROFESSIONAL SERVICES

Renewal Notice

Send your $20.00 check made to "AEG" for the 1989 dues to:

Jerry Treiman, AEG SCS Treasurer
c/o California Division of Mines and Geology
107 S. Broadway, Room 1065
Los Angeles, CA 90012

Name_____
WORK_____
Address_____ Phone_____
_____ ZIP_____ FAX_____
HOME_____ Phone_____
_____ ZIP_____

Why not include a Holiday Photo of yourself for the photo directory Don Lamar is compiling for the AEG Southern California Section Membership.

Please remember to contribute to the San Francisco Section survey, enclosed with the December Newsletter, by filling out the multiple-choice questionnaire and mail it to **Patti Oscieki**. It takes about 5 minutes to complete the questionnaire, unless you want to write out details or complaints. **The deadline for sending this anonymous questionnaire to Patti is January 10, 1989.**

Kelly E. Rowe
AEG Newsletter Editor
c/o James M. Montgomery, C.E., Inc.
30 Corporate Park Suite 310
Irvine, California 92714

Why Delay Renew Today

Use tear off form on other side of this page and mail $20.00/year to Treasurer