

The Engineering Geologist



THE
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NEWSLETTER OF THE ENGINEERING GEOLOGY DIVISION OF THE GEOLOGICAL SOCIETY OF AMERICA

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DIVISION-SPONSORED SYMPOSIUM 1985 ANNUAL MEETING ORLANDO, FLORIDA

The Engineering Geology Division (EGD) is sponsoring a half-day symposium on "Engineering Geology of Low-Energy Coastlines" as part of the 1985 Annual Meeting in Orlando. This symposium has been coordinated with a parallel one on "Sedimentary Processes and Deposits of Low-Energy Coastlines" sponsored by the Quaternary Geology and Geomorphology Division (QG&GD). The two symposia will be held back-to-back in the same room on Monday, October 28. Albert C. Hine and Daniel F. Belknap are the convenors of the morning QG&GD symposium and Robert L. Schuster is convenor of the afternoon EGD symposium.

The symposia convenors define low-energy coasts as those receiving low wind and wave energy. They do not attempt to provide a quantitative cutoff in terms of wave-energy flux, mean annual wave height, number of tropical or extra-tropical storms or some other criteria. Low-energy coastlines are commonly adjacent to bays, estuaries, lagoons having limited fetch, or those marine coastlines that are fronted by wide, broad, low gradient shelves. Low-energy coasts are generally dominated by the accumulation of fine-grained sediments, marsh deposits, and/or influenced noticeably by biological (oyster bioherms, sea-grass flats, algal mats, etc.) or chemical (beach-rock dolomitic crust formation, etc.) processes.

In view of the facts that (1) low energy coasts are statistically significant, (2) locally such coasts are being developed rapidly by humans, and (3) such coasts might represent the norm rather than the exception in epicontinental sea environments so common in the ancient past, the symposia are timely. Coordinating the two symposia provides an opportunity to consider both the basic and applied research approaches to low-energy coastlines.

Care has been taken to coordinate the content of the two symposia much in the same manner as was done for the highly successful symposium on "Debris Flows/Avalanches: Process, Sedimentology, and Hazard Mitigation" which was held at the 1984 Annual Meeting in Reno. Efforts are under way to publish many of the papers presented in that symposium in a GSA Reviews in Engineering Geology volume, edited by John Costa and Gerald Wieczorek.

DAVID VARNES RECEIVES FRENCH AWARD

David J. Varnes of the U.S. Geological Survey, a former chairman of the Engineering Geology Division, was recently awarded the prestigious Chevalier dans l'Ordre des Palmes Academiques by the Minister of Education of the Republic of France, "pour services rendus a la culture Francais."

This honor was due mainly to Dave's work on landslide zonation within the International Association of Engineering Geology Commission on Landslides and Other Slope Movements. That effort resulted in the 1984 UNESCO publication Landslide Hazard Zonation: A Review of Principles and Practice. In this study of landslide hazard zonation, Dave was aided by other members of the Commission as well as by French scientists from the Bureau de Recherches Geologiques et Minieres of the Ecole Nationale Supérieure des Mines and the Laboratoire Central des Ponts et Chaussees.

PETER J. TARKOY RECEIVES AWARD

GSA/EGD member Dr. Peter J. Tarkoy was cited by the publishers and editors of Engineering News-Record as one of those "who serve the best interests of the construction industry" for "resolving changed-condition disputes out of court with computerized geoloical records."

He was one of those honored at the Construction's Man of the Year Award Dinner held at the Plaza Hotel in New York in February.

Dr. Tarkoy is a geotechnical consultant in heavy and underground construction and makes extensive use of personal computers in the practice of engineering geology, geotechnical engineering, and construction. He has recommended, provided, and installed computer systems for contractors and professional services.

RICHARD W. GALSTER RETIRES

Effective June 1, Richard W. Galster retired as District Geologist, Seattle District, Corps of Engineers. Dick doesn't plan to remain idle, however. He has established his own practice as a consultant in engineering geology. Dick can be reached at 18233 13 Avenue NW, Seattle, Washington 98177, phone: (206) 542-2596.

**ENGINEERING GEOLOGY ABSTRACTS:
SHOULD THEY BE SAVED OR TRANSFORMED?**

by

Dr. Peter J. Tarkoy
102 North Main Street, Sherborn, MA 01770

Professor Hatheway's letter urging readers to subscribe to Engineering Geology Abstracts (**THE ENGINEERING GEOLOGIST**, July 1985) was timely. However, it rekindled some frustration I have experienced with the format of EG Abstracts.

Primarily, EG Abstracts is a professional service and tool. In order for EG Abstracts to survive, it must succeed financially. It appears that this survival is in doubt.

Professor Hatheway's editorial regarding the merits of subscribing to the EG Abstracts in view of the shortfall of subscribers is commendable. However, with only 400 subscribers I suspect that adding a few more subscribers might only obscure the problems with the publication rather than effect a cure. I suggest that we look for the underlying causes instead.

When I first subscribed to EG Abstracts (I learned of it through ASCE and a Geotechnical Engineering Committee) I thought it was a good idea. Having reviewed about two years worth of these abstracts as they arrived in the mail, I was pleased and satisfied with their coverage and content. However, trying to search EG Abstracts for literature on a particular topic required an inordinate amount of time. I found I had to review several topics in each of the quarterly issue published.

A number of on-line computer search services exist, one of which happens to be Georef (Georef's staff prepares EG Abstracts). However, it is very expensive to use Georef. In fact, Georef's costs are often prohibitive to those who most need to use them (self-employed consultants such as myself). Georef must protect their investment from those who would pirate and re-sell their database. It seems that one of the ways they protect their database is by making costs prohibitive. I don't deny this may be a consideration, but there has got to be another way.

I suggest that EG Abstracts be made available on floppy disk. Datafiles could be broken into the 22 index categories used for EG Abstracts. This would make computerized searches faster and cheaper. (Georef also would benefit directly from sale of the disks; telephone costs and Dialog fees are so high that I don't even consider using Georef! I think more people would use Georef if the fees and associated costs were more reasonable. --ed.) Quarterly updates can be added to create a larger database. The user could search his database, by category, with simple search facilities available on a wordprocessor or a search program supplied by AGI/Georef.

Alternatively, the abstracts could be made available through a CBBS (computer bulletin board service) or mainframe for downloading (with appropriate password or subscriber disk security protection). This method would save the cost of copying and mailing disks (and make them available in a wide variety of disk formats -- ed.). As an added benefit, the state-of-the-art of our profession would be enhanced by computerization.

I wish to save Engineering Geology Abstracts, primarily in some type of computer

format at an affordable cost (which may be higher than the printed version). Whether you agree or not, the person to contact is:

John Mulvihill
American Geological Institute
4220 King Street
Alexandria, VA 22302
(703) 379-2480

US NATIONAL COMMITTEE OF IAEG ACTIVITIES

by George A. Kiersch
Chairman, US Committee/IAEG

The first IAEG-sponsored event held in the United States will be on October 9-10, 1985, in Winston-Salem, North Carolina, a singular occasion for engineering geologists of North America. The US Committee for IAEG has joined the Association of Engineering Geologists to sponsor an International Symposium on "Management of Hazardous Chemical Waste Sites" in which 36 oral presentations, supported by 36 poster presentations, will be made. Authors are from North America, Europe, Australia, Africa, Asia, and South Africa.

The first-ever stateside International Council Meeting of IAEG will convene October 6-7 in Washington, D.C. The main sessions will be held at the National Academy of Sciences building on Constitution Avenue (the US Committee for IAEG is a constituent of the National Academy of Sciences). Representatives from more than 25 nations will attend, including IAEG President M. Langer (West Germany) and Vice-President for North America David Varnes (USA). On October 8 the full Council and their guests will tour the U.S. G.S. Engineering Geology facilities at Reston, Virginia. The tour will continue to Winston-Salem, arriving for an evening "southern barbecue" scheduled by the AEG hosts. US Committee member Howard Pincus chaired the panel that organized and arranged the Council meetings and related events, and travel from Washington to the conference at Winston-Salem.

The US Committee for IAEG will convene for the Annual Meeting during the Winston-Salem sessions. All members of IAEG-US are welcome. The Committee will meet October 10 from 11:30 A.M. to 2:00 P.M., with a buffet lunch. Selected panels and available US Committee members will meet during the GSA meetings in Orlando (probably October 29 from 8 to 10 P.M.). Check the Annual Meeting Program for location.

The Fifth International Congress of IAEG will be held in Buenos Aires, Argentina, in October 1986 (see elsewhere in this issue for details). Six papers will be presented by representatives of the US Committee. Members will also provide additional support for field trips in Argentina. Co-Chairmen Joseph Long and John Cabrera have arranged for IAEG-US to be well-represented at the Congress.

The US Committee for IAEG will soon begin planning for two major upcoming events: (1) the forthcoming 100-year celebration of the Geological Society of America (1988), and (2) the 28th International Geological Congress (Washington, D.C., 1989). New possible US Committee activities are being considered. These will be discussed during the meetings this fall.

TUNNELS SEMINARS ANNOUNCED

The Center for Continuing Education of the University of Wisconsin-Milwaukee/Extension is offering two seminars on tunnels. Rock Tunnels will be on November 18-20, and Soft Ground Tunnels will be November 20-22, 1985, in Milwaukee, Wisconsin.

These seminars are part of a series of courses concerned with underground excavation and construction. The Rock Tunnels course combines topics dealing with design and construction of tunnels in hard rock. The Soft Ground Tunnels course deals with the design and construction of tunnels in soft ground materials that are unable to support themselves.

These seminars are intended as an overview of the current practice involving tunneling projects. All of the speakers have practical experience with tunnels in rock or soft ground.

These courses will be of value to engineers, planners, and managers employed by consulting and construction firms, utilities, and governmental agencies that may be involved with underground construction projects.

The two seminars are structured to provide a continuous course for persons interested in both hard and soft ground conditions. A discount is available to persons who register for both courses.

For further information contact James R. Sleeper, UW-Milwaukee/Extension, 929 N. Sixth Street, Milwaukee, WI; phone 414-224-3040.

IAEG INTERNATIONAL CONGRESS

The Fifth International Congress of the International Association of Engineering Geologists will be held in Buenos Aires, Argentina, from October 20 to 25, 1986.

Information about the Congress may be obtained by writing:

Secretario del V Congreso Internacional de
Geologia Aplicada a la Ingenieria
Carlos Alberto Di Salvo
A.S.A.G.A.I.
Moreno 584 -9.0 Piso
1091 - Buenos Aires, Argentina

Information is also available from:

Aerolineas Argentinas
1825 K Street N.W. #522
Washington, D.C. 20006

ARTICLES, ETC., NEEDED

THE ENGINEERING GEOLOGIST needs articles, announcements of meetings in which engineering geologists would be interested, job opportunity bulletins, and similar material. No commercial messages, please. Be advised that the next (January 1986) issue should be mailed about January 1. Deadline for contributions to that issue is November 30 (submit your item early if possible). See the guidelines published in the April 1985 issue for suggestions and requirements. Send materials to Ted Smith, California Division of Mines and Geology, 380 Civic Drive, Suite 100, Pleasant Hill, CA 94523-1997, phone: (415) 671-4929.

IN-HOUSE MICROCOMPUTER SHORT COURSE AVAILABLE

At last October's Annual AEG Meeting, the short course TECHNICAL AND HANDS-ON TRAINING FOR GEOLOGICAL APPLICATIONS OF MICROCOMPUTERS, organized by Dr. Peter J. Tarkoy, was successful and well received. Dr. Tarkoy, a member of GSA/EGD, has offered to take the short course on the road for interested groups.

The objectives of the Short course are:

1. To promote the use of microcomputers in geology and engineering geology;
2. To support and advance the engineering geology profession by a more extensive entry into high technology via microcomputers to provide quality, timely, economical, and professional response to our clients, colleagues, and their needs;
3. To encourage the profession to remain current with existing technology;
4. To illustrate to fellow engineering professionals, our dedication to and mastery of high technology;
5. To increase the amount of quantitative data produced by practicing engineering geologists as required by engineering analysis associated with most projects today; and
6. To encourage sharing of the state-of-the-art technological applications in our field.

The short course is designed for engineering geologists and geological engineers who have little or no computer experience and who wish to evaluate the usefulness of microcomputers based on actual hands-on applications in engineering geology.

The course consists of a lecture and a hands-on session which can be presented in a time period of from one to two days. Computers can be provided locally. An overview of microcomputers is included to assist professionals in evaluating, selecting, and buying a microcomputer.

The lecture covers the fundamental conceptual operation of a computer, and discusses a variety of hardware such as: CPU, RAM, memory, external storage, input/output, (keyboard, mice, monitor, touch screen, printers, plotters, digitizers, modems). The lecture also covers software including operating systems, utilities, programming languages, word processing, spreadsheets, database management, graphics, integrated programs, accounting, costs, capabilities. Extensive course notes are provided.

The hands-on-portion is intended to remove the black box mystery by concentrating on keyboard use, usefulness of operating systems functions, ways databases and spreadsheets can make a computer useful in your professional applications (even if you don't know how to write a program), and wordprocessor, database, spreadsheet, and graphics applications.

Groups or sections that are interested should contact Dr. Peter J. Tarkoy, 102 North Main Street, Sherborn, MA 01770, phone: (617) 653-6583 / Telex II 710-346-0395.

IAEG CONFERENCE ON SEISMIC PROBLEMS

The International Association of Engineering Geologists is sponsoring an International Symposium on Engineering Geology Problems in Seismic Areas. The conference will be held from April 14 to 19, 1986, in Bari, Italy. The principal purpose of the conference is to bring together persons specializing in the problems of seismic geology related to engineering practice who will present the results of their research. Information about past experiences will be exchanged, and various criteria for seismic zoning will be discussed.

Major themes of the conference include (1) seismic geology related to engineering practice, (2) geological hazards due to the earthquakes, their possible control and remedial measures, (3) soil-structure interaction during earthquakes, (4) seismic zoning related to engineering practice, and (5) case histories.

Official languages of the conference will be English, French, and Italian. For more information, contact Prof. Dr. Eng. Gregorio Melidoro, General Secretary of the Symposium, Instituto di Geologia Applicata e Geotecnica, Via Re David, 200 - 70125 BARI - Italy.

GROUND FAILURE AVAILABLE

Issue number 2 of Ground Failure has been released by the National Research Council Committee on Ground Failure Hazards. The Committee is charged with broad responsibility encompassing a wide range of hazards and environments. Hazards addressed include landslides, subsidence, swelling soils, permafrost, construction-induced rock deformation, and combinations of these phenomena in multi-hazard environments.

Issue number 2 contains 20 pages of articles and photographs. Ground Failure is published three times a year in the winter, spring, and fall. To begin receiving Ground Failure (free of charge) contact Abram B. Bernstein, Director, Committee on Ground Failure Hazards, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418 (phone: 202-334-3219).

RESPONSE TO CALIFORNIA DEBRIS FLOWS DESCRIBED

When the Ground Fails: Planning and Engineering Response to Debris Flows, by Martha Blair and others, describes the response of public agencies to landslides of January 1982 in the San Francisco Bay region. The monograph analyzes the meteorological and geological mechanisms that contributed to the massive landslide at Love Creek in Santa Cruz County and the many thousands of debris flows in Marin County.

Case studies discuss the various responses of public officials and private groups. The findings and recommendations are of interest to any professional or public official who has dealt with or may have to deal with debris flows. The 100-page publication, Environment and Behavior Series Monograph No. 40, is available for \$8.00 from Publication Clerk, Natural Hazards Information Center, Institute of Behavioral Science #6, Campus Box 482, University of Colorado, Boulder, CO 80309.

DESTRUCTIVE MASS MOVEMENTS IN HIGH MOUNTAINS: HAZARD AND MANAGEMENT

The Geological Survey of Canada has released Paper 84-16, Destructive Mass Movements in High Mountains: Hazard and Management, by G.H. Eisenbacher and J.J. Clague. This 230-page book contains 288 figures, many of which are photographs.

The types of debris flows discussed include (1) debris flows from surficial deposits, (2) debris flows from bedrock failures, (3) mass movements on volcanoes, (4) glacier-related mass movements, and (5) rockfalls and avalanches. Each of these requires a different type of hazard appraisal and particular set of remedial or preventive measures. 137 case histories from the Alps illustrate the range of impacts and appropriate countermeasures.

The text addresses application of active measures (forestry, control works, protective works), passive measures (zoning, planning), monitoring, and acceptance of risk.

GSC Paper 84-16 is available by mail from Canadian Government Publishing Centre, Supply and Services Canada, Ottawa, Canada K1A 0S9, or from any of the GSC offices. Price in Canada is \$20.00; elsewhere \$24.00.

SLOPE INSTABILITY

Slope Instability, edited by Denys Brunsden and David B. Prior, reviews recent research on mass movement phenomena. The book's 13 chapters include sections on landslide classification, soil properties and behavior, sampling and testing techniques, field assessment, instrumentation and monitoring, and stability analysis. Also included are sections on debris flow phenomena, submarine slope stability, landslides in sensitive clays, flowslides, and hazard analysis. The book is available from John Wiley and Sons Ltd., Baffins Lane, Chichester, Sussex, PO19 1UD, England, for \$37.50.

ENGINEERING GEOLOGY AND SOILS ENGINEERING CALL FOR PAPERS

The 22nd (biennial) Symposium on Engineering Geology and Soils Engineering will be held on February 26, 27, and 28, 1986, in Boise, Idaho. Papers in engineering geology, geotechnical engineering, and engineering aspects of groundwater are invited. Both oral and poster sessions are scheduled.

Special sessions are planned on: waste disposal and toxic-waste cleanup operations in the soil and groundwater environment, and seismic considerations in geotechnical engineering.

The proceedings volume will be published before the meeting. Deadline for submitting abstracts (limit: one page) is October 30, 1985. Authors will be notified of acceptance by November 20. Final camera-ready manuscripts (limit: 20 pages) must be received by January 25, 1986, to be included in the proceedings volume. For further information, contact the symposium chairman Spencer H. Wood, Department of Geology and Geophysics, Boise State University, Boise, Idaho 83725, phone: (208) 385-3629.

**HAZARD AT SATURATED SOIL SITES:
EVALUATION AND MITIGATION**
A Seminar on Liquefaction of Soil
During Earthquakes

[Some of you probably received a flyer about this seminar in the mail. My copy 10 days before the seminar was scheduled to be held in Washington, D.C. However, the seminar will also be held in Denver on Nov. 14 and in San Francisco on Nov. 21 (both are tentative dates). There is no registration fee, although there may be a fee if lunch is provided. -- ed.].

It has been two decades since liquefaction of soils during earthquakes was identified as a major problem in earthquake engineering, although the problem has existed for as long as earthquakes have affected human structures. In those two decades much progress has been made in understanding the liquefaction problem, in developing tools for evaluating the safety of a site or facility against a liquefaction-related failure, and in developing methods of mitigating liquefaction hazard. But major questions concerning safety against liquefaction still arise and strong disagreements sometimes occur when assessing the safety of existing structures and facilities.

Under a grant from the National Science Foundation, in cooperation with the Nuclear Regulatory Commission, the National Research Council's Committee on Earthquake Engineering organized a workshop to discuss present knowledge of the causes and effects of liquefaction of soils, to document the state of the art of liquefaction analysis, and to recommend future directions for liquefaction research. Robert V. Whitman of MIT, as principal investigator, prepared a draft report based on the workshop discussions. Liquefaction specialists from the U.S., Japan, Canada, and the United Kingdom participated in the workshop, after which the final report, a major exposition of the current status and future direction of liquefaction analysis and hazard mitigation, will be distributed in the fall of 1985.

The purpose of this seminar is to provide the opportunity for interested engineers, researchers, public officials, and educators who are concerned with the problem of liquefaction to hear presentations of the principal findings of the workshop and to discuss the report and its recommendations with many key contributors. Advance copies of the report will be available for registered participants at the seminar.

The program includes:

Welcome, by Frank Press
Introduction, by George W. Housner
Field Observations and measurements of liquefaction, by T. Leslie Youd
Measurements and observations in small-scale centrifuge models, by Andrew N. Schofield
A framework of understanding, by Robert V. Whitman
Behavior of saturated sands in the laboratory, by Ricardo Dobry
Analysis and evaluation of level ground and building foundations, by H. Bolton Seed
Analysis and evaluation of slopes and embankments, by Ganzalo Castro
State-of-the-art methods of analysis, by W.D. Liam Finn

Measures to mitigate the hazard, by William F. Marcuson III
Research needs, by Robert V. Whitman
Several discussion periods will be included.

For more information about the seminar or the report contact:

Lally Anne Anderson
Committee on Earthquake Engineering
National Research Council
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

FIFTH INTERNATIONAL CONFERENCE ON PERMAFROST

The Fifth International Conference on Permafrost will be held in Trondheim, Norway, in June 1988. The conference is sponsored by the International Permafrost Association.

There are several publications of the Fourth International Conference, held in Fairbanks, Alaska, in 1983, that are now available. These are:

Permafrost: Fourth International Conference, Abstracts and Program. Fairbanks: University of Alaska, 1983, 278 p. with supplement. (Available for \$10.00 from University of Alaska, Fairbanks, AK 99701).

Permafrost: Fourth International Conference. Washington, D.C.: National Academy Press, 1524 p. (Available for \$65.00 from National Academy Press, 2101 Constitution Avenue, NW, Washington, D.C. 20418.

Guidebooks 1 through 7 are published by Alaska Division of Geological and Geophysical Surveys, 794 University Avenue, Basement, Fairbanks, AK 99701.

Permafrost: A Bibliography, 1978-1982. Glaciological Data Report GD-14. Boulder, CO: World Data Center for Glaciology, 1983, 172 p. (Available for \$10.00 from University of Colorado, Box 449, Boulder, CO 80309).

NINTH BIENNIAL AMQUA MEETING

The Ninth Biennial AMQUA meeting will be held at the University of Illinois from June 2 to 4, 1986. The program theme will be "Environments at glacier margins -- past and present."

Some of the topics to be featured include: (1) physical (glaciological) processes and conditions of the ice margin (temperature, erosion, sedimentation, etc.); (2) periglacial areas and phenomena (broadly defined); (3) polar and maritime margins of the ice sheet; (4) human interaction with ice-margin phenomena; (5) plant and animal life in ice-marginal and periglacial areas; and (6) present-day analogs of Pleistocene conditions.

For more information, contact:

Kenneth L. Pierce
U.S. Geological Survey
MS 913, Box 25046
Federal Center
Denver, CO 80225
phone: (303) 234-2737

**TWENTY-NINTH ANNUAL MEETING
ASSOCIATION OF ENGINEERING GEOLOGISTS**

The 29th Annual Meeting of the Association of Engineering Geologists will be October 5 to 11, 1986, at the Cathedral Hill Hotel in San Francisco, California. The meeting theme is "Better Living Through Engineering Geology."

The technical program includes a two-part symposium on landslides. "New Techniques in Landslide Investigation," will include papers on state-of-the-art techniques for age-dating of landslides and for investigating and defining the limits of debris flows, slides, slumps, and rockfalls. "New Techniques in Landslide Mitigation," will include papers on bio-engineering, ground freezing, Forest Service practices, and other techniques.

There will also be a symposium on "Ground-Water Contamination," designed to mesh closely with a ground-water monitoring short course to be given prior to the main meeting. Topics being considered for the symposium include discussion of new federal and state regulations and Superfund activities; new ground-water sampling tools and methods; contaminant attenuation, adsorption, and dispersion; and, alternatives for remedial action.

As usual, there will be general sessions during which papers on any topic related to engineering geology will be presented.

Several field trips are being planned. There will be day-trips to local areas of interest to engineering geologists. There will also be a three or four day pre-meeting trip from Reno to San Francisco, including visits to active faults, geothermal areas, and other interesting features. An overnight stay

at the Ahwahnee Hotel in Yosemite Valley promises to help make this trip one that will be remembered by participants for many years to come.

Two short courses will be offered. "The Personal Computer and Ground Water" includes four hours of lecture-demonstration and four hours of hands-on training, providing participants with the opportunity to learn how computers can assist in ground water studies. "Non-Geotechnical Knowledge Required for Success in a Geotechnical Business" is an eight-hour course designed to assist individuals who are considering starting or who have started small geotechnical firms. For more information about the meeting contact:

Alan D. Tryhorn
GeoResource Consultants, Inc.
851 Harrison Street
San Francisco, CA 94107
Phone: (415) 777-3177

ARTICLES AND FILLERS WANTED

In addition to well-written and timely articles, **THE ENGINEERING GEOLOGIST** needs short "newsy items" that may be of interest to members. If a short article or note in a newspaper or other periodical catches your eye, cut it out and send it to the editor along with a citation indicating the source of the article. Also include a note with your name, address, and phone number so you can be contacted should the need arise. Individuals submitting such items will be credited if the item is used in **THE ENGINEERING GEOLOGIST**.



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