

The Engineering Geologist



THE
GEOLOGICAL SOCIETY
OF AMERICA

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

Volume 21, Numbers 2 & 3

April & July, 1986

OUTGOING CHAIRMAN'S REPORT

The highlight of Engineering Geology Division activities for the past year was the 1985 Annual Meeting of the Society in Orlando. Of special interest to engineering geologists were two parallel symposia on the geology of low-energy coastlines, a topic of particular interest in the southeastern United States. These symposia were planned and organized as cooperative efforts of the Engineering Geology Division and the Division on Quaternary Geology and Geomorphology (QG&GD). The first of these, the Symposium on Sedimentary Processes and Deposits of Low-Energy Coastlines, was organized and sponsored by QG&GD. Immediately following was the Symposium on Engineering Geology of Low-Energy Coastlines, of which the Engineering Geology Division was in charge. The success of these well-attended symposia again illustrates the advantages of cooperation with other divisions. I would like to thank the speakers and participants for their outstanding efforts in assuring the success of these symposia.

The Engineering Geology Division also sponsored two excellent technical sessions in Orlando. The first of these, the session on engineering geology, consisted of 16 papers on topics ranging from subsidence problems in karst areas to studies of landslides and radioactive waste disposal. The second session, on environmental geology, emphasized problems encountered in disposal of hazardous wastes. In addition, the Division sponsored several poster papers on engineering geology and environmental geology.

The Annual Luncheon and Business Meeting of the Engineering Geology Division was highlighted by the presentation of Division awards for 1985. As reported more fully elsewhere in this issue, the E.B. Burwell, Jr., Award for a published work of distinction on engineering geology was presented to Lawrence D. Dyke of Queen's University, Ontario, for his excellent paper, "Frost heaving of bedrock in permafrost regions." The presentation was made by the Division's current Chairman-Elect, Chris Mathewson, who had been Dr. Dyke's major professor for his Ph.D. studies at Texas A & M University.

As chairman of the Division, I had the honor of presenting the Division's Distinguished Practice Award for 1985 to Shailer S. Philbrick, who during his 50-year career has

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EDITOR CHANGES ADDRESS

You may have notice that you did not receive an issue of **THE ENGINEERING GEOLOGIST** in April. This occurred because Theodore C. Smith, editor, was appointed Technical Planning Officer for the California Division of Mines and Geology and transferred to Sacramento. Ted was unable to complete his move until late March and could not meet the deadline for the April issue. He decided that it would be better to combine the April and July issues than to mail the April issue in June.

Ted's new address and phone number are:

Theodore C. Smith
California Division of Mines and Geology
1416 Ninth Street, Room 1341
Sacramento, CA 95814
(916) 324-2549

Please send all items for **THE ENGINEERING GEOLOGIST** to the above address. Deadline for the October issue is August 31.

A 40th BIRTHDAY PRESENT?

The following letters were exchanged between David Cruden, Chairman of EGD, and D.W. Roberts, President, GSA Foundation. A statement of the fiscal condition of EGD is elsewhere in this issue. These two letters discuss an issue that will be put on the EGD ballot this August -- ed.

(To D.W. Roberts)

Dear Sir:

The Management Board of the Engineering Geology Division of the Geological Society of America is considering how the Division should celebrate its 40th birthday in 1987.

One suggestion has been to begin funding of an Anniversary Award for research in Engineering Geology to be administered through the existing GSA Research Awards program. The Board (on approval of the Division's membership) would make a single gift of up to \$2 per member (over \$2,200 based on our current membership) to the Research Awards program. We would like to persuade other organizations with which we are associated (GSA, AEG, ASCE)

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OUTGOING CHAIRMAN'S REPORT (cont. from p. 1)

been one of the world's premier engineering geologists. In addition, I was privileged to announce that the Division's Meritorious Service Award had been bestowed upon Robert H. Fickies of the New York Geological Survey for his outstanding service as Editor of **THE ENGINEERING GEOLOGIST** from 1980 to 1984. Because Bob was not at the meeting, the award was accepted for him by Robert H. Fackundiny, New York State Geologist.

At the Engineering Geology Division Management Board meeting in Orlando, the results of the recent Division elections were announced. The membership of the Management Board for 1986 is:

David M. Cruden, Chairman
Christopher C. Mathewson, Chairman-Elect
Ellis L. Krinitzsky, Secretary-Treasurer
Thomas L. Holzer, Management Board Representative

With these outstanding officers on board, the Division is in excellent hands for the coming year. We wish them every success in their leadership.

At the Management Board meeting, it was noted that Frank Wilson's 1984 goal as outgoing Chairman that **THE ENGINEERING GEOLOGIST** be expanded to four issues in 1985 had been very successfully met. Appreciation for superb editorial efforts on our newsletter is due to Bob Fickies of the New York State Geological Survey, and to Ted Smith of the California Division of Mines and Geology who took over for Bob in midyear. I'd like to reiterate to Bob our thanks for the outstanding job he did as editor from 1980 to 1984. I'd also like to thank the New York State Geological Survey for the support Bob received in his efforts as editor. Of particular note in Survey support were the efforts of Gayle Femminella in manuscript preparation.

With Ted Smith at the helm, **THE ENGINEERING GEOLOGIST** is in very able hands. However, our newsletter will continue to be only as good as the material submitted to Ted for publication. I urge Division members to submit short articles, newsworthy notes on the activities of members, black and white action photographs (with captions), meeting notices, etc., to Ted for publication. Let's all help to make 1986 a banner year for our newsletter.

The Management Board was honored by the attendance at our annual meeting of Norman R. Tilford, the 1986 President of the Association of Engineering Geologists. Norm proposed to the Engineering Geology Division that a joint standing committee be established by GSA and AEG to explore means of improving the image of engineering geology as a profession. The Management Board wholeheartedly endorsed Norm's proposal, and plans are being made to establish the new committee.

Except for the many abstracts on engineering geology and environmental geology published in **GSA Programs with Abstracts**, the Division had no new publications in 1985. However, Terry West, Chairman of the Publications Committee, reports that preparation of the proceedings of the 1984 Reno Symposium on Debris Flows/Avalanches: Process, Sedimentology, and Hazard Mitigation is progressing on schedule. The papers from the symposium, which was co-sponsored by the Engineering Geology Division and the Division on Quater-

nary Geology and Geomorphology, will be published as a volume in the Division series **Reviews in Engineering Geology**. The papers are currently being reviewed by the technical editors, John Costa and Gerald Wieczorek. Publication is expected late in 1986.

Progress also is being made on preparation of the Engineering Geology Division DNAG volume, **The Heritage of Engineering Geology — The First 100 Years**, under the tutelage of the Chairman of the DNAG Editorial Committee, George Kiersch, and his enthusiastic committee. Chapter reviewers/editors and section authors have been selected and writing has begun. Final drafts of section articles are due by November 1, 1986, and publication is scheduled for 1988. This promises to be a landmark volume that will receive worldwide recognition by the engineering geology profession.

The Engineering Geology Division had a very successful year in 1985. I would like to take this opportunity to thank all those who participated in this success, particularly the members of the Management Board and the chairmen and members of Division committees. I would particularly would like to express the Division's gratitude to Frank Wilson and Jeff Keaton, who rotated off the Management Board at the end of the year. Frank had been a mainstay of the Management Board for 4 years, having served in every position from Secretary to Chairman. Jeff did an excellent job as Management Board Representative from 1983-85. In addition, we'd like to note our appreciation of the efforts of Ellis Krinitzsky, who chaired the Burwell Award Committee from 1981-85; Ellis has now moved onto the Management Board as the new Secretary-Treasurer. Thanks also are due Cole McClure who has completed his 3-year tenure as a Division representative on the Joint ASCE-GSA-AEG Committee on Engineering Geology. Cole has been replaced by Robert T. Pack.

Robert L. Schuster
1984-85 Chairman

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, 1984, 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.

A 40th BIRTHDAY PRESENT? (cont. from p. 1)

to match (or exceed) that donation. A similar appeal might go to our members and their employers. Our objective might be to raise enough to endow an award for 10 years or so - perhaps \$10,000.

We propose to poll our membership on the ballot for officers sent out in August with a single YES or NO answer. The question would read:

"I want the Division to make a single gift of up to \$2.00 per Division member to the GSA Foundation to start an Anniversary Research Award in Engineering Geology."

Regards,
D.M. Cruden, Ph.D., P.Eng.
Chairman, EGD, GSA

Dear Professor Cruden:

Thank you for your letter regarding the Engineering Geology Division Board's ideas establishing a Research Awards program. I think the idea has merit. I can't speak for the other organizations you mentioned as possible contributors, but I should think the idea might appeal to them.

If your membership approves of your plan, we would be happy to assist in the appeal to them for matching dollars.

Sincerely,
Dwight V. Roberts
President, GSA Foundation

**STATEMENT OF FINANCIAL CONDITION
ENGINEERING GEOLOGY DIVISION
December 31, 1985**

Division Fund Balance 12/31/84	\$4,377.94
Division Income:	
Dues (thru 12/30/85)	<u>5,205.00</u>
Total Division Resources	\$9,582.94
Division Expense:	
Member Labels	215.00
Composition of News-letters	311.32
Printing & Handling - Newsletters	1,453.23
Printing & Handling - Ballots & Biodata	121.53
Envelopes, Postage, & Mailing	516.30
1/2 Share Technical Session Equipment Charges (1984 Ann. Mtg. - Reno)	189.00
(3) Guest Luncheon Tickets - Orlando Ann. Mtg.	39.00
Audio Visual Equipment Rental - Orlando Ann. Mtg.	97.57
Frank Wilson Plaque	35.60
(3) Burwell Award Plaques	84.00
Burwell Award Certificate	<u>4.50</u>
Total Division Expense	\$3,067.05
Division Fund Balance 12/31/85	\$6,515.89

**DIVISION CO-SPONSORED SHORT COURSES
AT ANNUAL MEETINGS**

The Geological Society of America has begun a dedicated program of educational courses that will be expanded considerably during 1986 and 1987. GSA has invited the Divisions to co-sponsor short courses to be held in conjunction with Annual Meetings. The role of the Division is to recommend topics and faculty, and the role of GSA is to plan, promote, register, and supervise on-site arrangements.

Help is needed from the membership in identifying the educational needs and/or topics of interest and in identifying potential faculty. Send your suggestions and comments to:

David M. Cruden
Department of Civil Engineering
University of Alberta
Edmonton, Alberta
CANADA T6G 2G7

Members interested in obtaining more information about GSA's educational program or in obtaining guidelines for submitting short course proposals should write or call:

Sue Beggs, Meeting Manager
The Geological Society of America
P.O. Box 9140
Boulder, CO 80301
phone: 303-447-2020

GEOLOGIC-HAZARDS MITIGATION IN ALASKA

The Alaska Division of Geological and Geophysical Surveys (DGGS) has published "Geologic-hazards mitigation in Alaska: A review of federal, state, and local policies" as **Special Report 35**. The 71-page report by EGD member Rod Combellick reviews geologic-hazard issues and policies from a historical perspective and evaluates hazard-mitigation programs in other states (particularly California and Colorado) for possible application in Alaska. Nine specific recommendations, endorsed by the September 1985 USGS Workshop on Evaluation of Regional and Urban Earthquake Hazards and Risk in Alaska, are presented in the report.

Copies of **Special Report 35** are available for \$3.00 from Alaska Division of Geological and Geophysical Surveys, 794 University Ave., Fairbanks, AK 99709.

SOCIETY OF MINING ENGINEERS MEETING

The fall meeting of the Society of Mining Engineers is scheduled for September 7 to 10, 1986, in St. Louis, Missouri. Over 1,000 representatives from the mining and minerals industries are expected to attend.

Thirty-six technical sessions have been planned, as are two symposia -- one on Clay Minerals and one on Mine Subsidence. The agenda also will include short courses, field trips, and social activities.

For further information about the meeting contact the Meetings Department, SME, Caller No. D, Littleton, CO 80127 (phone: 303-973-9550; Telex 881988).

**PRESENTATION OF THE 1985 E.B. BURWELL AWARD
TO LAWRENCE DANA DYKE**

By Christopher C. Mathewson

The E.B. Burwell, Jr., Memorial Award was established in 1968 to recognize the author or authors of a published paper of distinction which advances knowledge concerning principles or practice of engineering geology, or of related fields of applied soil or rock mechanics where the role of geology is emphasized. The award is given by the Engineering Geology Division of the Geological Society of America.

This year's recipient was destined to become a geologist from the minute he was named by his parents. He carries the name of a famous international river as his first name, Lawrence; the name of an international mineralogist for a middle name, Dana; and a geological feature of significance as his family name, Dyke. Anyone who claims a relationship to a river, mineralogy, and geologic structure has no choice but to become a physical geologist. To paraphrase the late Professor Richard H. Johns' quote, Dr. Lawrence Dana Dyke is a logical candidate to become an engineering geologist because "engineering geologists are the last surviving physical geologists." Dr. Lawrence Dana Dyke surely fits this condition.

Dr. Dyke was born in Newmarket, Ontario, Canada and moved to Vancouver, British Columbia at a young enough age to believe that he is a "native" of the area. The geology of his boyhood home introduced Larry to the field. According to his parents, "If Larry was missing for supper, we searched in the hills and canyons and not in the candy store." Larry received his Bachelor of Science degree in Geology from the University of British Columbia in 1972, spending his undergraduate summers as a field assistant with Noranda Exploration Company or the Geological Survey of Canada. Larry received his Master of Science degree in Geology, through the Center for Tectonophysics, at Texas A&M University in 1974. He continued to spend summers, now as a Project Leader with the Geological Survey of Canada, doing structural geology in the Yukon and Northwest Territories. His Masters thesis dealt with a petrofabric analysis of experimentally folded rocks, which he related to his structural observations of the White, Barn, and Campbell Uplifts in arctic Canada. It was during this stage of Larry's academic career that I met him and spent many a late night discussing geology. Following his Masters program, Larry continued on for his Doctoral degree in Geology, through the Center for Engineering Geosciences at Texas A&M University. Larry underwent "cultural shock" during his dissertation work, moving from the cool summers of the arctic to the hot summers of south Texas. Larry's dissertation research dealt with the analysis of downhill creep in expansive soils. In addition to his academic programs, Larry was a most active graduate student and was always available for any new field project. For example, his introduction to Gulf coastal geology was memorable for the stalled cold front an "air raids" of Texas mosquitos.

Following graduation in 1978, Dr. Dyke became a Research Scientist with the Geological Survey of Canada. His primary research effort was the study of frost heaving of bed-

rock and terrain disturbance in arctic environments. In 1982, Dr. Dyke took a position as Assistant Professor of Geology at Queen's University, Kingston, Ontario, where he has continued his research in arctic processes.

Dr. Dyke is being recognized today for his paper "Frost Heaving in Bedrock in Permafrost Regions," published in the November 1984 issue of the *Bulletin of the Association of Engineering Geologists* (v. 21, n. 4, p. 389-405).

Dr. Dyke, I am honored to present to you the 1986 E.B. Burwell, Jr., Memorial Award on behalf of the Engineering Geology Division of the Geological Society of America.



Photo 1. The E.B. Burwell, Jr., Memorial Award is presented to Dr. Lawrence D. Dyke (left) by Christopher C. Mathewson.

BURWELL AWARD ACCEPTANCE

by Lawrence D. Dyke

The recognition associated with this award is a honour I cannot claim sole title to. It is particularly fitting the two people who were instrumental in preparing me for the frost heaving work are present. They remind me that few individuals can take complete credit for the results of a scientific study. Voluntary advice and actions from so many often make possible a useful conclusion. Chris Mathewson, my Ph.D. thesis chairman, singlehandedly represents the influence that Texas A&M University had in developing any ability I may have as a researcher. John Scott, my first boss, restrained that tendency to be carried away with method at the expense of purpose that new recruits sometimes have.

This paper represents a tentative understanding of the geological factors that seem to be associated with the occurrence of bedrock frost heaving. To qualify as engineering geology the associations must be useful in identifying engineering difficulties of requirements. It is gratifying to learn that this study is considered a contribution to engineering geology. Frost heaving in soils constitutes a complete sub-discipline in soil mechanics suggesting that the same process in rock will warrant further attention. The following questions support this: Is the apparent ice-richness of shales in the Arctic Islands significant to engineering? Can intact rock be fractured by ice segregation? What are the heaving forces associated with bedrock movement? When these questions are answered, the engineering side of the subject will have been more fully treated.

In retrospect I can now appreciate the

tremendous opportunity that was presented when the Geological Survey of Canada hired me to carry out this study. Frost heaving of bedrock has received little attention beyond mention as a version of the far more extensively studied process in soils. Most important was the requirement to look for frost heaving in the field. In this case a vast region was candidate for search, but in this respect the study was routine as the Geological Survey has been in the business of working in remote regions for some 140 years. I think the success of the study resulted partly from resisting the temptation to use these services too freely. Presumably one was also interested in determining the cause of rock movements so that locations and magnitude could be predicted. The study became a balance of trying to do this at a few hopefully representative locations and finding these locations. Only the efficiency that the Geological Survey has evolved in reaching the far-flung corners of its realm made this possible. Again, in receiving this award, I am reminded of the support from individuals and organizations that contributed to my eligibility for it. I receive this honour with sincere and deep gratitude.

**PRESENTATION OF THE
1985 DISTINGUISHED PRACTICE AWARD
TO SHAILER S. PHILBRICK
By Robert L. Schuster**

The Engineering Geology Division of the Geological Society of America is pleased to recognize the continuing contributions of Shailer S. Philbrick to the technical and professional stature of engineering geology by presenting to him the Distinguished Practice Award.

Dr. Philbrick began his professional career in 1934 after completing educational work at De Pauw and Johns Hopkins Universities. After brief service with the U.S. Geological Survey and Soil Conservation Service, he joined the Corps of Engineers where he remained until 1966. During this time, he contributed significantly to the planning, design, and construction of the flood control reservoirs and navigation locks and dams in the Upper Ohio River Basin. Since 1968 he has served as Consultant to the Advisory Committee on Reactor Safeguards, U.S. Nuclear Regulatory Commission.

Dr. Philbrick has shared his keen insight to geologic problems and extensive experience through his teaching and publications. His teaching record includes: Visiting Lecturer at Northwestern University in 1960; Visiting professor in 1963 and 1964 and Professor from 1966 to 1972 at Cornell University. His publications have greatly contributed to the profession's understanding of engineering geology in sedimentary rocks, dam foundations, design of rock slopes, landslide investigations, and coal mine subsidence.

**DISTINGUISHED PRACTICE AWARD ACCEPTANCE
By Shailer S. Philbrick**

Dr. Shuster, Mr. Gray, and members of the Engineering Geology Division, thank you for this much appreciated honor of the Distinguished Practice Award.



Photo 2. Shailer S. Philbrick (left) receives the Distinguished Practice Award from Robert L. Schuster.

guished Practice Award. It came as a complete surprise, at a time in my life when things just don't occur. All the more appreciated. Thank you from the bottom of my heart.

Exactly 50 years ago this date, I went to work for the Corps of Engineers at the U.S. Engineer Office, Hinton, West Virginia, as a Junior Geologist who had just passed the Civil Service assembled, written examination of 1931. Regardless of my Ph.D., the job paid \$2,000 per year. My continuing education on the job taught me to simplify my language so that engineers, unfamiliar with geology, could understand what I was telling them. I learned to say "limy" for "calcareous" and "clayey" for "argillaceous" but I never could swallow the Corp's habit of having the officer-in-charge sign the drill logs that I had prepared, containing my recommendation for the maximum foundation elevation - the firm rock line.

There at Bluestone dam site on the New River, I first encountered the troublesome valley bottom fractures in bedrock, with their huge core losses, so well explained later in Pennsylvania by Harry F. Ferguson. They were common occurrences in the valley bottoms of the Upper Ohio Basin. At Hinton I met my first Board of Consultants whose experiences included the Panama Canal and other major engineering works. The geologist on the Board was Professor Warren Mead of M.I.T.

These men and their successors taught me to make safe judgements as to foundation and abutment materials, to recommend removal of unsafe rock even if the costs were greatly increased thereby, to treat foundations with care -- to keep the grout pressures less than the lithostatic stress and always listen to the grout inspectors. They taught me to speak my mind, to call the shots as I saw them even if there was complete disagreement with the ranking geologists, engineers, and officers such as there was 22 years later with the piping of the embankment at East Branch Clarion River Dam. This is now incorrectly explained in the Soils Mechanics literature as the result of embankment cracking instead of simple overtopping of the grout curtain at the base of the earth fill, as I believe it was.

And then there was the morning of the Board meeting when I proposed a gently downstream-dipping foundation for Conemaugh Dam to use a good, durable siltstone layer as the foundation bed. But neither Ed Burwell, Professor Charles P. Berkey, nor W.H. McAlpine, the Senior Engineer of the Corps of Engineers

would accept this. They wanted a classic upstream-dipping foundation even though it would rest on layers of differing bearing capacity. They said so for hours. Then the downstream dip was shown to put the toe of the dam about 20 feet into rock and create a shoulder against which the grouted toe would be in contact. This, and a further pre-construction analysis which would confirm stability, finally satisfied these distinguished gentlemen. But it took nearly all morning and nearly wore me out. So much for speaking one's mind.

There are some more matters which could take up our time, but need not, beyond being mentioned. The first 300-foot deep, drained cut in the sandstones and shales of the Conemaugh Group at the spillway of Youghiogheny Dam at Confluence, Pennsylvania. There Bob Nesbit, R.R. (Bob) Philippe and I combined field geology, soil mechanics, many NX core borings, a 30-inch diameter hole, 180 feet deep, and finally the analysis of the cause of the contemporaneous failure of the old undrained, 150-foot deep cut at Brilliant, near Pittsburgh, PA. From that to induced and natural landslides, treatment of coal mines underlying building foundations and railroads. The application of geology to the location and design of Kinzua Dam on the Allegheny River which resulted in the saving of four million (1957) dollars or, according to the ENR Construction Index, about 23 million (1985) dollars. From this came my paper on Kinzua and happily in 1977, the Holdrege Award of our sister organization, the Association of Engineering Geologists. We learned when the American River water was diverted that the cliff was almost vertical because of the preserving effect of the constant presence of the water on the poorly cemented Rochester Shale. We should have known it from our experience at Youghiogheny and the Finger Lakes region water falls. Finally, consultant to the Advisory Committee on Reactor Safeguards of the Nuclear Regulatory Commission and a professorship at Cornell University.

A little philosophy. We find ourselves as engineering geologists now on almost every type of engineering project with easy cooperation with engineers who rely on us more and more. Rarely are we treated as the "new boy" on the street. Our responsibility increases all the time, and with it must come certain controls on our actions. Now Site Characterization Reports carry on with geological language understandable by few engineers and I wonder if we are being too "geological" and set on chasing down the last little detail of geological characterization lest someone intervene. Why not ask the interveners, what difference does it make if "that" were the condition? If "that" does make a significant difference, and they should have to prove it, let's chase "that" down, but if not, let's go on to important matters. The careful questioning by my superiors as to need and value of the exploration programs and always the need to control the desire to pursue some irrelevant geologic interest at my employer's expense affects my attitude now.

This is where I acknowledge my especial indebtedness to those who educated and trained me in geology: Professors E.B. Mathews and Ernst Cloos at Johns Hopkins; Professor E.R. (Rock) Smith at De Pauw; and in the field:

Professor George D. Hubbard of Oberlin; and Clyde P. Ross and Thomas B. Nolan of the U.S. Geological Survey. Later the training was detailed, one by one by that superb geologist and gentleman, E.B. Burwell, Jr., whom we have honored just now. There were my colleagues, too: Robert H. Nesbitt, who succeeded Burwell in OCE, and Harry F. Ferguson. And all those fellows in the field on the drill rigs who kept the core straight and the records complete. The design engineers and construction engineers taught me the job and guided my work toward the critical element. To all of them with us still, or gone beyond, I extend my sincere thanks for their help in my practice of Engineering Geology and to you and the Engineering Geology Division my sincere thanks for the Distinguished Practice Award.

PROCEEDINGS OF INTERNATIONAL CONFERENCES AVAILABLE

A limited number of copies of the English-language proceedings of two international conferences relating to landslides, debris flows, and erosion are available for purchase. **Proceedings of the Fourth International Conference and Field Workshop on Landslides** (Tokyo, August 23-31, 1985) is a 566-page hardbound volume containing 81 landslide papers by authors from 13 countries. It is available for 17,000 Japanese yen (surface mail) or 24,000 Japanese yen (air mail). Remittance may be made in one of two ways:

- (A) Bank draft (in yen) payable to T. Taniguchi, The Japan Landslide Society, mailed to: T. Taniguchi, The Japan Landslide Society, Ichimura Building, 5-7-2 Shinbashi, Minato-ku, Tokyo 105, Japan.
- (B) Remit directly to the bank account (in yen): T. Taniguchi, The Japan Landslide Society, The Dai-ichi Kangyo Bank, Shinbashi Branch, Account No. 051-1333997.

Proceedings of the International Symposium on Erosion, Debris Flow, and Disaster Prevention (Tsukuba, Japan, September 3-5, 1985) is a 504-page softbound volume containing 84 papers. It is available for 10,000 Japanese yen (surface mail) or 14,000 yen (air mail). Remittance may be made in one of two ways:

- (A) Bank draft (in yen) payable to Ichiro Takeshita, Sabo Kokusai Symposium Suishin Kyogikai, mailed to: Miss Tomaka Soma, The Sabo Koho Center, Tsunano Building, 1-12-2 Higashi-Azabu, Minato-ku, Tokyo 106, Japan.
- (B) Remit directly to the bank account (in yen): Ichiro Takeshita, Sabo Kokusai Symposium Suishin Kyogikai, Taiyo Kobe Bank, Shiba Branch, Account No. 3240837.

ARTICLES AND FILLERS WANTED

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

NECROLOGY

The following members of the Engineering Geology Division passed away in the last half of 1984 and the first half of 1985:

Arthur B. Cleaves (5/7/85)
George T. Faust (2/7/85)
Esther A. Holm (5/4/85)
Robert A. Lawrence (12/10/84)
Jorge Munoz-Reyes (9/84)
George L. Quick (12/24/84)
Mary E. Russell (6/22/85)
W. Calhoun Smith (7/27/84)
Francis A. Stejer (9/27/84)
Neil B. Steuer (11/21/84)

CONFERENCE ON SINKHOLES AND KARST INFORMATION AND CALL FOR PAPERS

The Second Multidisciplinary Conference on Sinkholes and the Environmental Impacts of Karst will be held February 9-11, 1987, in Orlando, Florida, USA. This meeting is a continuation of the interdisciplinary communication so successfully initiated at the First Multidisciplinary Conference on Sinkholes in 1984. Geologists and geographers study how and where sinkholes form, but engineers must apply this information. For man to benefit from what we learn about the unique environmental effects of karst terrain, communication is critical.

The proceedings of the first meeting, "Sinkholes: Their geology, engineering, and environmental impact," is the "state-of-knowledge" reference in this field. The second volume, and the second meeting, will be expanded in scope and should be even more successful than the first. Dr. Yuan Daoxian, Director of the Karst Institute in Guilin, China, will speak on environmental problems of karst geology in China. A new field trip to the west coastal area of Florida's classic karst will precede the meeting.

Technical papers and case studies are invited on the following broad subjects:

- o Geology and engineering studies of karst areas with emphasis on sinkholes and other practical aspects
- o Hydrogeology and environmental problems of karst
- o International examples of applied karst geology and hydrology
- o Specific engineering considerations of karst terrane
- o Additional related topics

Abstracts are due by August 15, 1986, and full manuscripts are due by November 14, 1986. The professionally bound and printed proceedings volume will be distributed at the meeting.

The registration fee will be only \$125.00, which includes the proceedings and banquet. Speakers and students will receive a reduced rate. An extremely favorable hotel rate of \$28 per room (1 to 4 persons) has been negotiated at the International Inn, which is convenient to Orlando's many tourist attractions.

Prospective contributors should submit a tentative title as soon as possible to: Dr. Barry F. Beck, Director, Florida Sinkhole Research Institute, College of Engineering, University of Central Florida, Orlando, FL 32816, USA.

OOPS! I GOOFED

In the January issue of **THE ENGINEERING GEOLOGIST**, EGD Chairman David Cruden apparently stated "Bill Krinitzky would welcome your ideas on a topic for the Division's 40th birthday at Phoenix...." Actually, David didn't say that at all! What he said was that Ellis Krinitzky would welcome your ideas on a topic.... This was an "Editors Goof." (Hissss! Boooooo! Who is that guy anyway?) Sorry, Ellis.

While I'm on the subject of David's article, I'm certain that Ellis would still welcome your ideas. Tom Holzer would probably still welcome your ideas on ways to celebrate the Society's Centennial in Denver. Their addresses appear elsewhere in this issue, along with those of other committee chairmen and the EGD officers.

MINE HYDROLOGY COURSE SCHEDULED

A mine hydrology short course will immediately precede the 1986 Society of Mining Engineers Fall Meeting at the Clarion Hotel, St. Louis, Missouri, Sept. 7-10, 1986. The short course will be conducted Sept. 6-7.

The course fee is \$325 for AIME members and \$450 for non-members. The fee includes morning and afternoon coffee breaks, lunch, and course notes. All participants will receive continuing education units and a certificate of completion. For information contact AIME Meetings Dept. at (303) 973-9550.

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ASCE/GSA/AEG JOINT COMMITTEE ON ENGINEERING GEOLOGY

The ASCE/GSA/AEG Joint Committee on Engineering Geology was originally established by Karl Terzaghi as a committee of the American Society of Civil Engineers (ASCE). The Geological Society of America (GSA) and the Association of Engineering Geologists (AEG) joined the committee in 1970. Under chairmen Dick Gray (1970-74), Bob Schuster (1974-78), and Frank Patton (1978-79), the committee was active, organizing several symposia and sponsoring special sessions at meetings of the three member societies.

After several years of inactivity, the committee has been revived with Nick Sitar (ASCE) as the chairman. A meeting of the committee was held during the ASCE Spring Convention in Seattle in May. Symposia and special sessions are being planned for future meeting of the three member societies. GSA's representatives on the joint committee are Dr. Lokesh Chaturvedi, Environmental Evaluation Group, P.O. Box 968, Santa Fe, NM 87503 (Tel. 505-827-8280), and Dr. Robert Pack, Thurber Consultants, 4475 Viewmont Ave., Suite 210, Victoria, B.C., Canada V8Z 678 (Tel. 604-727-2201). Please send any suggestions for future activities to either representative.

--- Lokesh Chaturvedi

COMPUTER CORNER: USE YOUR COMPUTER TO PREPARE COLOR SLIDES FOR A GSA PRESENTATION

Recently I presented a paper at a meeting of our local (San Francisco) section of the Association of Engineering Geologists. Most of my previous oral presentations before professional groups have been accompanied by color slides of geological features. Whenever I wanted a slide of text, I usually had to Leroy letter the text and have it professional photographed.

This time, however, my discussion centered on problems I found with local general plans. I was faced with the task of preparing numerous slides (about 60 or so) entirely consisting of text. I was a professional draftsman many years ago, but given my limited time these days, 60 slides worth of text almost seemed overwhelming (especially since I procrastinated until I had less than two weeks to complete the task with no technical assistance).

I have seen some rather elaborate color slides made on computers, and I have looked at some of the photographic equipment used to prepare such slides. The \$2000-plus price tag just didn't fit into my budget. After discussing my needs with one of our electronic data processing staff at the office, I decided to try creating the slides without the expensive device.

The slides were very well received. There were no complaints about any problems reading the slides. However, I must caution you that spelling errors cannot be hidden if you use my technique (as I found out).

My slides were prepared on an IBM PC with color monitor. You might be able to use monochrome monitors, and certainly should be able to use almost any color computer. You will need a programming language (my examples in

BASIC are presented later), a suitable camera and tripod, 100 or 200 ASA color film, and a dark room (the darker the better).

The camera I used is a 35 mm Nikon SLR with a 35-70 mm zoom lens. I found I could position the camera in front of the monitor, focus it once, and crank it up or down as needed to center the text in the frame. Exposure times of one-half to two seconds appeared to work best, but you will have to experiment with your own particular set-up. Longer exposures may yield a washed-out slide and will intensify glare from any undesirable light source.

The computer and software I used limited the available background colors to eight choices. I tried a black background, but had to use such a long exposure that the photos either were underexposed or spoiled by glare on the monitor (from light seeping in under the door to the room). The most pleasing and successful background color was a royal blue. Yellow, bright white, and light cyan were the colors I used for text (16 colors were available). Forty-character mode yields the most legible text.

One more photography tip. Because most computer screens are slightly curved, be certain that the camera is squarely centered on the screen. If it is a bit to the right, to the left, up, or down, lines of text may appear slightly curved on the color slides. The more the camera is off center, the more curved the lines of text will appear.

As I stated earlier, I used BASIC (by Microsoft) as my programming language. My program is very simple. For those who are unfamiliar with BASIC, each line is numbered. Most BASICs have an automatic line numbering utility (turned on simply by typing 'auto' at the 'OK' prompt, and off by hitting escape, control-C, or some similar key). Microsoft's BASICs also have another useful time saver... any question mark ('?') typed outside of quotation marks is interpreted by BASIC as 'PRINT.' Thus

```
10 ?::? "Will you become a GSA Fellow?"
```

will be interpreted by BASIC as

```
10 PRINT:PRINT "Will you become a GSA  
Fellow?"
```

When run, this simple program will print two blank lines and 'Will you become a GSA Fellow?' on the third line.

I don't have space to explain all the details of BASIC for the novice programmer. Also, BASIC languages differ somewhat. Therefore, I recommend that you read your software manual for information about (1) saving your BASIC program on disk or tape, (2) RUN, (3) LIST, (4) LLIST (listing on a printer), (5) TAB(nn) (for inserting nn blank spaces in a line), (6) COLOR, (7) GOSUB, and (8) editing BASIC programs.

Because I took the photos in a dark room, I didn't want to fumble around with the computer. One useful function in the program (the INKEY\$ function) checks for any input from the keyboard. When you type anything, the last slide is erased and the next appears automatically. This speeds up the photography to 2 or 3 slides per minute. If you not using Microsoft's BASIC for the IBM, you may want to review the INKEY\$ function for variations.

A sample program follows. I have inserted

COMPUTER CORNER (continued)

remarks ('REM') to explain a bit of the program. You don't have to type the remark statements to run the program.

```
1 REM *****
2 REM *
3 REM * Sample slide preparation program *
4 REM * By Theodore C. Smith *
5 REM * July 1, 1986 *
6 REM * THE ENGINEERING GEOLOGIST *
7 REM *
8 REM *****
9 REM Next line sets the 40 character mode
10 WIDTH 40
18 REM Line 20 sets screen colors as follows:
19 REM Text color, background, border
20 COLOR 15,1,1
30 CLS
40 ??:? "This is a sample slide."
50 GOSUB 1000
60 ??:? "This is another slide."
70 ? "To add spaces in the line, simply"
80 ? " insert spaces like this or"
90 ? TAB(10); "use a tab statement like this."
100 GOSUB 1000
120 ? "To change color of the text, simply"
130 COLOR 14
140 ? "use the color statement as above."
150 GOSUB 2000
160 COLOR 15,0,0:CLS
170 ? "To change the background color,"
180 ? "include a statement similar to line"
190 ? "160 above."
200 END
999 REM Subroutines for advancing slides
1000 A$=INKEY$:IF A$="" THEN 1000
```

```
1009 REM Next line sets default text color
1010 COLOR 14:CLS
1020 RETURN
2000 A$=INKEY$:IF A$="" THEN 2000
2009 REM Another default text color
2010 COLOR 15:CLS
2008 REM Automatically inserts 4 blank lines
2009 REM at the top of each slide.
2020 ??:?:?
2030 RETURN
```

One last suggestion, if you save your program in ASCII (see your manual for instructions on this), you may be able to use your word-processing spell-checker to detect and correct misspellings. Be sure that the word-processor saves the text in standard ASCII without introducing any new formatting data or high-order bits or you may lose your program. If you have doubts about the suitability of your software for this task, use a back-up copy of your slide program.

Enjoy. And please -- no more apologies for unreadable slides at GSA meetings. You computer users have fewer excuses now!!!

COMING IN OCTOBER

The Engineering Geology Division Data sheets will return to **THE ENGINEERING GEOLOGIST** in the October issue. Watch for them.



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