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ENGINEERING GEOLOGY DIVISION

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NEWS FROM THE EXECUTIVE COMMITTEE

On February 8 the Division Chairman - George E. Ekblaw - suffered a stroke which was severe and has required a long period in the hospital. The business of the Division is being carried on by the Chairman-Elect, Laurence B. James, until George is ready to resume his responsibilities. Larry received a letter from Mrs. Ekblaw, written early in April, with the welcome news that George is making good improvement and was looking forward to leaving the hospital in three weeks or so. The entire Engineering Geology Division is looking forward to his recovery.

The nominating committee which has been appointed for the current year includes John H. Melvin, Chairman, Thomas W. Fluhr, and Thomas F. Thompson.

Program chairman for the next annual meeting in Kansas City, 1965, is Lloyd B. Underwood, and Gordon Prescott will help him. For the 1966 meeting in San Francisco, Elmer Marliave has agreed to be chairman.

REPORT OF THE ABSTRACT COMMITTEE

John Lemish, Chairman of the Abstract Committee of the Division of Engineering Geology, GSA, has submitted the following report for 1964.

"The committee currently consists of 25 members who are covering 74 publications relating to engineering geology for GEOSCIENCE ABSTRACTS. Sixty abstracts were submitted since the 1963 report by 8 members of the committee.

"The committee does fill an important need in coverage of engineering journals for articles of geologic importance which are essentially unavailable in normal geologic channels. Revision of assignments and review of the coverage of the committee will be undertaken in the spring of 1965."

CONTRIBUTIONS FROM THE NEW WEST COAST REPORTER: Raymond C. Richter

Earthquakes in California

The disastrous 1964 Alaska earthquake, the Baldwin Hills reservoir failure in Los Angeles County, and a cold hard backward look at California's earthquake history since 1769, is awakening new interest by geologists, seismologists, engineers, and public officials in the relationship of man, his structures, and earthquakes. These professional people are greatly concerned about the "earthquake problem" with respect to California's exploding population and expanding industrial base. A significant constructive step in evaluating this problem occurred

in San Francisco, December 7-8, 1964, when approximately 280 geologists, seismologists, engineers, and public officials met to discuss what is known and not known about earthquakes and related phenomena. Administrator Hugo Fisher, of the Resources Agency of California, as a result of the two-day earthquake conference, has appointed two working committees composed of competent technical personnel and public officials to advise the State of California of the scope and content of earthquake studies the State should undertake, and the

organizational structure within the State best qualified to undertake earthquake studies on a statewide scope. A follow-up meeting on geologic hazards which affect man and his structures, such as landslides and land subsidence, is scheduled for May 1965 in Los Angeles. It is anticipated that proceedings of this meeting and the December 1964 Earthquake Conference will be made available to the public late in the year.

An opportunity for those individuals interested in learning more about earthquakes exists through a University of California at Berkeley Engineering Extension Service six-day (August 30-September 4, 1965) short course for the professional engineer. This course titled, "Earthquake Engineering", will be conducted by leading authorities in their respective fields. Lectures will cover a large number of subjects, including earthquakes, seismic sea waves, soil problems, analysis of structural response (elastic and inelastic systems), observations of structural performance and response, and the design of earthquake-resistant structures. Enrollment fee is \$200. Engineering geologists with special qualifications, that is, registration as civil engineer, and/or special education and experience backgrounds in earthquake engineering may be eligible for the course. For further details contact Engineering Extension, University of California, 2223 Fulton Street, Berkeley, California, 94720.

Rock Tunneling

Mr. T. L. White, internationally known specialist on rock tunneling, spoke to approximately 250 engineers and geologists in Sacramento in March. Mr. White, by use of case histories and 35-mm slides, covered determination of loads in tunnels, and selection, sizing, and spacing of steel supports. Many items covered in the meeting are in Mr. White's book, "Rock Tunneling with Steel Supports", Commercial Shearing and Stamping Company, Salt Lake City, 1959 - a most useful reference for the engineering geologist.

Registration of Geologists

Registration of geologists has been hotly discussed by various geologic groups and individuals for the past several years. The State of California has progressed to the point of considering a proposed registration bill Number 871, cited as the "Geologist Act". Geology as defined by this bill refers to the application of geologic data, techniques, and principles of the study of naturally occurring rock, soil materials and ground water for the purpose of assuring that geologic factors affecting the planning, design, construction, operation, and maintenance of civil engineering works and the conservation of ground water resources are recognized, adequately interpreted, and utilized.

The Geologist Act appoints a State Board of Registration for Geologists consisting of a public member and six geologists. The Board will conduct examinations, issue licenses, and undertake disciplinary proceedings. The Board may, by regulation, provide for the division of the certification of registration into different specialties, including, but not limited to, engineering hydraulics, or petroleum, and may issue certificates limited to one or more of the specialties in which the applicant demonstrates proficiency.

For further details contact Mr. Marvin L. McCauley, Registration Chairman, Sacramento Section, Association of Engineering Geologists, California Division of Highways, Materials and Research Department, 5900 Folsom Boulevard, Sacramento, California.

Geological Society of America, Cordilleran Section Meeting

The Geological Society of America, Cordilleran Section, held its 61st annual meeting at Fresno State College, Fresno, California, April 15-17, 1965. Seven papers were presented at the Engineering Geology sessions. The

subjects were varied and included the influence of sulfur fumes in denuding a small drainage area and the resultant increased erosion and building up of delta deposits in a new reservoir, the effect of landslides in a proposed new large residential development, the effect of tension faults in creating piping at the base of an existing reservoir and the eventual failure of the reservoir, the use of various geophysical techniques in evaluating geological conditions in nearshore areas, the use of shaking model studies to evaluate earth cracking and lurching patterns in soil-filled basins, the effect of thermodynamic factors as a basic earthquake-producing mechanism, and the use of 36-48 inch diameter

drill holes to visually inspect and sample unconsolidated to slightly compacted materials to depths of 200 feet.

New officers for the Cordilleran Section are Chairman, Bill Easton; Vice Chairman, E. R. Larson. The next annual meeting of the Section is tentatively scheduled for April 8-9, 1966 at Reno, Nevada. The out-going secretary of the Section was directed by Chairman John Verhoogen to write a letter to George Ekblaw, Chairman of the Division of Engineering Geology, regretting his inability to attend the Fresno meeting and wishing him a speedy recovery.

NEWS FROM THE SOUTHEAST: Reporter, John A. Hageman

The Southeastern Section of the Geological Society of America held its annual meeting April 8-10 in Nashville. Only two papers were related to engineering geology. They were "Geology of Projected Tunnel through Big Walker Mountain, Interstate Route 77, Virginia" by Byron N. Cooper, and "Seismicity of Tennessee" by B. C. Moneymaker. Considerable interest was generated by John R. Rogers' paper entitled "Lunar Environment: A Geologic Interpretation of the Surface of the Moon". The local press and TV gave the paper quite a play. Regrettably the physical limitations of the meeting room prevented many members from hearing the paper - including the newsletter reporter.

A group of engineering geologists in the vicinity of Baltimore and Washington have formed a new Baltimore-Washington Section of the Association of Engineering Geologists. The nucleus of the group held an organizational meeting in May

1964 at the home of Peter Hart in Baltimore. Monthly meetings followed, alternating between Washington and Baltimore until a halfway meeting space at Beltsville was offered by the U. S. Geological Survey. A technical paper has been given at each meeting, many of them on engineering geology or ground water problems of local interest. Some geologists have come from considerable distances; six from Harrisburg, Pennsylvania came to the March dinner meeting. The local group became an official Section of AEG in January, with the following officers: Peter Hart, Chairman; Bruce M. Hall, Vice Chairman; Alice S. Allen, Secretary; Raymond E. Whitla, Treasurer. All interested geologists are welcome at the meetings.

NEWS FROM THE NORTHEAST: Reporter, Albert J. Depman

Recently a one-day engineering and geology field trip was made along historic Chesapeake and Delaware Canal where the U. S. Army Engineers are completing a \$106,000,000 modernization of this strategic waterway between Philadelphia and Baltimore.

The trip was co-sponsored by the Corps of Engineers, American Society of Civil Engineers (Soils and Foundations Section)

and the Delaware State Geological Survey.

All phases of construction, including realignment or curves in the channel, bank stabilization, ground-water problems, bridge relocations and pier foundations in the Pleistocene and Cretaceous Coastal Plain sediments were observed and discussed.

Split-group tours were led by civil engineers and geologists and were made by both bus and boat.

The trip was quite successful and by popular request of many engineers in the

Philadelphia area a re-run has been scheduled for June 12th by the same co-sponsors.

NEWS FROM CANADA: Reporter, Robert F. Legget

Rock Fall at Quebec City

All who know the picturesque walled city of Quebec will know well the distinctive steep promontory on which the "Upper Town" is built, the older part of the city nestling at its foot. Cape Diamond is the name given to its highest point. In earlier days this name was often to be seen in geological literature since the nearly vertical strata of hard limestone and shale of the Quebec City formation differ so much from the usual exposure of the Trenton series that they were the subject of much controversy. Despite the solid appearance of the 325-foot cliff, rock falls have occurred on a number of occasions in the last century, sometimes with loss of life. On 8th April, another large fall took place, bringing down a slab of rock measuring 30 by 50 feet. Fortunately nobody was injured, despite the proximity of so many houses to the foot of the cliff. Rock falls can be so disastrous that this note may serve as a useful reminder that even so firm a formation as that at Quebec City can fail, suggesting the need for constant vigilance at all critically located rock cliffs.

Earthquake Engineering in Canada

The National Research Council of Canada recently established a Canadian National Committee on Earthquake Engineering. Dr. Sheldon Cherry of the University of British Columbia is Chairman and Dr. Howard Ward, of the Division of Building Research N.R.C., is Secretary. Members include engineers, building officials and seismologists. The Committee will act as the Canadian

liaison group with the International Association of Earthquake Engineering. It will review the engineering aspects of earthquakes in Canada, with special reference to the design provisions contained in the National Building Code of Canada. (This document, published by the National Research Council, is available at cost to all who want copies. By local legal adoption it can serve as the local building regulation. In this way it has been voluntarily adopted for use by most of the cities and towns of Canada. A fourth edition has just been published at \$4.00). It is not generally realized that Canada has two large areas classified in "Zone Three", in British Columbia, and in the St. Lawrence Valley. The extensive development of both these areas makes the future work of the new committee of great significance.

Avalanche Disaster at the Grand Duc Mine:

A far more serious avalanche disaster than those reported in the last issue of this news letter occurred on Thursday 18th February at the Grand Duc Mine in northern British Columbia. The avalanche destroyed the camp adjacent to the mine tunnel portal and blocked access to the tunnel. Of the mining crew 131 survived but 18 men were seriously injured. Twenty-seven men were killed, most being buried beneath the snow slide. Many of the men were able to dig themselves out through the snow. Twenty men were dug out alive by their workmates. Rescue by air was organized from both Canada and Alaska. Most of the survivors

were flown out to a bush camp at the south of the Chickamin River, Alaska. Heavy snowfalls during the winter, followed by unusually warm weather on 17 and 18 February combined to create conditions that triggered the avalanche but no details have yet become available.

The Grand Duc Mine is located in the Coast Mountains of British Columbia, close to the Canadian-Alaskan boundary at the southern tip of the Alaska Panhandle. The nearest settlement is Stewart, about 30 miles away. In 1964 the mining company

began to drive a tunnel near the tip of the Leduc Glacier to connect with an existing shaft. This was to be extended eventually into an 11-mile tunnel between the mill site and the valuable copper-ore body of the mine. Some years ago another exploratory shaft had been sunk near the adjacent Salmon Glacier. Some indication of the unusual terrain in which this mining project is being developed is given in an interesting work: "Vertical Distribution of Velocity in the Salmon Glacier, B.C." by W. H. Mathews, *Journal of Glaciology*, volume 3, pages 48-454, October 1959.

INTERNATIONAL MEETINGS

This is a reminder about the Sixth International Conference on Soil Mechanics and Foundation Engineering, in Montreal, Quebec, 8th to 15th September. Two volumes of Proceedings containing all papers (218) will be mailed to registrants before 1st July, and copies of the Reports of the General Reporters just before the meeting; all sessions will therefore be devoted to special lectures and panel discussions.

Special lectures will deal with the Geology of Canada, Rock Mechanics, Ice Mechanics, Permafrost in the U.S.S.R., Muskeg, and Engineering Geology of Montreal.

Registration, including all functions, dinner and Proceedings: \$60.00 (Canadian)

if paid before 1st July, \$70.00 after that date; 3 volumes of Proceedings, separate sets, \$50.00 before September 8.

Applications should be sent to Mr. M. K. Ward, Secretary, Sixth International Conf. on Soil Mech. and Found. Eng., c/o National Research Council, Ottawa, Canada.

At the 23d International Geological Congress it is planned to have one of the sessions devoted to engineering geology. The Congress is going to be held in Prague, Czechoslovakia, in 1968. Professor Quido Zaruba is Chairman of the National Committee responsible for this program; he will send further information as it develops.

PUBLICATIONS

Review of Research on Military Problems in Cold Regions: Symposium presented at 15th Alaskan Science Conference, Arctic Aeromedical Laboratory and Arctic Test Center Technical Documentary Rept. AAL-TDR-64-28, Dec., 1964. The report includes 16 papers on the physical factors of the arctic environment, and on research under way to solve problems of military operations in cold regions. The symposium illustrates the multi-discipline approach to research prob-

lems, with contributions from the fields of biology, civil engineering, geography, geology, geophysics, hydrology, materials engineering, physiology and psychology. The papers were organized and edited by Charles R. Kolb, Research and Development Office, Arctic Test Center, and by Fritz M. G. Holmstrom, Commander of Arctic Aeromedical Laboratory, both at Fort Wainwright, Alaska.

Engineering Implications and Geology,
Hall of Justice Excavation, Salt Lake City,
Utah: Utah Geol. and Mineral. Survey Special
Studies No. 11, Feb., 1965, by J. C. Osmond,
W. P. Hewitt, and Richard Van Horn. In
addition to the geologic problems which,
though seldom considered, confront all who
build in Salt Lake City, the report describes
a man-made problem of waste gasoline that
is accumulated in near-surface geologic
traps beneath the metropolitan area.
Faults exposed in the excavation were
studied in great detail in an attempt to
interpret the stability of the area during
the past 30,000 years. The report in-
cludes a detailed fence diagram, which
shows the faults and the stratigraphic
relations of some twenty Pleistocene and
Recent map units and two buried soil
horizons. According to William P. Hewitt,
Director of the Utah Geological and
Mineralogical Survey, this publication is
the first of a series of papers dealing
with engineering geology and related prob-
lems which affect urban development.