

## INTERNATIONAL PERMAFROST ASSOCIATION

No. 2, December 1986

This is the second Newsletter of the International Permafrost Association (IPA). Items for inclusion in the next Newsletter are welcomed - just send them to the Secretary General.

### V INTERNATIONAL CONFERENCE ON PERMAFROST

The First Bulletin, Call for Papers, has been distributed. Further information can be obtained from:

V International Conference on Permafrost  
The Norwegian Institute of Technology  
Studies Administration  
N-7034 Trondheim-NTH  
Norway

Telephone: 47 7 59 52 54  
Telex: 55637 nth ad n  
Telefax: 47 7 59 51 03

### VI INTERNATIONAL CONFERENCE ON PERMAFROST

The VI International Conference on Permafrost will be held in China. Provisional field trips are to the Far Northeast, the Tien Shan, and the northern edge of the Tibetan Plateau.

### EXECUTIVE COMMITTEE MEETING

The Executive Committee met in Boston on 28 to 30 October 1986. The Draft Minutes and included documents are being sent to Adhering National Bodies.

### FIRST COUNCIL MEETING

The first council meeting IPA will be held in Ottawa, Canada on 5 and 6 August 1987. Information is being sent to all Adhering National Bodies.

### NEW ADHERING BODIES

We welcome two new Adhering Bodies to IPA. The Swiss Academy of Sciences has now officially established the "Swiss Coordinating Group on Permafrost" composed of natural scientists and engineers. The main fields of interests are high-mountain permafrost, Ice-Age permafrost and artificial freezing. Close collaboration with other Alpine countries is planned. A British Permafrost Coordinating Committee has been established under the British Geomorphological Research Group. The convenor is Dr. C. Harris (Department of Geology, University College, Cardiff, UK).

## NEWS FROM CANADA

### 1. Canadian National Committee - IPA

The Canadian National Committee for the International Permafrost Association was formally approved by the Committee on International Scientific and Technological Affiliations of the Bureau of International Affairs, National Research Council of Canada on November 12, 1985. The Committee consists of the following: Professor H.M. French (Chairman), Department of Geography and Geology, University of Ottawa, representing the interests of the NRCC Associate Committee on Geotechnical Research and the Association of Canadian Universities for Northern Studies; Professor B. Ladanyi, Centre d'ingénierie nordique, École Polytechnique, Montréal, representing the Engineering Institute of Canada and the Canadian Society of Civil Engineers; Dr. J.I. Clark, Director, Centre for Cold Oceans Research and Engineering, Memorial University of Newfoundland, representing the Canadian Council of Professional Engineers; Mr. F. Tordon, Terratech, Montreal, a specialist in geotechnical and municipal engineering; Dr. K.L. MacInnes, Division of Land Resources, Department of Indian Affairs and Northern Development, Yellowknife, representing northern interests; Mr. J.C. McDougall, ESSO Resources Canada Ltd., Calgary, representing the interests of the petroleum industry, the Arctic Petroleum Operators Association, and Canadian Petroleum Association; Mr. N. Kalmanovitch, Dome Petroleum Ltd., Calgary, nominated by and representing the interests of the Canadian Geoscience Council; Mr. G.H. Johnston, Geotechnical Section, Institute of Research in Construction, NRCC, representing the Canadian Geotechnical Society and the interests of NRCC; Mr J.A. Heginbottom (Secretary), Terrain Sciences Division, Geological Survey of Canada, representing the interests of the Department of Energy, Mines and Resources, Government of Canada; In addition, Professor J.R. Mackay (Secretary General, IPA) and Mr. C. Gauvreau (Bureau of International Affairs, NRCC) are ex-officio members.

The purpose of the Committee is:

a) to promote, within Canada, international programs in permafrost and Canadian participation in international activities sponsored by the IPA, so as to ensure maximal benefits to Canada; b) to promote, within the IPA, international activities which are relevant, or of special interest, to Canada and to co-ordinate all aspects of Canadian **participation** in discussion and dissemination of the results of such activities; c) to formulate Canadian positions with respect to activities of the IPA and to advise NRCC on Canadian participation and on the activities of the IPA and the CNC-IPA; d) to act as a channel of communication among the IPA, NRCC, Canadian Scientific Societies, scientists and Canadian industry.

The term of office for all members is normally five years, including at least one International Conference on Permafrost.

### 2. Meeting of Canadian National Committee - IPA

The first meeting of the Canadian National Committee for the International Permafrost Association took place in Edmonton, Alberta, on November 19, 1985. The second meeting took place in Yellowknife, NWT, on November 17-18, 1986.

### 3. Summary of Permafrost Activities in Canada: 1986-1987

1. A special session on "Geophysics and Permafrost", was held during the Geological Association of Canada Annual Meeting in Ottawa, May 19-22, 1986.
2. The Thirtieth Meeting of the Permafrost Subcommittee, ACGR, NRCC, was held in Ottawa, May 22, 1986, and the Thirty-First meeting was held in Edmonton, December 10-11, 1986.
3. The Proceedings of the two workshops on "Subsea Permafrost" and "Pipelines and Permafrost", which were held in Edmonton November 18-19, 1985, are currently being prepared for publication in the Technical Memoranda series of NRCC.
4. An informal workshop on "Recent construction problems in permafrost" was held during the Thirty-First Meeting of the Permafrost Subcommittee, ACGR. Representations from the Northwest Territories Government, the Yukon Government, and the Government of Quebec made presentations.
5. XII INQUA Congress, Ottawa, July 30-August 7, 1987. A number of paper sessions and/or symposia will examine permafrost related topics. Several field excursions planned for northern Canada will provide opportunities to examine permafrost conditions at first hand. Individuals requesting the Second Circular should contact the following:

Mrs. H. Lacsoste  
Conference Services  
Natural Research Council of Canada  
Ottawa, ON  
K1A 0R6

### 4. Glossary of Permafrost and Related Ground Ice Terms

For several years, a Working Group of the Permafrost Subcommittee, ACGR, NRCC, has been preparing an update of the 1974 publication by R.J.E. Brown and W.O. Kupsch entitled "Permafrost Terminology". It is anticipated that this new version will be published in early 1987 by the National Research Council of Canada. It contains approximately 250 defined terms and over 450 entries, and is intended for use by Canadian permafrost scientists. It standardizes terminology, incorporates new concepts related to freezing, frozen and thawing ground, and adopts geocryological terminology. Information on this Glossary will be announced in academic and other permafrost-related publications, and will be advertised by the NRCC when available.

### 5. Permafrost Testing Manual

For several years, a Working Group of the Permafrost Subcommittee, ACGR, NRCC, has been preparing a manual intended to standardize permafrost testing procedures and present such procedures in the ASCE style. Several sections are in draft form. Information concerning the status of this project is available from:

Mr. T.H.W. Baker  
Institute of Research in Construction  
National Research Council of Canada  
Ottawa, ON  
K1A 0R6

## 6. The Roger J.E. Brown Memorial Award

This award is given to the author(s) of the best paper on permafrost science or engineering published in either the Canadian Geotechnical Journal of the Canadian Journal of Earth Sciences, or in the Proceedings of an International or Canadian National Permafrost Conference. Dr. J. Ross Mackay, Professor Emeritus, Department of Geography, University of British Columbia, was the first recipient of the award. This was presented at the Annual Meeting of the Canadian Geotechnical Society on August 27, 1986. Dr. Mackay's paper entitled "Pingo ice of the Western Arctic coast, Canada", published in the Canadian Journal of Earth Sciences, volume 22(10), October 1985, pp. 1452-1464, was judged the best paper in 1985.

## 7. Fifth International Conference on Permafrost, 1988

The CNC-IPA looks forward to active participation in the Fifth International Conference on Permafrost, to be held in Trondheim, Norway 1988. A substantial Canadian participation in the conference is anticipated. At the request of the Norwegian Organizing Committee, a Canadian National Review Committee has been established under the auspices of the Canadian National Committee-IPA. This Committee will organize the review of Canadian papers submitted to the conference. The Chairman of this committee is Professor H.M. French, Departments of Geography and Geology, University of Ottawa, Ottawa, K1N 6N5.

## 8. Register of Canadian Geocryologists

The CNC-IPA is preparing a list of scientists, agencies and institutions interested in permafrost studies, and, once created, will issue an Annual Newsletter to inform the Canadian Permafrost Community of permafrost activities in Canada and abroad.

Those persons wishing to be on the Newsletter mailing list should write to:

Mr. J.A. Heginbottom  
Secretary, CNC-IPA  
Geological Survey of Canada  
601 Booth St.  
Ottawa, Canada  
K1A 0E8

Individuals from outside of Canada may also be placed upon the mailing list, if they request.

## 9. Proposed Future Activities

1. A workshop on Global Change and Permafrost is being planned by the Permafrost Subcommittee, ACGR for 1987. Details will be announced shortly.
2. A Fifth Canadian National Permafrost Conference will be held in either 1990 or 1991. Details will be forthcoming.

For more information upon permafrost activities in Canada, the following individuals should be contacted:

- a) CNC-IPA  
J.A. Heginbottom  
Secretary, CNC-IPA  
Terrain Sciences Division  
Geological Survey of Canada  
601 Booth St.  
Ottawa, Canada  
K1A 0E8

## b) Permafrost Subcommittee, ACGR

Either: G.H. Johnston, Chairman  
 V.R. Parameswaran, Research Advisor  
 Permafrost Subcommittee, ACGR  
 Institute for Research in Construction  
 National Research Council of Canada  
 Ottawa, Canada  
 K1A 0R6

or: H.M. French, Chairman  
 Canadian National  
 Committee for the  
 International  
 Permafrost Assoc.  
 Professor of Geography  
 and Geology  
 University of Ottawa  
 Ottawa, Canada

The report from Canada has been submitted by Dr. H.M. French (Chairman, Canadian National Committee for the IPA).

#### NEWS FROM FINLAND

Dr. Matti Seppälä, Chairman, Adhering National Body for Finland, is spending a year at the University of Montreal, Montreal, Canada.

#### NEWS FROM THE NETHERLANDS

Professor Eduard Koster (IPA Adhering Body) has moved from the State University of Utrecht, Utrecht to the Free University De Boelelaan, Amsterdam.

#### NEWS FROM THE U.S.A.

1. The U.S. Committee for the International Permafrost Association (USC/IPA) coordinated the November 1986 visits to the U.S. of Soviet Academician P.I. Melnikov and Dr. N.A. Grave. The USC/IPA sent notices to U.S. participants in the Fourth International Conference on Permafrost to urge participation in the 1988 Conference in Norway and to consider submission of their abstracts by the February 1987 deadline. Notices of the Fifth Conference were also placed in many U.S. professional journals. The USC/IPA will arrange for review of the U.S. papers to the Fifth Conference.

Dr. Troy Péwé and Mr. Ray Kreig attended the Third National Chinese Permafrost Conference in Harbin, China, during August 1986. Kreig, a member of the NRC Committee on Permafrost of the Polar Research Board, visited the Railway Ministry's Fengua Shan Research Station located at 17,000 feet on the northern Zinghai-Xizang Plateau. He installed a thermistor cable in the permafrost for comparison of temperature measurements in Alaska.

The Fifth Cold Regions Specialty Conference sponsored by the American Society of Civil Engineers will take place in Minneapolis, Minnesota, in Spring 1989. The previous conference was held in Alaska in February 1986. The conferences are organized by the Technical Council on Cold Regions Engineering and are held on a 2- or 3-year cycle to avoid overlap with the International Permafrost Conferences.

The American Society of Mechanical Engineers (ASME) and its Division of Offshore Mechanics and Arctic Engineering (OMAE) sponsor an annual meeting. The April 1986 meeting was in Tokyo and the 1987 meeting is March 1-6, in

Houston. The OMAE Division of ASME has an operating committee for Permafrost Engineering. The ASME will cosponsor the International Symposium on Cold Regions Heat Transfer in Edmonton, Canada, June 4-6, 1987. The ASME Heat Transfer Division held a session at its annual meeting on December 3, 1986, on Heat and Mass Transfer in Permafrost.

The American Water Resources Association held a conference in Fairbanks, Alaska, in July 1986, on Cold Regions Hydrology. A five-year arctic research plan is under preparation by the U.S. Interagency Arctic Research Policy Committee. Recommendations for onshore and offshore permafrost research and engineering studies, based on reports of the U.S. National Research Council and other organizations, are being considered in the plan.

## 2. Members of the USC/IPA

<u>Chairman</u>	Jerry Brown, National Science Foundation, Washington, DC
<u>Vice-Chairman</u>	C.W. Lovell, Jr., Purdue University, W. Lafayette, Indiana
	David M. Hopkins, University of Alaska, Fairbanks, Alaska
	George Gryc, U.S. Geological Survey, Menlo Park, California
	Virgil J. Lunardini, Jr., Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire
	Rupert G. Tart, Jr., Tart Consultants, Anchorage, Alaska

The U.S.A. report has been submitted by Dr. J. Brown (Chairman, U.S. Committee for the International Permafrost Association (USC/IPA)).

## NEWS FROM THE U.S.S.R.

### Permafrost Investigations in 1985

Permafrost investigations in the U.S.S.R. are coordinated by the Scientific Council on Earth Cryology of the Academy of Sciences of the U.S.S.R. The main results of the investigations were discussed at the Conferences and Meetings under the Scientific Council. The annual meeting of the Scientific Council was held in March in Moscow. Some problems of general and engineering geocryology, physics and geochemistry of frozen ground and ice, geocryology of the Baikal-Amur Railway area and Environment were discussed.

The all-Union conference under the Scientific Council and Gosstroy of the U.S.S.R. took place in the city of Vorkuta in April. The geocryological prediction by the construction in the North was the main theme of the meeting. The methods of the regional prediction and of the geocryological prediction by surveying and construction, the problem of monitoring of the permafrost phenomena and Environment were discussed.

A special meeting of the Scientific Council was held in the city of Magadan in August. The state and the outlook of the permafrost investigations in the Extreme North-East of the U.S.S.R. by the development of the area and the problem of the Environment were discussed.

Some monographs and symposium on geocryology were published in the U.S.S.R. in 1985. Among them are to be mentioned:

1. Are F.E. The base of the prediction of the shore thermal abrasion. Novosibirsk, "Nauka", 1985; 2. Popov A.I., Rosenbaum G.E., Tumel N.V. Cryolithology. Moscow, Moscow State University Edition, 1985; 3. Group of authors. Eurasia cryolithozone evolution in the Upper Cenozoic. The symposium, Moscow, "Nauka", 1985.

Chief of the laboratory Dr. Aldar Gorbunov and Deputy Director of the Permafrost Institute Dr. N.A. Grave are nominated as members of the Council of the International Permafrost Association representing the U.S.S.R.

The New Research Institute for studying the problems of the North was established in the city of Tjumen under Siberian Branch of the Academy of the U.S.S.R. in January 1986. The aim of the Institute is carrying out fundamental and applied research connected with the development of gas and oil exploration in Western Siberia. The Institute is headed by Dr. Vladimir P. Melnikov.

## 2. Permafrost investigations in 1986

A meeting of the Scientific Council on Earth Cryology was held in March 25-27 1986 in Moscow. Nine papers were included at the Plenary Session and many at special sessions. There were present scientists and specialists dealing with permafrost problem from Moscow, Leningrad, Yakutsk, Yumen, Novosibirsk, Irkutsk, Magadan, Vladivostok, Krasnoyarsk, Chita, Khabarovsk and other cities.

The papers at the Plenary Session:

1. Tests at field stations are important factors in the regional geocryology (A.V. Pavlov, G.F. Gravis);
2. A map of the natural landscapes of the West Siberian North for geocryological prognosis and planning of the Environment protection measures (E.S. Melnikov, L.N. Kritsuk, N.G. Moskalenko and others);
3. Problems of the development of the West Siberian North oil and gas bearing fields (V.P. Melnikov, I.A. Nekrasov, V.P. Tsarev, A.S. Linkov);
4. Deep freezing and thermal regime of the Earth's crust in the Asia North (V.T. Balobaev, B.V. Volod'ko, M.N. Zheleznyak, A.I. Levchenko, V.G. Rusakov);
5. Land use management in the North and Technology (N.A. Grave);
6. Tritium analysis in geocryological studies (A.B. Chizhov, V.V. Romanov, I.K. Morkovkina);
7. Permafrost and gases of the underground hydrosphere (N.N. Romanovskiy);
8. Mining technology in the North and the Environment (E.A. El'chaninov);
9. Investigations in water development construction in the North (L.I. Kudoyarov).

The U.S.S.R. reports have been submitted by Dr. N.A. Grave (Soviet member of the IPA Council).

## FIFTH SYMPOSIUM ON GROUND FREEZING (ISGF 88)

The dates are 26 to 28 July 1988 and the symposium will be held at Nottingham, England. For further information contact: International Symposium on Ground Freezing, Department of Civil Engineering, University of Nottingham, N67 2RD, United Kingdom

## XVI PACIFIC SCIENCE CONGRESS

The XVI Pacific Science Congress, with the theme "New Dimensions of Science, Manpower and Resources in the Pacific" will be held in Seoul, Korea, August 20-30, 1987. Congress sections include Ecology, Conservation and Environmental Protection; Solid Earth Sciences; Geography; Museums; Marine Sciences; Coral Reefs; Botany; Forestry; Freshwater Sciences; Entomology; Social Sciences and Humanities; Economics: Public Health and Medical Sciences; Nutrition; and Science Communication and Education. Copies of the Second Circular may be obtained from Professor Choon Ho Park, Secretary-General, Organizing Committee, XVI Pacific Science Congress, Seoul 1987, K.P.O. Box 1008, Seoul 110, Korea (Information from W. Petrie).

### LOGO

Suggestions for an IPA logo? Sketches, ideas, finished drawings are welcomed.

### SUGGESTIONS FROM THE PRESIDENT IPA

Academician P.I. Melnikov has suggested two points for discussion to promote international cooperation in permafrost research.

1. Monitoring of recent permafrost change connected with climatic and heat balance fluctuations, organized on special experimental stations. Data obtained can be useful in prediction of natural and man-induced trends in the development and degradation of permafrost (see "Priorities for basic research in Permafrost", Washington, D.C., 1974). In the beginning, two or three experimental stations should be placed in sites with more or less equal natural conditions in North America, Siberia and China 2. Foundations on permafrost - testing of different types of foundations on ice-rich, high temperature etc. soils. Methods of monitoring of the ground temperature should be discussed.

### THE VICE PRESIDENTS COLUMN

It is indeed encouraging to learn that so many countries have established Adhering Bodies to the International Permafrost Association. Fifteen countries have representation ranging from official bodies within National Academies or scientific or engineering organizations to individuals representing their countries. We are still gathering the names and addresses of the representative groups and participants.

Last summer it was my privilege to represent the IPA at the Third National Chinese Conference on Permafrost held at Harbin in Northeast China. I was able to discuss IPA with the members of the Chinese Adhering Body and the president and secretary of the Japanese Adhering Body.

With 22% of its country underlain by permafrost and an additional 68% subject to only seasonal freezing of the ground, China continues to expand its research in science and engineering of frozen ground. Some continuous permafrost occurs in N.E. China, but is much more widespread in the far west in the high Qinghai-Xizang (Tibet) Plateau. The conference covered many aspects of seasonally and perennially frozen ground in 6 days of papers and



local field trips. About 160 participants were involved and books of abstracts in Chinese and English are available from the Institute of Glaciology and Geocryology, Lanzhou, China. The conference was divided into four general subject areas: general and regional geocryology; physical, thermal and mechanical properties in freezing and thawing of soils; design and construction in frozen ground; and instrument design and testing techniques. In fact, it appeared to me that the two main conference themes heavily covered were (1) the main aspects of theoretical and practical interpretation of frost heaving and (2) periglacial phenomena.

The conference provided an ideal place to recognize the newly founded IPA and that China was one of the original four founding countries along with U.S.A., U.S.S.R. and Canada. I spoke briefly about the IPA in the opening and closing sessions and also was allotted a formal time to describe the status of the IPA and comment on the 14 adhering countries. Also, special time was given to describing the status of the Fifth International Conference on Permafrost to be held in Norway in 1988 and the Sixth scheduled for China in 1993. I met in special session with the Chinese adhering body to the IPA to discuss the Fifth and Sixth Conferences. Professor Shi Yafeng is chairman of the body and Cheng-Xiaobai is secretary. Also present at the conference was Professor S. Kinoshita, chairman of the adhering body of Japan and Dr. M. Fukuda, secretary.

(Contributed by Dr. T.L. Péwé).

#### GEOLOGIC HAZARDS SYMPOSIUM

A Geologic Hazards Symposium with field trips, will be held 12 to 17 May 1987 at Anchorage, Alaska. The technical sessions will include shallow drilling hazards (permafrost) and construction problems (settlement, slope stability, frost heave). Contact: William Pyle, 1987 Geologic Hazards Symposium, P.O. Box 101288, Anchorage, Alaska, 99510, telephone: (907) 561-1020.

#### SUGGESTIONS FOR IPA ACTIVITIES 1988-1993

What should the IPA attempt to accomplish between 1988-1993? Should there be commissions? Working groups? Plans for the future will be discussed at the 1987 Council Meeting.

#### JOURNALS

##### GEOGRAFISKA ANNALER

A special issue of the Geografiska Annaler, Volume 68A, 1986, published by the Swedish Society of Anthropology and Geography, covers the Abisko Symposium of 1985. The focus of the special issue is on permafrost and periglacial features with particular reference to northern Sweden.

## JOURNAL OF COLD REGIONS ENGINEERING

The Technical Council for Cold Regions Engineering of the American Society of Civil Engineers (ASCE) was formed in 1977 and currently has a membership of about 4,000. The interest level in cold regions engineering has steadily risen and has led to the establishment of a new ASCE quarterly, "Journal of Cold Regions Engineering", with the first issue in December 1986. The price for nonmembers of ASCE is \$44.00 (U.S.) and foreign postage is \$2.50 (U.S.). The publication can be ordered from Department CR-1, ASCE, 345 East 47th Street, New York, NY, 10017-2398, U.S.A. Potential authors are encouraged to submit four copies of their papers for consideration to: Manager, Journals, ASCE (address given above).

## JOURNAL OF GLACIOLOGY AND GEOCRIOLOGY

The Journal of Glaciology and Geocryology (Chinese Society of Glaciology and Geocryology, Chinese Academy of Sciences, 14 Donggangxi Road, Lanzhou, China) is a quarterly journal that is distributed by the China International Book Trading Corporation, Guoji Shudian, P.O. Box 2820, Beijing, China. The text is in Chinese with English abstracts and figure captions. Many of the articles deal with geocryology such as periglacial features, frost heaving, and construction on frozen ground. The first three issues of Volume 8, 1986, have been published.

## POLAR GEOGRAPHY AND GEOLOGY

Polar Geography and Geology is a quarterly journal which publishes exclusively English translations of recent articles concerning aspects of geography or geology from both polar regions. Translations are primarily from Russian but articles are also translated from German and French and less often from languages such as Danish and Chinese. A substantial number of the translations deals with aspects of permafrost and of periglacial forms and processes. For example, four out of the seven articles in the latest issue (Vol. 10, No. 3, 1986) are oriented to the periglacial environment, the lead article being "Underground Ice in Western Siberia: origin and geological significance," by M.G. Grosval'd et al.

Suggestions for potential material for translation are warmly welcomed and should be sent to: Professor William Barr, Editor, Polar Geography and Geology, Department of Geography, University of Saskatchewan, Saskatoon, SK, S7N 0W0, Canada.

Subscription orders and inquiries concerning subscriptions should be sent to: V.H. Winston & Sons Inc., 7961 Eastern Avenue, Silver Spring, Maryland 20910, U.S.A. Subscription prices for the current issue are \$125 (U.S.) for addresses in the United States, \$135 (U.S.) for elsewhere.

OFFICERS OF THE IPA

## President:

Academician P.I. Melnikov  
 Scientific Council on Earth Cryology, U.S.S.R. Academy of Sciences,  
 Fersman St. 11, 117312, Moscow B-312, U.S.S.R.

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 Department of Geology, Arizona State University, Tempe, Arizona, 85287,  
 U.S.A.

## Second Vice-President:

Dr. K. Flaate  
 Norwegian Public Roads Administration, P.O. Box 6390, Etterstad, 0604  
 Oslo 6, NORWAY

## Secretary-General:

Dr. J. Ross Mackay  
 Department of Geography, #217-1984 West Mall, The University of British  
 Columbia, Vancouver, B.C., V6T 1W5, CANADA.

ARCTIC CONFERENCE CALENDAR\*

1987

March 1-6, 1987: 6th International Symposium on Offshore Mechanics and  
 Arctic Engineering, Houston, Texas (Jin Chung, Colorado School of Mines, 1500  
 Illinois, Golden, CO, 80401).

March 23-24, 1987: Second International Conference on Cold Regions  
 Environmental Engineering, Edmonton, Canada (Daniel Smith, Dept. of Civil  
 Engineering, University of Alberta, Edmonton, Canada, T6G 2B7).

April 30-May 3, 1987: 16th Arctic Workshop, Edmonton, Canada (John England,  
 Department of Geography, University of Alberta, 3-32 Tory Building, Edmonton,  
 Alberta, Canada, T6G 2H4).

June 8-12, 1987: 7th International Congress on Circumpolar Health, Umea,  
 Sweden (Box 6105, S-900 06 Umea, Sweden).

July 31-August 9, 1987: XII INQUA Congress, Ottawa, Canada K1A 0R6 (Alan  
 Morgan, Department of Earth Sciences, University of Waterloo, Ontario,  
 Canada, N2L 3G1).

August 17-21, 1987: POAC 87, 9th International Conference on Port and Ocean  
 Engineering under Arctic Conditions, Fairbanks, Alaska (William Sackinger,  
 Geophysical Institute, University of Alaska, Fairbanks, Alaska, 99715-0800).

1988

July 26-28, 1988: The Fifth International Symposium on Ground Freezing, Nottingham, England (Roland Jones, Civil Engineering Department, University of Nottingham, Nottingham NG7 2RD, England).

August 2-5, 1988: Fifth International Conference on Permafrost, Trondheim, Norway (VICOP, Norwegian Institute of Technology, N-7034, Trondheim-NTH, Norway).

August 9-22, 1988: International Association of Hydrological Sciences/International Union of Geodesy and Geophysics, Vancouver, Canada (Gordon J. Young, Inland Waters, Environment Canada, Ottawa, Canada, K1A 0E7).

\* Information from Dr. J. Brown